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Type Specimens of Non-fossil Mammals in the Australian Museum, Sydney

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Abstract. The Australian Museum (AM) Mammal Collection represents one of the most significant world collections from the Australo-Pacific region, with over 50,000 mammal specimens of some 650 species from the region. The Collection contains about 882 primary (name bearing) and secondary mammal type specimens, representing 210 proposed names (species and subspecies), 124 of which are currently recognized as valid taxa. All are of taxa originating from the Australian region, Indonesia, Melanesia and the south-west Pacific. The 205 primary type specimens comprise 145 holotype specimens (on which 149 names are based), seven lectotypes, two neotypes; 33 syntypes of 18 taxa; and 18 specimens suspected to be syntypes of 11 taxa. Primary type material of the 185 named taxa represent 4 monotremes, 62 marsupials, 2 canids, 9 cetaceans, 68 rodents and 40 bats. The 677 secondary type specimens comprise 659 paratypes, 15 paralectotypes, and three suspected paralectotypes.

This is the first published list of non-fossil mammal types in the AM Collection since the publication of Krefft's catalogue in 1864. Individual accounts are presented discussing type status of 233 taxa by their originally proposed names, which includes taxa for which the type series has not been located since publication of the name. Registration data are given, with additional information not included in the published description, along with new information on many taxa proposed in the 19th century. Photographs of the primary type specimens of 43 taxa are provided, many of which are the first published images. New insights and a summary of current information is given for 14 taxa for which type material has not been located in world collections but we believe might have originally been lodged in the AM.

Type material of seven taxa named by Krefft, Gray and Ramsay (all suspected junior synonyms), were identified in the AM Collection and are reported here for the first time since their original publication. These are: holotypes of *Canis familiaris* var. *papuensis* Ramsay, 1879, and *Macleayius australiensis* Gray, 1865 (= *Eubalaena australis* (Desmoulins, 1822)); syntypes of *Pteropus rufus* Ramsay, 1891 (= *Pteropus neohibernicus* Peters, 1876), *Cuscus chrysorrhous* var. *goldiei* Ramsay, 1877 (= *Spilocuscus maculatus goldiei* (Ramsay, 1877)), and *Antechinus allanii* Krefft, 1872 (= *Antechinus* cf. *stuartii* Macleay, 1841); and suspected syntypes of *Halmaturus mastersii* Krefft, 1871 (= *Wallabia bicolor mastersii*), and *Phascolomys assimilis* Krefft, 1872 (= *Vombatus ursinus* (Shaw, 1800)). The registration numbers of likely syntypes of two forgotten names, *Antechinus brevicaudatus* Krefft, 1872 (= *?Antechinus* spp.), and *Phalangista rufescens* Krefft, 1872 (= *Trichosurus* spp.) have been located in the old specimen registers, the specimens have not yet been found in the Collection.

The type series of many taxa proposed by Krefft and Ramsay are not fully defined and syntypes could remain unrecognized in the many institutions to which they extensively exchanged specimens during the 19th century. No nomenclatural actions are taken in this paper. *

Keywords: monotreme; marsupial; bat; cetacea; rodent; colonial science; G. Krefft; E. P. Ramsay

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* We dedicate this work to Dr Ken Aplin in recognition of his enormous contribution to mammal research in the Asia-Pacific Region

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Introduction

This is the first published compilation of type specimens of recent mammals in the Australian Museum (AM) Mammal Collection. Type specimens of fossil and subfossil taxa are not included here; see Mahoney (1971). Three catalogues dealing with modern (as opposed to subfossil) mammals have been published, none of which systematically list type specimens. All were published in the 19th century before the concept of the type specimen and its importance had become widely established. The first catalogue of natural history specimens in the Australian Museum (Bennett, 1837) lists at least 54 specimens of 36 different kinds of native mammals acquired since the Museum was founded. A unique catalogue or field number was not assigned to these specimens and this often obscures their identity amongst specimens currently in the AM Collection. The mammal fauna was poorly known at that time and the specimens are either listed by scientific name, or if from undescribed species, either by generic name only, or common names adopted by the public. The comprehensive catalogue of Krefft (1864a) lists all mammal specimens held by the Museum, including display mounts of mammals from other continents. The *Catalogue of Australian Mammals* (J. Ogilby, 1892) is a compendium of species accounts aimed at the general reader. It appears to be based largely on a summary of the literature, particularly Thomas (1888a), rather than an assessment of the AM Collection, but a limited number of type specimens are cited.

Our primary objective has been to provide an inventory of name-bearing type specimens of modern mammals in the AM Collection, i.e. holotypes, syntypes, lectotypes and neotypes. The registration numbers of most primary types in the AM Collection have been reported in the literature, either in original taxon descriptions or subsequent taxonomic works. However, this catalogue identifies type specimens of taxa proposed by J. Gray, Krefft and Ramsay that were previously undefined. Our secondary objective was to identify and locate paratype and paralectotype specimens, several hundred of which have remained unrecognized in the Collection for many decades, particularly of taxa proposed by Ellis Troughton, AM mammalogist from 1919 to 1958. Although paratypes are not regulated by the International Code of Zoological Nomenclature (hereafter the *Code*; ICZN, 1999) and thus have no nomenclatural relevance, they arguably are nonetheless of great taxonomic value; effectively, paratypes (and, by the same token, "referred" specimens) are the physical manifestation of the author's original concept of what constituted the species, hence they constitute a historical record long after the demise of the author. Furthermore, if past history is any indication, bestowing paratype status greatly enhances the long term prospects for survival of specimens deemed by the original author of a name as belonging to the taxon. For these reasons, we encourage continued use of the paratype category in systematics.

Overview of the Mammal Collection

Established in 1827, the Australian Museum is Australia's oldest natural history museum. Its extensive collection of scientifically and historically important mammal specimens originates mainly from Australia, Papua New Guinea, Indonesia, and countries in the south western Pacific, and is of global significance. The AM Collection has over 50,000 registered mammal specimens. In terms of species representation, the AM Mammal Collection is one

Table 1. The 22 extinct mammal species represented in the Australian Museum Collection, and an addtional three represented only by cast material (*).

	common name	scientific name
	Thylacine	*Thylacinus cynocephalus* (Harris,1808)
	Desert Bandicoot	*Perameles eremiana* Spencer, 1897
	Lesser Bilby	*Macrotis leucura* (Thomas, 1887a)
	Pig-footed Bandicoot	*Chaeropus ecaudatus* (W. Ogilby, 1838a)
	Broad-faced Potoroo	*Potorous platyops* (Gould, 1844)
	Desert Rat-kangaroo	*Caloprymnus campestris* (Gould, 1843)
*	Central Hare-wallaby	*Lagorchestes asomatus* Finlayson, 1943
	Eastern Hare-wallaby	*Lagorchestes leporides* (Gould, 1841)
	Toolache Wallaby	*Notamacropus greyi* (Waterhouse, 1846)
	Crescent Nail-tailed Wallaby	*Onychogalea lunata* (Gould, 1840)
	White-footed Rabbit-rat	*Conilurus albipes* (M. Lichtenstein, 1829)
	Lesser Stick-nest Rat	*Leporillus apicalis* (Gould, 1853b)
	Short-tailed Hopping-mouse	*Notomys amplus* Brazenor, 1936
	Long-tailed Hopping-mouse	*Notomys longicaudatus* (Gould, 1844)
*	Big-eared Hopping-mouse	*Notomys macrotis* Thomas, 1921
*	Darling Downs Hopping-mouse	*Notomys mordax* Thomas, 1922a
	Bramble Cay Melomys	*Melomys rubicola* Thomas, 1924
	Gould's Mouse	*Pseudomys gouldii* (Waterhouse, 1839)
	Maclear's Rat	*Rattus macleari* (Thomas, 1887b)
	Bull-dog Rat	*Rattus nativitatis* (Thomas, 1889)
	Nendo Tube-nosed Fruit Bat	*Nyctimene sanctacrucis* Troughton, 1931
	Dark Flying-fox	*Pteropus subniger* (Kerr, 1792)
	Greater Short-tailed Bat	*Mystacina robusta* Dwyer, 1962
	Christmas Island Pipistrelle	*Pipistrellus murrayi* C. Andrews, 1900
	Steller's Sea Cow	*Hydrodamalis gigas* Zimmermann, 1780

Table 2. Taxa for which the Australian Museum Collection holds the majority of specimens held in world collections, including six taxa (marked by asterisk *) known only from the holotype. Note that this list is not exhaustive.

	common name	scientific name
	Scott's Tree-Kangaroo	*Dendrolagus scottae* Flannery & Seri, 1990a
	Golden-mantled Tree-Kangaroo	*Dendrolagus pulcherrimus* Flannery, 1993a
	Dingiso	*Dendrolagus mbaiso* Flannery, Boeadi & Szalay, 1995
	Calaby's Pademelon	*Thylogale calabyi* Flannery, 1992
	Bougainville Mosaic-tailed Rat	*Melomys bougainville* Troughton, 1936a
	Manus Island Mosaic-tailed Rat	*Melomys matambuai* Flannery, Colgan & Trimble, 1994
	Woolley's Moss-mouse	*Pseudohydromys patriciae* Helgen & Helgen, 2009
	Southern small-toothed Moss-mouse	*Pseudohydromys pumehanae* Helgen & Helgen, 2009
*	White-bellied Moss-mouse	*Pseudohydromys sandrae* Helgen & Helgen, 2009
*	Florida Naked-tailed Rat	*Solomys salamonis* (Ramsay, 1882a)
*	Emma's Giant Rat	*Uromys emmae* Groves & Flannery, 1994
	Bulmer's Fruit Bat	*Aproteles bulmerae* Menzies, 1977
	New Georgia Monkey-faced Bat	*Pteralopex taki* Parnaby, 2002a
*	Montane Monkey-faced Bat	*Pteralopex pulchra* Flannery, 1991
	Fijian Monkey-faced Bat	*Mirimiri acrodonta* (Hill & Beckon, 1978)
*	Nendo Tube-nose Bat	*Nyctimene sanctacrucis* Troughton, 1931
	Solomons Mastiff Bat	*Chaerephon solomonis* Troughton, 1931
*	Wollaston's Leaf-nosed Bat	*Hipposideros wollastoni fasensis* Flannery & Colgan, 1993
	New Caledonia Long-eared Bat	*Nyctophilus nebulosus* Parnaby, 2002b
	Mt Missim Long-eared Bat	*Nyctophilus shirleyae* Parnaby, 2009

of the most comprehensive collections of Australo-Pacific mammals in the world. Approximately 650 mammal species (over 95% of the Collection) are from the region which encompasses Indonesia, Papua New Guinea, Australia, New Zealand, Solomon Islands, Vanuatu, Tonga, New Caledonia, Kosrae (Federated States of Micronesia), Samoa, Fiji and Cook Is. The remainder of the Collection of approximately 1700 specimens (c. 560 species) originates from over 100 countries outside that region. Included in the Collection are specimens of historical significance obtained on expeditions during the initial exploration of Australia, such as Ludwig Leichhardt (1844–1848), and Edmund Kennedy (1847–1848), and some of the earliest scientific expeditions such as the William Macleay's 1875 *Chevert* Expedition to New Guinea, the 1856–1857 Blandowski Expedition to the Murray-Darling Rivers, Andrew Goldie's expeditions in Papua New Guinea (1876–1878), the 1894 Horn Scientific Expedition to Central Australia, and material obtained by Mawson on the Australian Antarctic Expedition (1911–1914). Two specimens of the Spectacled Hare-wallaby (*Lagorchestes conspicillatus leichardti* Gould, 1853a) collected between 1845–1848 on Leichhardt's Expedition are the oldest documented mammal specimens in the Collection. It is possible that older mammal specimens remain in the Collection but are not recognized due to inadequate associated data. An extensive archival search might establish whether material originating from the 1830s is still in the Mammal Collection. Candidates include specimens obtained during the expeditions of Thomas Mitchell (1831–1836).

The Collection includes specimens of 22 globally extinct recent mammal species (Table 1), consisting of ten marsupials, ten rodents, four bats, and one manatee, of which the majority occurred on Australian Territory. The Collection also contains the majority of specimens in world collections of at least 15 taxa, and an additional six taxa known only from the holotype (see Table 2).

The AM houses the largest assemblage of mammal type specimens in Australian Institutions; it has about 882 type specimens representing a total of 210 proposed taxa (see Table 3). There are primary (i.e. name-bearing) type specimens of 185 taxa as originally proposed, consisting of 145 holotype specimens of 149 named forms, two neotypes, seven lectotypes and 33 syntype specimens of 18 taxa. Eleven proposed taxa are represented by 18 specimens that are suspected to be syntypes (see Table 3). There are 677 secondary type specimens, which includes 25 taxa for which the primary type specimens are not lodged in the AM. Secondary type specimens consist of 659 paratypes, 15 paralectotypes of six taxa, with an additional three suspected paralectotypes. Casts of two additional holotype skulls held in other Institutions are discussed in the *Cast material* section (p. 401). The number of taxa for which the AM has name-bearing types by country of origin are: Australia, 89; Papua New Guinea 65; Solomon Islands, 16; Indonesia, 12; two from New Caledonia and one from Kosrae, the Federated States of Micronesia. Authorship of three quarters of the 185 taxa for which name-bearing type specimens are lodged in the AM Collection, are by former AM mammologists: Ellis Troughton (76 taxa), Timothy Flannery (28 taxa), Edward P. Ramsay (22 taxa) and Gerard Krefft (12 taxa). An additional 14 taxa for which some or all of the type series remain unlocated in institutions, are discussed in the section *Types not found in the AM* (p. 401). These taxa were mainly proposed by early zoologists associated with the AM but the specimens used in their descriptions were not necessarily lodged in the AM Collection. The status of AM specimens of seven taxa that are not types is given in the last section of this work (p. 407).

A collection of tissue samples of some type specimens, originally frozen in liquid nitrogen or preserved in 95% ethanol, are stored as frozen material and maintained by the AM's Australian Centre for Wildlife Genomics.

Curatorial history of the Mammal Collection 1860–2017

Our success in identifying previously unrecognized type material in the Mammal Collection relied heavily upon a broad understanding of the history of the Museum, its staff, and collection management procedures adopted by different Curators. Although the history of the Museum and some of its luminaries is available in the literature (e.g., the overview of Strahan, 1979), little specific information has been published about the Mammal Collection. Consequently, we present a brief historical summary relevant to type material in this and three subsequent sections.

There appears to be no published account of the history of the Mammal Collection. Separate departmental reports first appear in the AM annual reports in 1887, but the first Mammal Department report was not until 1890 (Ramsay, 1891a).

The Mammal Section was formed in 1919 as the Department of Mammals and Skeletons, with Ellis Le Geyt Troughton as the first staffer solely in charge of mammals. The Museum did not have separate vertebrate departments before 1919. Instead, the vertebrate zoology staff and their assistants were allocated responsibility for the different vertebrate collections according to the primary research interests of the senior zoologists of the time. The term "curator" used during Krefft and Ramsay's time was equivalent to Museum Director or CEO (Chief Executive Officer). The position of Curator of Mammals which applied from 1948 to 1980 was replaced by the position of Research Scientist in 1984. The Research Scientist position remained vacant following the departure of Tim Flannery in 1999, until appointment of Mark Eldridge in 2007. A restructure in 2004 however meant that research scientists no longer had direct involvement in collection management.

The following outline of the AM staff responsible for curation of the Mammal Collection does not include the contribution made by many volunteers, part time assistants, temporary appointments and honorary research associates whose duties included care and maintenance of the Mammal Collection over the past 150 years.

Gerard Krefft: 1860–1874

Johann Ludwig Gerard Krefft (1830–1881) was employed by the Australian Museum from June 1860 to September 1874. His initial appointment as Assistant Curator was upgraded to Curator in 1864 (see biography by Whitley, 1961; 1969). Although the Museum was founded in 1827, the first organization into a research collection began around 1860 with the appointment of Gerard Krefft, who is recognized as the first active research scientist to give the Museum an international reputation (Strahan, 1979). Krefft, of German descent, not only made a major contribution to zoological science, but was ahead of his time. Unfortunately, in a colonial scientific community dominated by socially conservative, creationist, Anglo-Australians, Krefft, an early advocate of Darwin's theory of evolution, eventually fell out of favour with influential sections of Sydney society (Pigott & Strahan, 1979). Prior to our work, several mammal taxa proposed by Krefft have been overlooked since the early 1870s, or treated as *nomina nuda*, despite being validly published, available names. Type specimens of nine taxa proposed by Krefft are known to be in the AM Collection and it is likely that other type specimens remain unrecognized, either because they were not labelled as types, have inadequate or no associated specimen label, or no longer remain in the Collection.

George Masters: 1864–1894

George Masters (1837–1912) was amongst the most significant 19th Century contributors to the AM Mammal Collection and much of his material remains in the Collection. He was appointed Assistant Curator and Collector at the AM in June 1864 and remained in that position until his resignation in January 1874. His duties included curation of the Mammal Collection. From 1864 to 1870 he amassed large collections of both vertebrates and invertebrates for the AM. He collected in southeast Qld, NSW, Tas, southern SA, southwestern WA and Lord Howe Island (Whitley, 1971). Masters collected in many regions soon after European settlement (Froggatt, 1914: 5) and his mammal material in the AM Collection is of particular significance because he is responsible for much of the material of species that are now extinct. Masters made a significant contribution to the entomological literature but did not publish on mammals.

Edward Ramsay: 1874–1894

Edward Pierson Ramsay (1842–1916), was appointed by the AM as Curator on 22 September 1874. He resigned on 31 December 1894 (Etheridge Jr, 1917). His last proposed new mammal species was published in 1891 and he continued as a consulting ornithologist with the AM from 1896 until 1909. Ramsay was a prolific writer and made a significant contribution to the literature of mammalogy during an early phase of European expansion into northern Australia, New Guinea and the Pacific region. Although ornithology was his main focus, he also published papers in diverse fields including herpetology, ichthyology and botany (Whittell, 1954).

Ramsay never cited registration numbers of type specimens in published descriptions of his new mammal taxa, even when registration numbers existed. It appears that Ramsay, along with many of his contemporaries, often did not label mammal specimens as types, a practice he also applied to his favourite group, birds (Boles, 2012). Many of Ramsay's mammal types have subsequently been located in the Australian Museum collection and type specimens (holotypes and syntypes) of 21 taxa proposed by Ramsay are now known to be in the AM Collection. Type specimens of a further five Ramsay taxa are thought to be in the Macleay Museum, University of Sydney (Groves, 1982; Stanbury, 1969; Walton, 1988). The fate of type material of two taxa, *Perameles macroura* var. *torosus* Ramsay, 1877a and *Hapalotis papuanus* Ramsay, 1883 remains unknown; see respective accounts in the section on *Types not found in the Australian Museum collection* (p. 401).

Edgar Waite: 1893–1906

Edgar Ravenswood Waite (1866–1928), was employed from 17 April 1893–31 March 1906. Waite was appointed Assistant in Vertebrate Zoology (exclusive of Ornithology) and was in charge of Herpetology, Mammals, Fish and the Skeleton Collection. Waite focused on fish but was an exceptionally prolific writer and published on a diverse range of subjects on all vertebrate groups. While at the AM, he published 20 papers on mammals (see the biography by Hale, 1928) and proposed four new Australian mammal species, all of which are currently recognized, and two new subspecies, now regarded as synonyms (see Table 3). The AM Collection holds types of five of Waite's new taxa. Waite

returned type material of his remaining species, *Dasycercus blythi* (Waite, 1904), to the WAM. Waite resigned on 31 March 1906 to become Curator at Canterbury Museum, Christchurch, New Zealand.

Allan McCulloch: 1906–1919

Allan Riverstone McCulloch (1885–1925) was appointed as vertebrate zoologist on 1 July 1906 as Waite's replacement. McCulloch, an acclaimed ichthyologist, began this appointment with a primary interest in fish (Anderson, 1926). McCulloch joined the Museum as an unpaid assistant in 1898 at the age of 13 and was trained on the job by Waite (Anderson, 1926). Published documentation of department structure, staff duties and department activities for this period is very poor, but in addition to the fish collection, he would also have overseen the reptile, mammal and skeleton collections. The departure of Waite and the appointment of the 21 year old McCulloch as his replacement, marked the beginning of a period spanning more than a decade in which the vertebrate collections, and in particular the Mammal Collection, were administered by young and relatively inexperienced staff, all of whom were self-educated. In 1908, Troughton, then 14 years of age, was appointed in the cadet scheme, effectively as an apprentice assistant to McCulloch. Annotations to the AM Registers indicate that a substantial number of specimens were deemed worthless, and destroyed during this period, including the holotype skin and unique specimen of *Solomys salamonis* (Ramsay, 1882a). Curation of the vertebrate collections, including mammals, was hindered during this period by ongoing financial constraints, and this was exacerbated by the absence of several staff on military service from 1915–1919, including Troughton and Kinghorn (another cadet assistant to vertebrates).

Ellis Troughton: 1919–1958

Ellis Le Geyt Troughton (1893–1974) joined the Museum as a curatorial assistant on 13 January 1908 in the cadet scheme, and in 1913 was upgraded to the position of "Second Class Assistant". He joined the army in July 1916 and returned to the Museum in March 1919 where he was the first staff member to be in charge of the newly formed Mammal and Skeletons Department—the first Mammal Department at the Museum (Whitley, 1975: 221). In 1920 he was appointed "First Class Assistant" until the position was reclassified as Curator of mammals in 1948. Troughton published numerous papers on the taxonomy of Australo-Papuan mammals, mainly during 1928–1946, and continued publishing papers and books into the 1970s. He published over 168 papers and popular accounts (listed by Whitley, 1975) and collected extensively in all mainland Australian States and the Northern Territory, Lord Howe Island, Dutch New Guinea (now Papua and West Papua Provinces, Indonesia), Papua New Guinea, the Moluccas and the Santa Cruz Islands (Solomon Islands). Troughton's last major collecting trip (with AM staff member Norm Camps) was to the Mt Hagen district, Western Highlands of Papua New Guinea during July–September 1954, at the age of 61. During these expeditions he made significant collections of other vertebrate specimens, and also invertebrates (Musgrave, 1930). Troughton was an astute taxonomist, whose insight was strengthened by visits to examine type material of all major collections of Australo-Papuan mammals in European and North American institutions. He took long service leave in 1930, and at his own expense, spent the year visiting research collections in London, Stockholm, Oslo, Berlin, Paris and Genoa, amongst others. In 1939 he again visited research collections in England and North America, including the Archbold Collections in the American Museum of Natural History, which he also visited during 1964. Troughton retired in April 1958, at that time the longest serving staff member in the history of the AM. In September 1958 he was elected an AM "Honorary Zoologist" (equivalent to Research Associate) and remained so until his death in November 1974. His *Furred Animals of Australia* was the primary reference on Australian mammals, with ten editions from 1941 to 1974 (see Whitley, 1975 for chronology of editions).

Basil Marlow: 1958–1980

Basil Joseph Guy Marlow (1920–1993; McEwan, 1993), was appointed head of the Mammal Department on 2 June 1958 and retired on 31 October 1980. Marlow was primarily interested in mammal ecology and behaviour, initially focusing on small, carnivorous marsupials (Family Dasyuridae) and is hailed as one of the founders of modern dasyurid research (Jones *et al.*, 2003: v). He later published pioneering research on sea lions and fur seals, and also participated in cetacean research. He authored and co-authored over 22 papers and over 20 popular articles on Australian mammals. Marlow's highly successful *Marsupials of Australia* (Marlow, 1962) appeared as three editions over the ensuing two decades and remained one of the few books on Australian mammals at that time. Marlow substantially expanded the Mammal Collection through a series of productive collecting trips to central and northern Australia during the late 1950s and 1960s and continued field work and collecting until his retirement. An increase in registration of marine mammals occurred during this period. Basil was the husband of Judith E. Marlow (nee King, 1926–2010) who was a marine mammal specialist (pinnipeds) formerly employed at the British Museum of Natural History (Shaughnessy, 2012), and was appointed Research Associate of the AM in 1974.

Linda Gibson: 1980–1984

Linda Margaret Gibson (1948–2005) commenced employment with the AM on 30 June 1969 as an assistant to Basil Marlow and later as a Technical Officer in the Mammal Section. Following Marlow's retirement in 1980, Gibson was appointed Acting Head of Department until the appointment of Dr Tim Flannery in November 1984. Her main duties from 1984 until 1996 were to maintain and enhance the Mammal Collection. In June 1998, she transferred from the Mammal Section to Terrestrial Ecology and AM Business Services (an environmental consultancy). She undertook numerous mammal collecting trips, including throughout NSW in the 1980s and 1990s, to north Qld in September–October 1985 with one of us (HEP), and to Vanuatu in May 1990 with Pavel German and Lindy Lumsden. She remained employed in various positions at the AM until 30 July 2004 and passed away after a long illness in May 2005.

Timothy Flannery: 1984–1999

Dr Timothy Fridtjof (Tim) Flannery (1956–) was appointed as Scientific Officer in charge of Mammalogy in November 1984 and had attained the position of Principal Research Scientist in Mammals when he left the Museum in August 1999, to take up the Directorship of the South Australian Museum.

Flannery was an energetic and prolific worker whose main focus while engaged by the AM was Indo-Papuan, and south-west Pacific mammals. During this period Patricia (Tish) Ennis and Alexandra (Alex) Szalay were employed at various times to assist in research, field work and curation of the collection. Flannery organized a series of collecting expeditions while employed by the Museum, including to the Solomon Islands, Papua New Guinea, New Caledonia, Fiji, and Indonesia (principally West Papua, Maluku and North Maluku Provinces). Australians employed to undertake mammal field work in these regions include, Tish Ennis, Diana Fisher, Pavel German, Linda Gibson, Sandy Ingleby, Harry Parnaby, Alex Szalay, and Elizabeth (Liz) Tasker. The results of these expeditions were published in numerous research papers and popular accounts, including several books (Flannery, 1994; 1995b,c; 1998; 2011). Holotypes of 28 recent mammal taxa authored or co-authored by Flannery are lodged in the AM Collection, all of which are currently recognized as valid taxa. He named additional mammal taxa based on material housed in other institutions, and also named numerous fossil and subfossil mammal taxa.

Sandra Ingleby: from 1996, ongoing

Dr Sandra (Sandy) Ingleby (1959–) was appointed Mammal Collection Manager in June 1996 and continues as the Collection Manager in charge of the Mammal Section. The Mammal Section became part of the Terrestrial Vertebrates Division following a series of restructures in 2013. Since then Sandy's duties have extended to oversee collection management of the Bird and Herpetology sections in addition to Mammals. Sandy has a long association with the Mammal section in varying roles, since the late 1970s and in 1992 was in charge of the Fiji mammal surveys as part of Tim Flannery's mammal research of Melanesia, during which she also worked in the Solomon Islands. She has also conducted field work in northern and central Australia, south-western Australia, western Qld, Victoria, and throughout NSW including Lord Howe Island.

Mark Eldridge: from 2007, ongoing

Dr Mark Derek Bruce Eldridge, a molecular ecologist, and morpho-taxonomist, is currently a Principal Research Scientist in the Terrestrial Vertebrates Division at the AM. He was appointed Senior Research Scientist to the Terrestrial Vertebrates Division on 2 January 2007, the first research scientist position associated with the Mammal Collection since the departure of Dr Tim Flannery in 1999. Mark commenced his employment at the AM in 2003 for a year as Queen Elizabeth II Fellow at the Evolutionary Biology Unit, after which he became a Senior Lecturer, Department of Biological Sciences, Macquarie University, Sydney. Since 1992 he has published over 160 contributions to the research literature of marsupial molecular ecology, systematics, phylogenetics and conservation biology and has gained international acclaim as a leading authority on the Macropodidae.

In 2017, Mammal Section staff consist of two full-time employees: Dr Sandy Ingleby (position ongoing) and Dr Anja Divljan (Technical Officer, position ongoing). Christine Crowther volunteers one day per week. Dr Tim Flannery is an Honorary AM Associate, Professor Colin Groves is a Senior Fellow and three Research Associates, Drs Kenneth (Ken) Aplin, Kristofer (Kris) Helgen and Harold (Harry) Parnaby are appointed to the section.

Evolutionary Biology Unit 1988–2005

In addition to the main Mammal Collection, a limited number of frozen tissue samples were maintained by the Mammal Section until added to the tissue collection of the Evolutionary Biology Unit (EBU), founded in July 1988 under the direction of Dr Don Colgan. Frozen tissue samples obtained by Tim Flannery prior to c. 1988 were sent to the South Australian Museum, Adelaide. When the EBU was restructured in 2005, responsibility for maintenance of the frozen tissue collection was assumed by the DNA Laboratory (headed by Dr Rebecca Johnson until April 2015) which is now part of the Museum's Australian Centre for Wildlife Genomics. Registration, development and access to tissue samples are determined by the Mammal Section.

The early specimen registers

The early AM registers were specially printed and bound large format books that followed the same broad format. The entry for each item was restricted to a single line that spanned the adjacent page and was divided into columns that included, amongst others, registration date, registration number, species name, name of donor or seller, locality and a remarks column. The information provided was often very limited.

The earliest registers listed all objects received at the Museum, including library material, minerals and ethnological specimens along with biological specimens. These registers were not consecutive but overlapped, in some instances for several years. The five registers are:

The "A" Register: spanned January 1875 to October 1883 to which all acquisitions were entered. This included all biological, geological, ethnographic and library material. All specimens and artefacts were assigned individual numbers prefixed with A, commencing with A.1 in June 1877. From January 1875 until June 1877, brief entries were made for each acquisition entered per month but these were not assigned a number. The A Register ceased in October 1883 with the last entry being A.19027.

The "B" Register: commenced with B.1 in September 1883 extending to B.10435 in December 1886, with numbers assigned to all biological, ethnological and mineralogy specimens received.

The "S" Register: also referred to as the Osteology, or Skeleton Register, listed skeletons of all vertebrate groups and began in 1889. The first mammal specimen was entered on the S Register in March 1889. Specimens thought to be represented only by skeletal material were entered in this Register. The S Register was closed on 1 July 1958 to mammal registrations, after which all mammal skeletal material was to be entered in the "M" Register.

The Palmer Register: Edward Gillet Worcester Palmer (1842–1914) compiled a register of Museum specimens that was never finished, and is undated. Palmer was engaged by the Museum on a part time basis between about June 1877 to May 1880 (Strahan 1979: 49) to compile a register of all biological, geological and ethnological material that had remained unregistered. Specimens were assigned an unprefixed number starting at 1 and ending with 8767. Specimens were not registered in chronological order of original acquisition. This Register ran concurrently with the A and B Registers. It appears that its primary purpose was to assign a registration number to the backlog of unnumbered

specimens obtained by the Museum since the 1830s, which had not been assigned A or B numbers. The historical backlog of unregistered mammal specimens was largely cleared by 1992 with the registration of some 1800 specimens, which consisted of specimens not registered by Palmer by 1880 along with unregistered material obtained in ensuing decades until the appointment of Marlow.

The "M" register: The current mammal specimen registration numbering system commenced with M.1 in June 1886, the year specialist Museum department registration systems were created. Entries into the hardcopy register ended in May 1977 at M.10399 and were immediately replaced by handwritten computer datasheets from M.10400.

The prefix P, A, B or M is an essential part of the registration number. In recent decades, the original unprefixed registration numbers of the Palmer Register were prefixed with P. All P numbers were changed to PA by 2004 with the introduction of the EMu database to avoid duplication as the Marine Invertebrate Collection also used a P prefix. Confusion has sometimes arisen in the literature when registration numbers were prefixed with M instead of A, B or P, i.e. M.799 instead of P.799.

We also consulted a fifth register, the *"X" Register*, for which we have not found any mention in the published mammal literature. The X Register was a register of documentation that arose from an inventory of early documents associated with specimen acquisition such as letters, receipts, acquisition forms, and specimen exchange schedules. These were cross referenced to a specimen inventory. The aim was to identify those specimens mentioned in original documents that could not be matched against both registered and unregistered specimens in the collections, and to assign those specimens an X Register number linking it to a document. The Register was initiated in 1907 by AM Director Robert Etheridge, Jnr. (1847–1920), who instructed his assistant William Walford Thorpe (1879–1932) to assemble all documentation relating to specimens in the early collections, mostly those acquired before 1883 but some as late as 1897. An inventory of the entire specimen collection was undertaken and citation of any documentation listed against specimens registered in the Palmer, A and B Registers were examined. An entry was made in the X Register for any specimen mentioned in original documents that could not be matched against a registered specimen (AM Archives: R. Etheridge to W. Thorpe [1906] in series 9 item 4). Several staff were involved in the specimen inventories and X registration numbers and notes entered on original documentation signed and dated. The inventory extended over a number of years.

In addition to the register books, a concurrent specimen card index system, with a card for each specimen, started in 1898 (Waite, 1900). The mammal specimen card index was maintained until at least the mid 1980s. The specimen card index remains a valuable resource because entries often contain additional information that was never transferred to the hardcopy Registers, on which the electronic register was based.

Although there were periods in the 19th century during which several of the early registers were operated concurrently, once registered, mammal specimens were not usually assigned a second registration number in a different register. During the curatorships of Troughton and Marlow, however, a limited number of specimens that had already been registered in the A, B or Palmer Registers were re-registered with M numbers.

Digitization of the Mammal registers

The following account draws heavily on the recollections of Dr Des Beechey (pers. comm. October 2014), after consulting his papers in the AM Archives. Different sections of the AM Collections were progressively digitized and each vertebrate collection has a separate history. The Herpetology Collection was the first to be digitized, commencing in the mid 1970s, followed by birds, mammals and fish.

The first electronic mammal register was the M Register, which became operational in about 1983. Data were stored in a database on the CSIRO's Cyber 76 computer that was part of "CSIRO-NET", administered by the CSIRO Division of Computing Research in Canberra, and accessed via phone line through the CSIRO Office at Sydney University. (CSIRONET was an Australian predecessor of the internet). At this stage there was no interactive access to the database, which was accessed by sending a batch of commands to Canberra. Output for small searches was via printed sheets but large output involving hundreds of records were printed as microfiche sheets. Specific listings could be requested from output options including a printed list of sequential registration numbers and accompanying data, and records per geographic area.

Manual entries into the hardcopy M Register ended in May 1977 at M.10399 and were replaced by handwritten computer datasheet entries from M.10400 which were then digitally entered. The datasheets are bound into volumes and are retained in the Mammal Section. The Palmer, A and B Registers and the S Register were also transferred to computer datasheets and data entry, editing and checking continued on the entire electronic register throughout the 1990s.

Mammal database records were transferred to an early version of Knowledge Engineering's (KE) "Titan" database software in about 1986 with the purchase of the Museum's in-house computer, after which records were transferred to KE "Texpress" by 1995. Mammal records were moved to the current KE "EMu" database system in November 2004.

The transfer of records to digital format introduced an inevitable level of error, the most obvious of which is the requirement for latitude and longitude to be estimated for specimens that lacked one at the time of collection or registration. We have used original register hardcopy and specimen index cards as the primary sources during preparation of this paper, with the exception of the S Register which is stored as images taken from microfiche sheets.

Identifying the type series of taxa described before 1950

The identification of specimens that formed the basis of taxa named by Australian zoologists in the 19th century is problematic because it involves the retrospective application of contemporary concepts of the holotype, paratype and the syntype series that did not exist in the 19th century. Retrospective determination of the type series is determined by the *Code*, which specifies that all available evidence can be used, including unpublished data. Establishing the type series is further complicated by the diverse interpretation of

terms such as "type specimen" and "type of the species" used during the second half of the 19th century. For example, one interpretation of type specimen was any specimen judged to be "typical" of the species by exhibiting "typical" non-aberrant diagnostic features (see the detailed discussion of Witteveen, 2015). Another concept of the type was any specimen from the type locality, including material obtained years after publication of the name. Boles (2012) laments what he interpreted to be the arbitrary labelling of bird specimens as types during Ramsay's curatorship, but this is possibly an outcome of applying a different concept of "the type" than that in use today. Although a unified concept of the type specimen did not exist in the 19th century, the implicit importance of specimens used as the original basis of species descriptions is evident in the published works of Krefft and Ramsay.

The impediments to recognizing mammal holotypes and syntypes in the AM Collection of taxa named in the 19th century are similar to those described for fish (Paxton & McGrouther, 1997), reptiles (Cogger, 1979; Shea & Sadlier, 1999) and birds (Boles, 2012; Longmore, 1991), viz.: there was no Museum register of numbered specimens before June 1877 (the A Register). Specimens were not assigned a unique number and the only data were on labels associated with the specimen. Specimens were often poorly labelled. The imperative of documenting the original specimens used as the basis of species descriptions was not an established practice in the 19th century and details of the number of specimens used in original descriptions were often poorly documented in published descriptions. The primary authors of taxa for which material was lodged in the AM during that period were Krefft and Ramsay. Some old specimens have lost their original tags and this has complicated our attempts to establish the number of specimens in the type series of many taxa, and our assessment of which specimens qualify as paratypes and paralectotypes amongst the specimens currently in the Mammal Collection. Another complication is that an unknown number of early specimens were never registered because Palmer's original cataloguing was not completed when his employment by the AM was terminated in May 1880 (Strahan, 1979: 49). Further, several specimens could have been registered under the one number without this being indicated in the register, as is known to have occurred with type material registered by Waite.

The published AM annual reports, which began in 1858, are a useful source of specimens acquired by the AM by donation, purchase or obtained by Museum collectors, but detailed lists were not consistently included.

Assembling data on mammal type specimens was particularly problematic for the period from 1900 until the appointment of Troughton as mammal curator in 1919. Work of the entire AM scientific staff, including specimen acquisition lists and departmental reports, receives no mention in the annual reports published from 1900 to 1916, apparently due to internal wrangling among senior staff (Strahan, 1979). As previously stated, the appointment of McCulloch in 1906 began a decade of curation by a very young, and inevitably inexperienced, vertebrate staff, all of whom later became renowned zoologists. Specimens that are potentially the original material of six mammal taxa named by Ramsay were assigned M numbers during this period but without adequate documentation of type status, collector, locality or collection date, thereby curtailing determination of the provenance or type status of some of these specimens prior to registration. We also examined an unpublished list of AM type specimens prepared, signed and dated by Troughton and lodged in the AM Archives in 1956 (Troughton, 1956). Although dated 1956 by Troughton, the 78 names included in his list were all published before 1937. The most recent names listed were the rodent and bat taxa published in April 1936 by Troughton (1936a), and none of the 36 names subsequently proposed by him are included. Evidently he prepared the list in the mid 1930s and presented it to the AM without updating it. The document is a basic, three column list of registration number, type status (holotype, allotype or cotypes) and species name and author, but without additional comments. Troughton does not list paratypes for any taxa on his list, including those for which he cited registration numbers and applied the term "paratype" in his published descriptions. In effect, he has listed only name bearing types, along with "allotypes". Three taxa included in the list require further comment. Although "holotype" is listed against "*Cercartetus nanus unicolor* Krefft", there is no registration number or indication that an unregistered specimen was sighted and the taxon was presumably included on the assumption that it remained unlocated in the Collection. Neither are registration number or type status included against "*Notomys alexis reginae* Troughton" which was based on a single specimen still in the QM Collection. Cotypes are erroneously associated with two taxa, *Hapalotis arboricola* Krefft in Gould, 1863a (which is discussed further in the section on *Types not found in AM,* p. 401) and A.3642 (which is incorrectly listed as a cotype of *Halmaturus crassipes* Ramsay, 1876a). The latter specimen was collected after publication of the name. In spite of these limitations, the list did however, provide valuable insight into Troughton's conclusions regarding the identity of some of the early type material.

The main challenge in the compilation of this paper arose from identifying the original specimens used in the descriptions of names proposed by Krefft, Ramsay, Waite and Walter Baldwin Spencer (1860–1929) and the paratypes of Troughton. The circumstances peculiar to each author are outlined below.

Taxa described by Krefft

Krefft was employed by the Australian Museum from 1860–1874. In an infamous incident that is possibly relevant to the fate of some of his original material used in species descriptions, Krefft was evicted from the Museum premises in September 1874 following a prolonged dispute between himself and the AM Trustees. Significantly, it appears that Krefft was subsequently permanently denied access to the AM Collections and according to Rutledge & Whitley (1974), his collections were "damaged and muddled". The fate of Krefft's original material after 1874 has not been determined for a number of taxa named by him, including *Dromicia unicolor* Krefft, 1863, and *Echidna orientalis* Krefft, 1872a. However, some three years after Krefft's eviction, Palmer began registering specimens that most likely included material that formed the basis of taxa named by Krefft, as discussed in the taxon accounts below. Palmer had not finished registering the backlog of old specimens when his employment was terminated in 1880, further complicating attempts to identify material used by Krefft.

Table 3. The number of primary and secondary type specimens held by the Australian Museum Mammal Collection, for each of the 210 proposed names, listed by family. Asterisk indicates instances where several names are based on the same holotype specimen. *H*, holotype; *N*, neotype; *L*, lectotype; *S*, syntypes; *?S*, possible syntypes; *P*, paratypes; *PL*, paralectotypes; *?PL*, possible paralectotypes.

Name originally proposed	Current name	H	N	L	S	?S	P	PL	?PL
Family Tachyglossidae		**4**	—	—	—	—	—	—	—
Echidna corealis Krefft, 1872a	*Tachyglossus aculeatus aculeatus* (Shaw, 1792)	1	—	—	—	—	—	—	—
Echidna (Tachyglossus) lawesii Ramsay, 1877b	*Tachyglossus aculeatus lawesii* (Ramsay, 1877b)	1	—	—	—	—	—	—	—
Zaglossus bartoni diamondi Flannery & Groves, 1998	*Zaglossus bartoni diamondi* Flannery & Groves, 1998	1	—	—	—	—	—	—	—
Zaglossus bartoni smeenki Flannery & Groves, 1998	*Zaglossus bartoni smeenki* Flannery & Groves, 1998	1	—	—	—	—	—	—	—
Family Thylacinidae		—	—	—	**2**	—	—	—	—
Thylacinus breviceps Krefft, 1868a	*Thylacinus cynocephalus* (Harris, 1808)	—	—	—	2	—	—	—	—
Family Dasyuridae		**12**	**1**	**—**	**2**	**1**	**46**	**—**	**2**
Antechinus agilis Dickman, Parnaby, Crowther & King, 1998	*Antechinus agilis* Dickman, Parnaby, Crowther & King, 1998	1	—	—	—	—	36	—	—
Antechinus allanii Krefft, 1872b	*Antechinus stuartii* Macleay, 1841	—	—	—	2	—	—	—	—
Antechinus (Podabrus) froggatti Ramsay, 1887a	*Sminthopsis macroura froggatti* (Ramsay, 1887a)	1	—	—	—	—	—	—	—
Antechinus stuartii Macleay, 1841	*Antechinus stuartii* Macleay, 1841	—	1	—	—	—	—	—	—
Chaetocercus cristicauda Krefft, 1867a	*Dasycercus cristicauda* (Krefft, 1867a)	1	—	—	—	—	—	—	—
Dasyuroides byrnei Spencer, 1896a	*Dasyuroides byrnei* Spencer, 1896a	—	—	—	—	—	—	—	1
Dasyurus gracilis Ramsay, 1888a	*Dasyurus maculatus gracilis* Ramsay, 1888a	1	—	—	—	—	—	—	—
Myoictis leucura Woolley, 2005a	*Myoictis leucura* Woolley, 2005a	1	—	—	—	—	1	—	—
Ningaui yvonneae Kitchener, Stoddard & Henry, 1983	*Ningaui yvonneae* Kitchener, Stoddard & Henry, 1983	—	—	—	—	—	3	—	—
Phascogale flavipes burrelli Le Souef, in Le Souef & Burrell, 1926	*Antechinus stuartii* Macleay, 1841	1	—	—	—	—	—	—	—
Phascogale macdonnellensis Spencer, 1895a	*Pseudantechinus macdonnellensis* (Spencer, 1895a)	—	—	—	—	1	—	—	—
Planigale gilesi Aitken, 1972	*Planigale gilesi* Aitken, 1972	—	—	—	—	—	5	—	—
Planigale ingrami brunneus Troughton, 1928	*Planigale ingrami brunnea* Troughton, 1928	1	—	—	—	—	—	—	—
Planigale tenuirostris Troughton, 1928	*Planigale tenuirostris* Troughton, 1928	1	—	—	—	—	1	—	—
Podabrus albocaudatus Krefft, 1872c *nomen oblitum*	*Sminthopsis granulipes* Troughton, 1932a	1	—	—	—	—	—	—	—
Sminthopsis granulipes Troughton, 1932a	*Sminthopsis granulipes* Troughton, 1932a	1	—	—	—	—	—	—	—
Sminthopsis larapinta Spencer, 1896a	*Sminthopsis macroura macroura* (Gould, 1845)	—	—	—	—	—	—	—	1
Sminthopsis monticola Troughton, 1965a	*Sminthopsis macroura macroura* (Gould, 1845)	1	—	—	—	—	—	—	—
Sminthopsis murina tatei Troughton, 1965a	*Sminthopsis murina tatei* Troughton, 1965a	1	—	—	—	—	—	—	—
Sminthopsis murina ooldea Troughton, 1965a	*Sminthopsis ooldea* Troughton, 1965a	1	—	—	—	—	—	—	—
Family Peramelidae		**4**	**1**	**—**	**2**	**—**	**6**	**—**	**—**
Didephilus obesula Shaw, 1797	*Isoodon obesulus* (Shaw, 1797)	—	1	—	—	—	—	—	—
Echymipera davidi Flannery, 1990	*Echymipera davidi* Flannery, 1990	1	—	—	—	—	—	—	—
Echymipera philipi Troughton, 1945	*Echymipera kalubu philipi* Troughton, 1945	1	—	—	—	—	3	—	—
Isoodon arnhemensis Lyne & Mort, 1981	*Isoodon auratus arnhemensis* Lyne & Mort, 1981	1	—	—	—	—	2	—	—
Perameles broadbenti Ramsay, 1879a	*Peroryctes broadbenti* (Ramsay, 1879a)	1	—	—	—	—	—	—	—
Perameles moresbyensis Ramsay, 1877a	*Isoodon macrourus moresbyensis* (Ramsay, 1877a)	—	—	—	1	—	—	—	—
Perameles cockerelli Ramsay, 1877c	*Echymipera kalubu cockerelli* (Ramsay, 1877c)	—	—	—	1	—	—	—	—
Rhynchomeles prattorum Thomas, 1920	*Rhynchomeles prattorum* Thomas, 1920	—	—	—	—	—	1	—	—
Family Thylacomyidae		**2**	**—**	**—**	**—**	**—**	**19**	**—**	**—**
Macrotis lagotis interjecta Troughton, 1932b	*Macrotis lagotis lagotis* (Reid, 1837)	1	—	—	—	—	2	—	—
Macrotis lagotis cambrica Troughton, 1932b	*Macrotis lagotis lagotis* (Reid, 1837)	1	—	—	—	—	17	—	—
Family Phacolarctidae		**1**	**—**	**—**	**—**	**—**	**1**	**—**	**—**
Phascolarctos cinereus victor Troughton, 1935a	*Phascolarctos cinereus* (Goldfuss, 1817)	1	—	—	—	—	1	—	—
Family Petauridae		**1**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
Petaurus kohlsi Troughton, 1945	*Petaurus biacensis* Ulmer, 1940	1	—	—	—	—	—	—	—
Family Pseudocheiridae		**2**	**—**	**2**	**3**	**—**	**2**	**4**	**1**
Petaurides cinereus Ramsay, 1890a	*Petauroides minor* (Collett, 1887)	—	—	—	2	—	—	—	—
Pseudochirus cooki bassianus Le Souef, 1929	*Pseudocheirus peregrinus convolutor* (Schinz, 1821)	1	—	—	—	—	2	—	—
Pseudocheirus dahlii Collett, 1895	*Petropseudes dahlii* (Collett, 1895)	—	—	—	1	—	—	—	—
Pseudochirus herbertensis colletti Waite, 1899	*Pseudochirulus herbertensis* (Collett, 1884)	—	—	1	—	—	—	3	1
Pseudochirus mongan De Vis, 1887	*Pseudochirulus herbertensis* (Collett, 1884)	—	—	1	—	—	—	1	—
Pseudochirus rubidus Troughton & Le Souef, 1929a	*Pseudocheirus peregrinus peregrinus* (Boddaert, 1785)	1	—	—	—	—	—	—	—
Family Phalangeridae		**5**	**—**	**1**	**—**	**1**	**15**	**6**	**—**
Cuscus chrysorrhous var. *goldiei* Ramsay, 1877d	*Spilocuscus maculatus goldiei* (Ramsay, 1877d)	—	—	—	—	1	—	—	—
Phalanger alexandrae Flannery & Boeadi, 1995	*Phalanger alexandrae* Flannery & Boeadi, 1995	1	—	—	—	—	3	—	—
Phalanger ornatus matabiru Flannery & Boeadi, 1995	*Phalanger ornatus matabiru* Flannery & Boeadi, 1995	1	—	—	—	—	3	—	—
Phalanger matanim Flannery, 1987	*Phalanger matanim* Flannery, 1987	1	—	—	—	—	1	—	—
Phalangista johnstonii Ramsay, 1888a	*Trichosurus vulpecula johnstonii* (Ramsay, 1888a)	—	—	1	—	—	—	6	—
Trichosurus caninus nigrans Le Souef, 1916	*Trichosurus caninus* (W. Ogilby, 1836)	1	—	—	—	—	2	—	—
T. cunninghami Lindenmayer, Dubach & Viggers, 2002	*T. cunninghami* Lindenmayer, Dubach & Viggers, 2002	1	—	—	—	—	4	—	—
Trichosurus vulpecula raui Finlayson, 1963	*Trichosurus vulpecula vulpecula* (Kerr, 1792)	—	—	—	—	—	2	—	—
Family Hypsiprymnodontidae		—	—	—	**2**	—	—	—	—
Hypsiprymnodon moschatus Ramsay, 1875	*Hypsiprymnodon moschatus* Ramsay, 1875	—	—	—	2	—	—	—	—
Family Potoroidae		**1**	**—**	**—**	**—**	**—**	**1**	**—**	**—**
Potorous tridactylus benormi Courtney, 1963a	*Potorous tridactylus apicalis* (Gould, 1851)	1	—	—	—	—	1	—	—

Table 3. Continued.

Name originally proposed	Current name	H	N	L	S	?S	P	PL	?PL
Family Macropodidae		**11**	**—**	**—**	**11**	**8**	**24**	**—**	**—**
Conoyces hageni eitape Troughton, 1937a	*Dorcopsis hageni* Heller, 1897	1	—	—	—	—	1	—	—
Dendrolagus deltae Troughton & Le Souef, 1936a	*Dendrolagus matschiei* Förster & Rothschild, 1907	1	—	—	—	—	1	—	—
Dendrolagus dorianus Ramsay, 1883	*Dendrolagus dorianus* Ramsay, 1883	—	—	—	—	2	—	—	—
Dendrolagus dorianus stellarum Flannery & Seri, 1990b	*Dendrolagus stellarum* Flannery & Seri, 1990b	1	—	—	—	—	3	—	—
Dendrolagus goodfellowi pulcherrimus Flannery, 1993a	*Dendrolagus pulcherrimus* Flannery, 1993a	1	—	—	—	—	1	—	—
Dendrolagus mbaiso Flannery, Boeadi & Szalay, 1995	*Dendrolagus mbaiso* Flannery, Boeadi & Szalay, 1995	1	—	—	—	—	3	—	—
Dendrolagus scottae Flannery & Seri, 1990a	*Dendrolagus scottae* Flannery & Seri, 1990a	1	—	—	—	—	2	—	—
Dendrolagus spadix Troughton & Le Souef, 1936a	*Dendrolagus spadix* Troughton & Le Souef, 1936a	1	—	—	—	—	1	—	—
Lagorchestes leichardti Gould, 1853a	*Lagorchestes conspicillatus leichardti* Gould, 1853a	—	—	—	2	—	—	—	—
Halmaturus browni Ramsay, 1877e	*Thylogale browni browni* (Ramsay, 1877e)	—	—	—	3	—	—	—	—
Halmaturus crassipes Ramsay, 1876a	*Notamacropus agilis papuanus* (Peters & Doria, 1875)	—	—	—	1	—	—	—	—
Halmaturus mastersii Krefft, 1871a	*Wallabia bicolor mastersii* (Krefft, 1871a)	—	—	—	—	4	—	—	—
Macropus jukesii Miklouho-Maclay, 1885a	*Thylogale brunii* (Schreber, 1778)	—	—	—	—	1	—	—	—
Macropus tibol Miklouho-Maclay, 1885b	*Thylogale browni* (Ramsay, 1877e)	—	—	—	—	1	—	—	—
Petrogale celeris Le Souef, 1924	*Petrogale xanthopus celeris* Le Souef, 1924	1	—	—	—	—	1	—	—
Petrogale herberti Thomas, 1926	*Petrogale herberti* Thomas, 1926	—	—	—	—	—	1	—	—
Petrogale longicauda Krefft, 1865a	*Petrogale penicillata* (J. Gray, 1827)	1	—	—	—	—	—	—	—
Petrogale puella Thomas, 1926	*Petrogale assimilis* Ramsay, 1877f	—	—	—	—	—	1	—	—
Petrogale purpureicollis Le Souef, 1924	*Petrogale purpureicollis* Le Souef, 1924	1	—	—	—	—	6	—	—
Thylogale eugenii decres Troughton, 1941	*Notamacropus eugenii eugenii* (Desmarest, 1817a)	—	—	—	5	—	—	—	—
Thylogale calabyi Flannery, 1992	*Thylogale calabyi* Flannery, 1992	1	—	—	—	—	3	—	—
Family Balaenidae		**1**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
Macleayius australiensis Gray, 1865a	*Eubalaena australis* (Desmoulins, 1822)	1	—	—	—	—	—	—	—
Family Delphinidae		**1**	**—**	**—**	**—**	**—**	**1**	**—**	**—**
Grampidelphis exilis Iredale & Troughton, 1933	*Grampus griseus* (G. Cuvier, 1812)	1	—	—	—	—	1	—	—
Family Physeteridae		**2**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
Catodon australis Wall, 1851	*Physeter macrocephalus* Linnaeus, 1758	1	—	—	—	—	—	—	—
Catodon (Meganeuron) krefftii Gray, 1865b	*Physeter macrocephalus* Linnaeus, 1758	1	—	—	—	—	—	—	—
Family Kogiidae		**2**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
Euphysetes grayii Wall, 1851	*Kogia breviceps* (de Blainville, 1838)	1	—	—	—	—	—	—	—
Euphysetes macleayi Krefft, 1866a	*Kogia breviceps* (de Blainville, 1838)	1	—	—	—	—	—	—	—
Family Ziphiidae		**1**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
Mesoplodon güntheri Krefft, 1871b	*Mesoplodon layardii* (J. Gray, 1865c)	1	—	—	—	—	—	—	—
Mesoplodon longirostris Gray (ex Krefft), 1873a	*Mesoplodon layardii* (J. Gray, 1865c)	1*	—	—	—	—	—	—	—
Mesoplodon thomsoni Krefft in Scott, 1873	*Mesoplodon layardii* (J. Gray, 1865c)	1*	—	—	—	—	—	—	—
Family Canidae		**2**	**—**	**—**	**—**	**—**	**1**	**—**	**—**
Canis familiaris var. *papuensis* Ramsay, 1879b	*Canis familiaris* Linnaeus, 1758	1	—	—	—	—	—	—	—
Canis hallstromi Troughton, 1957	*Canis familiaris* Linnaeus, 1758	1	—	—	—	—	1	—	—
Family Muridae		**57**	**—**	**3**	**8**	**6**	**138**	**4**	**—**
[Conilurus pedunculatus] var. *brachyotis* Waite, 1896	*Zyzomys pedunculatus* (Waite, 1896)	—	—	—	1	—	—	—	—
Conilurus pedunculatus Waite, 1896	*Zyzomys pedunculatus* (Waite, 1896)	—	—	1	—	—	—	1	—
Gyomys berneyi Troughton, 1936b	*Leggadina forresti* (Thomas, 1906a)	1	—	—	—	—	3	—	—
Gyomys pumilus Troughton, 1936b	*Pseudomys delicatulus pumilus* (Troughton, 1936b)	1	—	—	—	—	1	—	—
Hapalotis boweri Ramsay, 1887b	*Mesembriomys macrurus* (Peters, 1876a)	—	—	—	1	—	—	—	—
Hapalotis caudimaculata Krefft, 1867b	*Uromys caudimaculatus caudimaculatus* (Krefft, 1867b)	—	—	—	1	4	—	—	—
Hapalotis personata Krefft, 1867b	*Rattus leucopus* (J. Gray, 1867)	—	—	1	—	—	—	2	—
Hydromys grootensis Troughton, 1935b	*Hydromys chrysogaster* É. Geoffroy, 1804	1	—	—	—	—	—	—	—
Hydromys hussoni Musser & Piik, 1982	*Hydromys hussoni* Musser & Piik, 1982	—	—	—	—	—	1	—	—
Hydromys lawnensis Troughton, 1935b	*Hydromys chrysogaster* É. Geoffroy, 1804	1	—	—	—	—	1	—	—
Hydromys lutrilla Gould, 1863a	*Hydromys chrysogaster* É. Geoffroy, 1804	1	—	—	—	—	—	—	—
Hydromys moae Troughton, 1935b	*Hydromys chrysogaster* É. Geoffroy, 1804	1	—	—	—	—	1	—	—
Hydromys oriens Troughton, 1937a	*Hydromys chrysogaster* É. Geoffroy, 1804	1	—	—	—	—	—	—	—
Mallomys gunung Flannery, Aplin & Groves, in Flannery *et al.* 1989	*Mallomys gunung* Flannery, Aplin & Groves, in Flannery *et al.* 1989	—	—	—	—	—	3	—	—
M. istapantap Flannery, Aplin & Groves, in Flannery *et al.* 1989	*M. istapantap* Flannery, Aplin & Groves, in Flannery *et al.* 1989	1	—	—	—	—	2	—	—
Mayermys germani K. Helgen, 2005a	*Pseudohydromys germani* (K. Helgen, 2005a)	1	—	—	—	—	—	—	—
Melomys bougainville Troughton, 1936a	*Melomys bougainville* Troughton, 1936a	1	—	—	—	—	—	—	—
Melomys cervinipes pallidus Troughton & Le Souef, 1929b	*Melomys cervinipes* (Gould, 1852)	1	—	—	—	—	2	—	—
Melomys hadrourus Winter, 1984	*Uromys hadrourus* (Winter, 1984)	—	—	—	—	—	2	—	—
Melomys hageni Troughton, 1937a	*Melomys rufescens hageni* Troughton, 1937a	1	—	—	—	—	—	—	—
Melomys limicauda Troughton, 1935b	*Melomys cervinipes* (Gould, 1852)	1	—	—	—	—	—	—	—
Melomys littoralis insulae Troughton & Le Souef, 1929b	*Melomys burtoni* (Ramsay, 1887a)	1	—	—	—	—	7	—	—
Melomys matambuai Flannery, Colgan & Trimble, 1994	*Melomys matambuai* Flannery, Colgan & Trimble, 1994	1	—	—	—	—	1	—	—
Melomys mixtus Troughton, 1935b	*Melomys burtoni* (Ramsay, 1887a)	1	—	—	—	—	3	—	—
Melomys muscalis froggatti Troughton, 1937a	*Melomys burtoni* (Ramsay, 1887a)	1	—	—	—	—	—	—	—
Melomys rufescens paveli K. Helgen, 2003	*Melomys paveli* K. Helgen, 2003	1	—	—	—	—	—	—	—
Mus burtoni Ramsay, 1887a	*Melomys burtoni* (Ramsay, 1887a)	1	—	—	—	—	—	—	—
Mus colletti Thomas, 1904	*Rattus colletti* (Thomas, 1904)	—	—	—	—	—	1	—	—
Mus(?) echimyoides Ramsay, 1877g	*Rattus exulans browni* (Alston, 1877)	—	—	—	2	—	—	—	—

Table 3. Continued.

Name originally proposed	Current name	H	N	L	S	?S	P	PL	?PL
Family Muridae (continued)									
Mus fieldi Waite, 1896	*Pseudomys fieldi* (Waite, 1896)	1	—	—	—	—	—	—	—
Mus hermannsburgensis Waite, 1896	*Pseudomys hermannsburgensis* (Waite, 1896)	—	—	1	—	—	—	1	—
Mus longipilis Gould, 1854	*Rattus villosissimus* (Waite, 1898a)	1	—	—	—	—	—	—	—
Mus musavora Ramsay, 1877g	*Melomys rufescens rufescens* (Alston, 1877)	—	—	—	3	—	—	—	—
Mus salamonis Ramsay, 1882a	*Solomys salamonis* (Ramsay, 1882a)	1	—	—	—	—	—	—	—
Mus subrufus Krefft, 1862	*Pseudomys desertor* Troughton, 1932c	—	—	—	—	1	—	—	—
Mus villosissimus Waite, 1898a [1]	*Rattus villosissimus* (Waite, 1898a)	1*	—	—	—	—	—	—	—
Notomys carpentarius Johnson, 1959	*Notomys aquilo* Thomas, 1921	—	—	—	—	—	3	—	—
Pogonomys championi Flannery, 1988	*Pogonomys championi* Flannery, 1988	1	—	—	—	—	27	—	—
Pseudohydromys patriciae Helgen & Helgen, 2009	*Pseudohydromys patriciae* Helgen & Helgen, 2009	1	—	—	—	—	1	—	—
Pseudohydromys sandrae Helgen & Helgen, 2009	*Pseudohydromys sandrae* Helgen & Helgen, 2009	1	—	—	—	—	—	—	—
Pseudomys (Gyomys) desertor Troughton, 1932c	*Pseudomys desertor* Troughton, 1932c	1	—	—	—	—	1	—	—
Pseudomys hermannsburgensis bolami Troughton, 1932c	*Pseudomys bolami* Troughton, 1932c	1	—	—	—	—	11	—	—
Pseudomys (Pseudomys) minnie Troughton, 1932c	*Pseudomys australis* J. Gray, 1832	1	—	—	—	—	1	—	—
Pseudomys minnie flavescens Troughton, 1936b	*Pseudomys australis* J. Gray, 1832	1	—	—	—	—	2	—	—
Pseudomys pilligaensis Fox & Briscoe, 1980	*Pseudomys pilligaensis* Fox & Briscoe, 1980	1	—	—	—	—	3	—	—
Pseudomys (Pseudomys) rawlinnae Troughton, 1932c	*Pseudomys gouldii* (Waterhouse, 1839)	1	—	—	—	—	1	—	—
Pseudomys (Leggadina) waitei Troughton, 1932c	*Leggadina forresti* (Thomas, 1906a)	1	—	—	—	—	2	—	—
Rattus biakensis Troughton, 1946	*Rattus jobiensis jobiensis* Rümmler, 1935	1	—	—	—	—	—	—	—
Rattus browni aitape Troughton, 1937a	*Rattus exulans browni* (Alston, 1877)	1	—	—	—	—	—	—	—
Rattus browni gawae Troughton, 1945	*Rattus exulans browni* (Alston, 1877)	1	—	—	—	—	—	—	—
Rattus browni praecelsus Troughton, 1937a	*Rattus exulans browni* (Alston, 1877)	1	—	—	—	—	2	—	—
Rattus browni suffectus Troughton, 1937a	*Rattus exulans browni* (Alston, 1877)	1	—	—	—	—	10	—	—
Rattus browni tibicen Troughton, 1937a	*Rattus exulans browni* (Alston, 1877)	1	—	—	—	—	1	—	—
Rattus culmorum apex Troughton, 1939	*Rattus tunneyi culmorum* (Thomas & Dollman, 1909)	1	—	—	—	—	—	—	—
Rattus detentus Timm, Weijola, Aplin, Flannery & Pine [2]	*Rattus detentus* Timm, Weijola, Aplin, Flannery & Pine [2]	1	—	—	—	—	—	—	—
Rattus gestri aramia Troughton, 1937a	*Rattus sordidus aramia* Troughton, 1937a	1	—	—	—	—	1	—	—
Rattus gestri bunae Troughton, 1946	*Rattus sordidus gestri* (Thomas, 1897)	1	—	—	—	—	6	—	—
Rattus lutreolus cambricus Troughton, 1937b	*Rattus lutreolus lutreolus* (J. Gray, 1841)	1	—	—	—	—	3	—	—
Rattus lutreolus imbil Troughton, 1937b	*Rattus lutreolus lutreolus* (J. Gray, 1841)	1	—	—	—	—	1	—	—
Rattus mordax hageni Troughton, 1937a	*Rattus steini hageni* Troughton, 1937a	1	—	—	—	—	7	—	—
Rattus owiensis Troughton, 1945	*Rattus jobiensis* Rümmler, 1935	1	—	—	—	—	3	—	—
Rattus praetor mediocris Troughton, 1936a	*Rattus praetor praetor* (Thomas, 1888b)	1	—	—	—	—	2	—	—
Rattus purdiensis Troughton, 1946	*Rattus praetor praetor* (Thomas, 1888b)	1	—	—	—	—	1	—	—
Rattus rennelli Troughton, 1945	*Rattus exulans browni* (Alston, 1877)	1	—	—	—	—	3	—	—
Rattus ringens dobodurae Troughton, 1946	*Rattus leucopus dobodurae* Troughton, 1946	1	—	—	—	—	5	—	—
Rattus sansapor Troughton, 1946	*Rattus praetor coenorum* Thomas, 1922b	1	—	—	—	—	1	—	—
Solomys salebrosus Troughton, 1936a	*Solomys salebrosus* Troughton, 1936a	1	—	—	—	—	5	—	—
Thetomys gracilicaudatus ultra Troughton, 1939	*Pseudomys gracilicaudatus ultra* (Troughton, 1939)	1	—	—	—	—	5	—	—
Unicomys ponceleti Troughton, 1935c	*Solomys ponceleti* (Troughton, 1935c)	1	—	—	—	—	2	—	—
Uromys banfieldi De Vis, 1907	*Melomys cervinipes* (Gould, 1852)	—	—	—	—	1	—	—	—
Uromys emmae Groves & Flannery, 1994	*Uromys emmae* Groves & Flannery, 1994	1	—	—	—	—	—	—	—
Uromys lamington Troughton, 1937a	*Uromys caudimaculatus papuanus* (Ramsay, 1883)	1	—	—	—	—	—	—	—
Uromys macropus exilis Troughton & Le Souef, 1929b	*Uromys caudimaculatus caudimaculatus* (Krefft, 1867b)	1	—	—	—	—	—	—	—
Family Pteropodidae		**15**	**—**	**1**	**3**	**1**	**98**	**1**	**—**
Dobsonia beauforti Bergmans, 1975	*Dobsonia beauforti* Bergmans, 1975	—	—	—	—	—	1	—	—
Melonycteris fardoulisi fardoulisi Flannery, 1993b	*Melonycteris fardoulisi fardoulisi* Flannery, 1993b	1	—	—	—	—	4	—	—
Melonycteris fardoulisi maccoyi Flannery, 1993b	*Melonycteris fardoulisi maccoyi* Flannery, 1993b	1	—	—	—	—	1	—	—
Melonycteris fardoulisi mengermani Flannery, 1993b	*Melonycteris fardoulisi mengermani* Flannery, 1993b	1	—	—	—	—	5	—	—
Melonycteris fardoulisi schouteni Flannery, 1993b	*Melonycteris fardoulisi schouteni* Flannery, 1993b	1	—	—	—	—	2	—	—
Nyctimene bougainville Troughton, 1936a	*Nyctimene bougainville* Troughton, 1936a	1	—	—	—	—	10	—	—
Nyctimene sanctacrucis Troughton, 1931	*Nyctimene sanctacrucis* Troughton, 1931	1	—	—	—	—	—	—	—
Nyctimene wrightae Irwin, 2017	*Nyctimene wrightae* Irwin, 2017	1	—	—	—	—	15	—	—
Pteralopex flanneryi K. Helgen, 2005b	*Pteralopex flanneryi* K. Helgen, 2005b	1	—	—	—	—	3	—	—
Pteralopex pulchra Flannery, 1991	*Pteralopex pulchra* Flannery, 1991	1	—	—	—	—	—	—	—
Pteralopex taki Parnaby, 2002a	*Pteralopex taki* Parnaby, 2002a	1	—	—	—	—	22	—	—
Pteropus (Cheiropteruges) alboscapulatus Ramsay, 1877g	*Melonycteris melanops melanops* Dobson, 1877	—	—	1	—	—	—	1	—
Pteropus howensis Troughton, 1931	*Pteropus howensis* Troughton, 1931	1	—	—	—	—	3	—	—
Pteropus rennelli Troughton, 1929a	*Pteropus rennelli* Troughton, 1929a	1	—	—	—	—	—	—	—
Pteropus rufus Ramsay, 1891b	*Pteropus neohibernicus neohibernicus* Peters, 1876b	—	—	—	3	—	—	—	—
Pteropus sanctacrucis Troughton, 1930	*Pteropus nitendiensis* Sanborn, 1930	1	—	—	—	—	6	—	—
Pteropus temminckii ennisae Flannery & White, 1991	*Pteropus ennisae* Flannery & White, 1991	1	—	—	—	—	1	—	—
Pteropus tonganus heffernani Troughton, 1930	*Pteropus tonganus geddiei* MacGillivray, 1860	1	—	—	—	—	25	—	—
Pteropus ualanus Peters, 1883	*Pteropus ualanus* Peters, 1883	—	—	—	—	1	—	—	—

[1] replacement name for *Mus longipilis*
[2] in Timm *et al.* (2016)

Table 3. Continued.

Name originally proposed	Current name	H	N	L	S	?S	P	PL	?PL
Family Emballonuridae		**6**	—	—	—	—	**27**	—	—
Taphozous flaviventris Peters, 1867a	*Saccolaimus flaviventris* (Peters, 1867a)	1	—	—	—	—	—	—	—
Taphozous hargravei Ramsay, 1876b	*Saccolaimus flaviventris* (Peters, 1867a)	1	—	—	—	—	—	—	—
Saccolaimus mixtus Troughton, 1925	*Saccolaimus mixtus* Troughton, 1925	1	—	—	—	—	2	—	—
Emballonura dianae fruhstorferi Flannery, 1995a	*Emballonura dianae fruhstorferi* Flannery, 1995a	1	—	—	—	—	13	—	—
Emballonura dianae rickwoodi Flannery, 1995a	*Emballonura dianae rickwoodi* Flannery, 1995a	1	—	—	—	—	9	—	—
Emballonura serii Flannery, 1995a	*Emballonura serii* Flannery, 1995a	1	—	—	—	—	3	—	—
Family Hipposideridae		**5**	—	—	—	—	**41**	—	—
Hipposideros bicolor gilberti Johnson, 1959	*Hipposideros ater gilberti* Johnson, 1959	—	—	—	—	—	1	—	—
Hipposideros diadema reginae Troughton, 1937c	*Hipposideros diadema reginae* Troughton, 1937c	1	—	—	—	—	2	—	—
Hipposideros diadema trobrius Troughton, 1937c	*Hipposideros diadema trobrius* Troughton, 1937c	1	—	—	—	—	1	—	—
Hipposideros edwardshilli Flannery & Colgan, 1993	*Hipposideros edwardshilli* Flannery & Colgan, 1993	1	—	—	—	—	5	—	—
Hipposideros wollastoni fasensis Flannery & Colgan, 1993	*Hipposideros wollastoni fasensis* Flannery & Colgan, 1993	1	—	—	—	—	—	—	—
Hipposideros wollastoni parnabyi Flannery & Colgan, 1993	*Hipposideros wollastoni parnabyi* Flannery & Colgan, 1993	1	—	—	—	—	32	—	—
Family Molossidae		**1**	—	—	—	—	**188**	—	—
Chaerephon solomonis Troughton, 1931	*Chaerephon solomonis* Troughton, 1931	1	—	—	—	—	187	—	—
Mormopterus halli Reardon, McKenzie & Adams [3]	*Ozimops halli* (Reardon, McKenzie & Adams[3])	—	—	—	—	—	1	—	—
Family Miniopteridae		—	—	—	—	**1**	—	—	—
Miniopterus australis robustior Revilliod, 1914	*Miniopterus robustior* Revilliod, 1914	—	—	—	—	1	—	—	—
Family Vespertilionidae		**9**	—	—	—	—	**51**	—	—
Anamygdon solomonis Troughton, 1929b	*Myotis moluccarum solomonis* (Troughton, 1929b)	1	—	—	—	—	—	—	—
Eptesicus baverstocki Kitchener, Jones & Caputi, 1987	*Vespadelus baverstocki* (Kitchener, Jones & Caputi, 1987)	—	—	—	—	—	1	—	—
Eptesicus sagittula McKean, Richards & Price, 1978	*Vespadelus darlingtoni* (McKean, Richards & Price, 1978)	—	—	—	—	—	2	—	—
Eptesicus troughtoni Kitchener, Jones & Caputi, 1987	*Vespadelus troughtoni* (Kitchener, Jones & Caputi, 1987)	—	—	—	—	—	3	—	—
Myotis moluccarum richardsi Kitchener, in Kitchener *et al.* 1995	*Myotis moluccarum richardsi* Kitchener, in Kitchener *et al.* 1995	—	—	—	—	—	4	—	—
Nyctophilus arnhemensis Johnson, 1959	*Nyctophilus arnhemensis* Johnson, 1959	—	—	—	—	—	1	—	—
Nyctophilus bifax, Thomas, 1915a	*Nyctophilus bifax* Thomas, 1915a	—	—	—	—	—	4	—	—
Nyctophilus corbeni Parnaby, 2009	*Nyctophilus corbeni* Parnaby, 2009	1	—	—	—	—	4	—	—
Nyctophilus major tor Parnaby, 2009	*Nyctophilus major tor* Parnaby, 2009	—	—	—	—	—	5	—	—
Nyctophilus nebulosus Parnaby, 2002b	*Nyctophilus nebulosus* Parnaby, 2002b	1	—	—	—	—	2	—	—
Nyctophilus shirleyae Parnaby, 2009	*Nyctophilus shirleyae* Parnaby, 2009	1	—	—	—	—	2	—	—
Philetor rohui Thomas, 1902	*Philetor brachypterus* (Temminck, 1840)	—	—	—	—	—	1	—	—
Pipistrellus ponceleti Troughton, 1936a	*Pipistrellus angulatus ponceleti* Troughton, 1936a	1	—	—	—	—	5	—	—
Pipistrellus wattsi Kitchener, Caputi & Jones, 1986	*Pipistrellus wattsi* Kitchener, Caputi & Jones, 1986	—	—	—	—	—	1	—	—
Scoteinus orion aquilo Troughton, 1937c	*Scotorepens greyii* (J. Gray, 1843)	1	—	—	—	—	1	—	—
Scoteinus balstoni caprenus Troughton, 1937c	*Scotorepens greyii* (J. Gray, 1843)	1	—	—	—	—	1	—	—
Scoteinus orion Troughton, 1937c	*Scotorepens orion* (Troughton, 1937c)	1	—	—	—	—	14	—	—
Scoteinus sanborni Troughton, 1937c	*Scotorepens sanborni* (Troughton, 1937c)	1	—	—	—	—	—	—	—
Total number of specimens		**145**	**2**	**7**	**33**	**18**	**659**	**15**	**3**

[3] in Reardon *et al.* (2014)

We are aware of about 22 mammal taxa named by Krefft, three of which are invalid names and three are unused names that have been overlooked. To the best of our knowledge, several are mentioned here for the first time since their publication. Identifying material used by Krefft in his species descriptions is problematic because original labels have been removed from most early specimens, the AM did not have a system of assigning unique numbers to specimens, and the limited documentation of specimens exchanged to other institutions at that time.

Taxa described by Ramsay

Ramsay was employed by the AM from September 1874–December 1894 (Etheridge, 1917) and the 28 new mammal taxa proposed by him were all published during that period. Ramsay initiated the first system of assigning registration numbers to specimens, commencing in June 1877. Ramsay, who was self-taught, sometimes stated the number of specimens upon which he based his descriptions but he never cited specimen registration numbers in his publications on mammals. He did physically label some specimens as "type of the species", although it is not possible to determine if he consistently did so, because in many instances his original labels have not survived. Significantly, he frequently did not state in which institutional or private collection his original material resided. Many of the specimens used in Ramsay's original descriptions of new taxa would have been lodged in the Australian Museum but others were probably in his private collection, which he called the Dobroyde Museum (at his estate *Dobroyde*, Sydney), or in the private collection of Sir William John Macleay (1820–1891) at his residence in Elizabeth Bay, Sydney. Macleay's collection was moved to the University of Sydney in 1889 (Anderson, 1965), and became the Macleay Museum. Several of Ramsay's primary type specimens have been located in the Macleay Museum, and further scrutiny of both the AM and Macleay Museum collections is likely to identify more examples. The location of Ramsay's type material found to date is given in Table 4. Of the 28 new mammal taxa proposed by Ramsay, 18 are currently recognized as valid species or subspecies. Ramsay also based his mammal descriptions on specimens he had examined in the private collections of Rev. George Brown, James Cockerell Jr. and likely a number of other private collectors based in eastern Australia at that time. Ramsay could have used mammal specimens that would now qualify as syntypes as collateral in exchange for bird material in both

Table 4. The 28 mammal taxa named by Ramsay, their current status (following Groves, 2005c,d; Jackson & Groves, 2015; Musser & Carleton, 2005; Simmons, 2005) and the location of type material (Groves, 1982; Mahoney & Richardson, 1988; Stanbury, 1969). * *Phalangista pinnata* Ramsay, 1877a is considered here to be a single letter error for *Phalangista pennata* Peters, 1874; *year*, year published.

Year	Taxon as originally proposed by Ramsay	Current name	Collection
1875	*Hypsiprymnodon moschatus* Ramsay, 1875	*Hypsiprymnodon moschatus* Ramsay, 1875	AM
1876	*Halmaturus crassipes* Ramsay, 1876a	*Notamacropus agilis papuanus* (Peters & Doria, 1875)	AM
1876	*Taphozous hargravei* Ramsay, 1876b	*Saccolaimus flaviventris* (Peters, 1867a)	AM
1877	*Echidna (Tachyglossus) lawesii* Ramsay, 1877b	*Tachyglossus aculeatus lawesii* (Ramsay, 1877b)	AM
1877	*Cuscus chrysorrhous* var. *goldiei* Ramsay, 1877d	*Spilocuscus maculatus goldiei* (Ramsay, 1877d)	AM
1877	*Halmaturus browni* Ramsay, 1877e	*Thylogale browni* (Ramsay, 1877e)	AM
1877	*Petrogale assimilis* Ramsay, 1877f	*Petrogale assimilis* Ramsay, 1877f	MMUS
1877	*Mus(?) echimyoides* Ramsay, 1877g	*Rattus exulans browni* (Alston, 1877)	AM
1877	*Perameles cockerelli* Ramsay, 1877c	*Echymipera kalubu cockerelli* (Ramsay, 1877c)	AM
1877	*?Perameles novae-hollandeae* Ramsay, 1877d	unassigned *nomen nudum*	?AM
1877	*Perameles macroura* var. *torosus* Ramsay, 1877a	*Isoodon macrourus torosus* (Ramsay, 1877a)	unknown, ?MMUS
1877	*Mus musavora* Ramsay, 1877g	*Melomys rufescens* (Alston, 1877)	AM
1877	*Perameles moresbyensis* Ramsay, 1877a	*Isoodon macrourus moresbyensis* (Ramsay, 1877a)	AM
1877	*Pteropus (Cheiropteruges) alboscapulatus* Ramsay, 1877g	*Melonycteris melanops* Dobson, 1877	AM
1877	*Pteropus (Epomops?) epularius* Ramsay, 1877a	*Pteropus macrotis epularius* Ramsay, 1877a	MMUS
1877	*Phalangista pinnata* Ramsay, 1877a [*nomen nudum*]*	*Distoechurus pennatus* (Peters, 1874)	MMUS
1879	*Canis familiaris* var. *papuensis* Ramsay, 1879b	*Canis familiaris* Linnaeus, 1758	AM
1879	*Perameles broadbenti* Ramsay, 1879a	*Peroryctes broadbenti* (Ramsay, 1879a)	AM
1882	*Mus (?Hapalotis) tompsoni* Ramsay, 1882b	*Rattus rattus* (Linnaeus, 1758)	MMUS
1883	*Dendrolagus dorianus* Ramsay, 1883	*Dendrolagus dorianus* Ramsay, 1883	MMUS, ?AM
1883	*Hapalotis papuanus* Ramsay, 1883	*Uromys caudimaculatus papuanus* (Ramsay, 1883)	unknown
1883	*Mus salamonis* Ramsay, 1882a	*Solomys salamonis* (Ramsay, 1882a)	AM
1887	*Antechinus (Podabrus) froggatti* Ramsay, 1887a	*Sminthopsis macroura froggatti* (Ramsay, 1887a)	AM
1887	*Hapalotis boweri* Ramsay, 1887b	*Mesembriomys macrurus* (Peters, 1876a)	AM
1887	*Mus burtoni* Ramsay, 1887a	*Melomys burtoni* (Ramsay, 1887a)	AM
1887	*Perameles auratus* Ramsay, 1887a	*Isoodon auratus* (Ramsay, 1887a)	MMUS
1888	*Dasyurus gracilis* Ramsay, 1888a	*Dasyurus maculatus gracilis* Ramsay, 1888a	AM
1888	*Phalangista johnstonii* Ramsay, 1888a	*Trichosurus vulpecula johnstonii* (Ramsay, 1888a)	AM
1890	*Petaurides cinereus* Ramsay, 1890a	*Petauroides minor* (Collett, 1887)	AM
1891	*Pteropus rufus* Ramsay, 1891b	*Pteropus neohibernicus* Peters, 1876b	AM

Australian and a range of European collections. Progress has been made in identifying and locating unrecognized type specimens of bird taxa described by Ramsay (e.g., McAllan *et al.*, 2005) and this provides a lead for future efforts to trace mammal syntypes.

Ramsay's published descriptions often give no indication of the number of specimens in his original series and for such taxa it is possible that the existence of syntypes has been overlooked by previous revisers. This has been demonstrated for several of Ramsay's bird descriptions (McAllan, 2016), with the syntypes sometimes distributed across a number of collections.

The Dobroyde collection was purchased by the NSW Government and given to the AM in 1895. The vertebrate specimens of this collection largely consisted of birds and eggs, but three *Petaurus breviceps* (Waterhouse, 1838) skins were listed as acquisitions in the AM annual reports of that time; these were registered, without data, in June 1895. Registration of the bird material did not occur until 1912 (Hindwood, 1970) and it is possible that additional mammal specimens in Ramsay's collection remained unregistered in the AM Collection for many years.

Ramsay purchased mammal specimens obtained from the Australian region, both for his private collection and for the AM, from a variety of private collectors including Edward Spalding, James Cockerell Jnr., Andrew Goldie, Kendall Broadbent (also employed by the AM, 1879–1880), and the Rev. George Brown. Several collectors were also employed as AM staff at different times during Ramsay's curatorship, including amongst others, George Masters (1861–1874); Alexander Morton (1877–1884) and E. J. Cairn (1887–1889), see Strahan (1979).

Taxa described from Horn Expedition material

The AM Collection holds type specimens or likely type specimens of seven mammal taxa named from material obtained during, or shortly after, the 1894 Horn Scientific Expedition to Central Australia. The Expedition was financed by businessman William Austin Horn (1841–1922). Spencer and Horn sent specimens to the AM on a number of occasions during the years following the Expedition, some of which were specimens used in the original descriptions of three dasyurids named by Spencer and four rodent taxa named by Waite. Neither Spencer nor Waite referred to "type specimens" in their published accounts of their proposed new mammal taxa. However, in unpublished documents both men sometimes used the term "types" when referring to specimens they used in published descriptions; several examples are discussed in the taxon accounts, below. Identification of the syntype series of several of these taxa remains problematic. Spencer continued to receive material from his central Australian correspondents such as F. J. Gillen and J. F. Field (Alice Springs), E. C. Cowle (Illamurta) and P. M. Byrne (Charlotte Waters) for a decade or so after the Horn Expedition and publication of the results of the expedition in 1896 (Calaby, 1996). Difficulties arise in establishing whether particular specimens sent by

Spencer to the AM were collected before or after publication of the report; this clearly affects their eligibility as types. This difficulty is compounded by the destruction of some of Spencer's correspondence to the AM at the start of the 20th century, the poor documentation of material received by the AM, and the notoriously poor labelling and documentation by Spencer of vertebrate specimens in the years following the Horn Expedition (Calaby, 1996; Shea, 2004).

Waite worked extensively with specimens either obtained on the Horn Expedition or sent to Baldwin Spencer by his collectors in the decade or so after the expedition. Confusion persists about the identity of some of Waite's original specimens. In several instances he registered two specimens under the one number but did not record this in the register.

Taxa described by Troughton

Identifying the type series for many of the mammal taxa described by Troughton was a major impetus in the preparation of this paper and also one of its greatest challenges. Starting in 1925, Troughton, who had no formal zoological training, authored or co-authored 75 of 185 taxa for which the AM holds name-bearing type material. He was the first AM staffer to use the term "holotype" for material in the AM Collection (Troughton, 1928) and his use of this term was consistent and unambiguous. By contrast, Troughton through his long career displayed an idiosyncratic and inconsistent approach to type series designation. Where descriptions of new taxa were based on a series of specimens, he usually nominated a male specimen as the holotype, and a female specimen as an "allotype", typically citing registration numbers of both. However, Troughton did not always specify the total number of specimens in the type series and, while he often labelled specimens as paratypes either in the register, on specimen index cards or on specimen labels, he often did not publish such information.

We have been able to identify many previously unrecognized specimens that Troughton regarded as paratypes and list these here for the first time. Our criteria for recognition of paratypes made use of Troughton's published descriptions as well as information on specimen tags, annotations on the type specimen card index and in the mammal specimen registers, all in Troughton's handwriting. He usually only used red ink when writing the names of taxa on type specimen tags, or the type card index and this has been used as an indication of paratype status in many instances. Troughton included subadult specimens as paratypes as evident from several of his published descriptions. We have included in Troughton's paratype series subadult specimens not marked as types if he had identified the specimens as belonging to his new taxon and if the specimens were from the original collector's series. With few exceptions, we have not taken an alternative option of recognizing such material as referred specimens because we believe that Troughton was lax about labelling paratypes of taxa he had named. Our principal goal in this endeavour has been to assist future taxonomic studies by identifying the specimen series upon which Troughton based his concept of each taxon. Our varied success, as documented in the following accounts, reflects Troughton's inconsistent approaches through his career, both to paratype designation and to the documentation of paratypes. The most problematic taxa are those published between 1928–1946, for which the type series was often ill-defined.

Identifying paratypes of taxa proposed by Troughton before 1950 is guided by the current edition of the *Code*. However, there is some ambiguity within the fourth edition of the *Code* regarding the identification of paratypes and it is important to recognize that the *Code* does not regulate paratypes, given that they have no name-bearing status. Primary guidance is provided by Article 72.4.1, which states:

> 72.4.1. The type series of a nominal species-group taxon consists of all the specimens included by the author in the new nominal taxon (whether directly or by bibliographic reference), except any that the author expressly excludes from the type series [Art. 72.4.6], or refers to as distinct variants (e.g., by name, letter or number), or doubtfully attributes to the taxon;

and

> 72.4.1.1. For a nominal species or subspecies established before 2000, any evidence, published or unpublished, may be taken into account to determine what specimens constitute the type series.

However, under Article 72.4.6:

> 72.4.6. If an author when establishing a nominal species-group taxon nominates either "syntypes" (by that term, or by use of one of the terms "cotypes" or "types" alone), or "holotype and paratypes" used together (or by use of the term "type" together with "allotype" or "cotypes"), and also lists other specimens, the separate mention of the latter expressly excludes them from the type series.

For some of the names proposed by Troughton, a strict application of 72.4.6 would exclude specimens from the type series that he explicitly regarded as paratypes, based on his own annotations on specimen tags or in the mammal specimen registers or specimen card index, but which are mentioned in the formal publication without any designation as such. In these cases we reject a literal application of 72.4.6, which we see as being secondary to 72.4.1 on the grounds that the primary consideration is the author's intent. We use unpublished evidence to identify the type series, as specified in Article 72.4.1.1., to demonstrate that Troughton did not intentionally exclude specimens additional to the holotype and allotype and that his separate mention of such specimens simply reflected a writing style that did not incorporate explicit definition of all specimens in the type series.

Format of taxon accounts

Publication dates are taken from the journal issues, or where these are not cited, from Andersen (1912), Iredale & Troughton (1934), or Walton (1988). Publication dates for early issues of the *Proc. Zool. Soc. N.S.W.* are taken from Fletcher (1896) and Anonymous (1929); *Proc. Zool. Soc. London* from Duncan (1937), and Evenhuis (2003) for the *Annals and Magazine of Natural History*. In a few instances we had to resort to contacting journal editors to obtain publication dates of several taxonomic papers published in the past two decades.

Vernacular names generally follow those of Jackson & Groves (2015) and Van Dyck & Strahan (2008) for Australian taxa, and Flannery (1995b,c) for taxa from Indonesian, Papua New Guinea and the south west Pacific region.

Current name reflects the current generally accepted taxonomic status of a taxon, citing a recent authority. In most instances we have followed Jackson & Groves (2015) for Australian taxa, and section authors in Wilson & Reeder (2005), except for cetaceans for which we draw from Perrin (2017). We have not attempted to cite the first author to propose the current taxonomic arrangement, nor do we evaluate the taxonomic status of most taxa, other than for names previously overlooked in the literature.

Holotype, syntype, neotype, lectotype: the form of the specimen is stated in terms of whether the skull has been extracted, which in all instances is stored as a dry skull unless otherwise indicated. *Body in alc.* refers to a whole body preserved in alcohol with skull *in situ* unless otherwise stated. *Study skin* refers to a stuffed dry skin prepared for museum research purposes (puppet skin), unless indicated as a *flat skin*, or *skin mount* if prepared as a stuffed skin mounted for display in a lifelike pose. *Skull* refers to a cranium plus both dentaries, unless otherwise noted. We have followed Recommendation 74G (Declaration 44) of the *Code* (Fourth edition, 1999) which states that lectotype designation should only be done to resolve a nomenclatural issue. Additional information about the name-bearing types is given in square brackets when not provided in the original description. This has not usually been done for paratypes.

Condition: a brief description of name bearing type specimens is given to provide an overview of the condition and completeness of specimens. We have not attempted a comprehensive documentation of all missing elements. Missing teeth are specified in terms of the number of teeth pre or post-canine to minimize confusion and possible errors in applying dental nomenclature.

Paratypes: the total number of paratype specimens held in the AM Collection is given in brackets for each taxon. Paratypes held in other institutions are not listed. The species identification of paratype specimens is taken at face value from the AM database. Recognition of paratype specimens ("cotypes" of earlier workers) in the AM Collection has been a challenging task that for some taxa is ongoing. We have retained use of the term "allotype" (i.e. a paratype of opposite sex to the holotype and nominated in the original description) to help clarify our efforts to identify the paratype series of Troughton's taxa where he failed to clearly define a type series in his published description.

Locality data are taken from the published description, cross checked with specimen labels, the AM specimen registers, field notes or other sources. Latitude, longitude and altitude if provided in the original description are cited within parentheses. Co-ordinates in square brackets are those derived from unpublished sources. Grid co-ordinates and altitudes given in the original descriptions of most taxa were calculated prior to the availability of GPS and are generally imprecise.

Photographs of name-bearing type specimens are provided for 43 taxa. These were selected from available unpublished images, most of which are of skulls. Taxa selected are those for which we have not been able to find quality published illustrations, are known from very few specimens, or are thought to be extinct. Photographs of holotype skulls of a significant number of other taxa dealt with in this paper were published by Flannery (1995b,c).

Cranial measurements are given for 30 primary type specimens of 23 taxa for which cranial and dental measurements have not been published, or to augment those that have. Measurements were taken to an accuracy of 0.01 mm and automatically stored in an Excel file using a Mitutoyo digital Vernier caliper (500-172-30) linked to a computer via a USB Input Tool (model: 264-012-10). A subset of 20 standard measurements was taken for each skull by one person (AD). All measurements were taken from the left side of the cranium and the right dentary, unless otherwise specified. The manner in which each measurement was taken, and their abbreviations used in the text are:

GL Greatest Length of skull: most posterior skull projection to most anterior part of premaxilla, taken laterally parallel with the long axis of the cranium (only given when GL exceeds ConL);

ConL Condylobasal skull length: from the most anterior of premaxilla to most posterior edge of occipital condyles, measured laterally with caliper blades at right angles to the long axis of cranium;

BasL Basal skull length: from anterior of premaxilla to most anterior margin of foramen magnum, measured laterally with caliper blades at right angles to the long axis of cranium;

NasL Greatest length of nasal bones: most anterior tip of nasal bones to junction of naso-frontal sutures in the midline, measured with caliper blades at right angles to the dorsal surface of the rostrum; does not include most posterior boundary of nasals if this is posterior to the median naso-frontal suture junction;

NasB Breadth across both nasal bones, measured either at the junction of the nasals with maxillo-frontal sutures (marsupials), or at the anterior junction of nasals with the premaxilla (placentals);

UC1–C1 (alv.) Outside breadth across upper canines, from outer most canine alveolar boundary on either side of the skull, taken ventrally with caliper blades at right angles to surface of the palate;

DIL Diastema length: least distance from most posterior alveolar margin on last upper incisor, to most anterior alveolar margin of first tooth of upper tooth row, taken laterally, not parallel to the long axis of the skull;

APV Anterior palatal vacuity length: maximum length of the longest of the pair, measured ventrally along the long axis of the vacuity;

PPV Posterior palatal vacuity length: maximum length of the longest of the pair, measured ventrally along the long axis of the vacuity;

PAL Length of boney palate: from most forward projection of premaxilla (anterior to incisors), to most anterior boundary of meso-pterygoid fossa, measured laterally parallel to long axis of cranium;

UPM (alv.) Length of the largest upper premolar, measured from labial surface, along the long axis of the tooth from anterior to posterior alveoli margins;

UMR (alv.) Upper molar row length: measured laterally, from most anterior alveolar margin of anterior most molar to posterior alveolar margin of last molar, measured along the axis of the molar row;

ZB Zygomatic breadth: maximum breadth across zygomatic arches, measured in horizontal plane;

POC Post-orbital constriction: minimum breadth of skull posterior to the orbits, measured dorsally;

BUL Length of auditory bulla: lateral measurement of auditory bulla taken along the long axis of the bulla, from lateral base of bony eustachian tube to posterior most point of bulla;

MB Mastoid breadth: maximum breadth across mastoids, more generally, maximum breadth across the occipital arch, measured from above and viewed from the rear of the skull;

DL (condyl.) Dentary length from condyle: measured along the axis of one dentary, from anterior most point of dentary excluding teeth, to posterior margin of condyle, usually the maximum dentary length;

DL (angl.) Dentary length from angular process: measured diagonally from the most anterior of dentary excluding teeth, to most posterior projection of the angular process, measured along the long axis of one dentary;

LPM (alv.) Length of the largest lower premolar: from most anterior alveolar margin to posterior alveolar margin, measured laterally along the long axis of the premolar;

LMR (alv.) Lower molar row length: from most anterior alveolar margin of anterior most molar to posterior alveolar margin of last molar, measured from the labial surface, along the axis of the molar row.

Abbreviations for institutional collections referred to in the text are:

AM Australian Museum, Sydney, Australia;
AMNH American Museum of Natural History, New York;
ANWC Australian National Wildlife Collection, CSIRO, Canberra;
BBM Bernice P. Bishop Museum, Honolulu, Hawaii, USA;
BMNH Natural History Museum, London, U.K. (previously the British Museum of Natural History, London);
MCZ Museum of Comparative Zoology, Harvard University, Cambridge, USA;
MMU Macleay Museum, University of Sydney, Australia;
MV Museum of Victoria, Melbourne, Australia;
MZB Museum Zoologicum Bogoriense, Bogor, Indonesia;
NHMO Natural History Museum, University of Oslo, Norway (previously the Zoological Museum, Christiania);
NMB Natural History Museum Basel, Switzerland;
PNGM National Museum and Art Gallery, Port Moresby, Papua New Guinea;
RMNH National Museum of Natural History (Naturalis), Leiden (previously Rijksmuseum van Natuurlijke Historie, Leiden), Holland;
SAM South Australian Museum, Adelaide, Australia;
QM Queensland Museum, Brisbane, Australia;
USNM United States National Museum of Natural History, Smithsonian Institution, Washington, DC, USA;
WAM Western Australian Museum, Perth, Australia;
ZMA Zoölogisch Museum, University of Amsterdam (now National Museum of Natural History [Naturalis], Leiden), Holland;
ZMB Zoological Museum of the Humboldt-University Berlin (now Museum für Naturkunde, Berlin, Germany).

Stolen type specimens

A large number of AM mammal specimens remain missing, following conviction of Hendrikus (Hank) van Leeuwen on 19 April 2007 for theft of mammal, bird (Boles, 2012: 235) and reptile specimens from the AM Collections which occurred between 1996–2003 (ICAC, 2003). No name-bearing mammal type specimens are missing although a paratype of the Critically Endangered tree-kangaroo *Dendrolagus pulcherrimus* (a body in alc.) is still missing. A *Nyctimene* paratype skull M.5597 was stolen and recovered as was a *Nyctimene* topotype M.6349.

Unrecognized type material in the Mammal Collection

It is likely that the Mammal Collection contains additional unrecognized type material, i.e. holotypes, syntypes, paralectotypes and paratypes and it is possible that type material not sighted for many years could be discovered during ongoing inventory of the Collection.

Significant progress has been achieved over the past three decades in the re-identification and inventory of mammal specimens from the 19th century that were originally poorly documented. However it is possible that material received by the AM from exchanges during the 19th century from overseas museums, particularly European museums, e.g., from Leiden and London, included currently unrecognized types. For example, Krefft (1864b) lists 45 specimens of 34 mammal species from outside the Australian region that were received from the Leiden Museum. Exchange programmes with leading European museums, particularly those in Berlin and Leiden, were active during the directorships of both Krefft and Ramsay. Mention of exchanges can be found in the annual reports to the AM Trustees during the 1860s and 1870s, although species are often not listed in the annual reports. The limited data accompanying such specimens means that a detailed search of archival exchange documents and correspondence in several Institutions would be necessary to resolve this.

Annotated species accounts

Taxon accounts are presented under their original proposed names, arranged by the Orders and Families recognized by Jackson & Groves (2015). We have not cited authorship and publication date for names applied at taxonomic ranks above the level of species, for these see Jackson & Groves (2015).

Order Monotremata

Family Tachyglossidae

Echidna corealis Krefft, 1872a

The Sydney Mail and New South Wales Advertiser 14 (652): 808, col. 1. (28 December 1872).

Common name. Short-beaked Echidna.

Current name. *Tachyglossus aculeatus aculeatus* (Shaw, 1792), following Groves (2005a) and Jackson & Groves (2015), who consider that subspecies of *aculeatus* and associated names require taxonomic clarification.

Holotype. PA.389 by subsequent determination. Skin mount, skull *in situ* (Figs 1–2), indeterminate sex. Purchased from J. A. Thorpe, entered in Palmer Register in c. 1878 as "Echidna sp."

Condition. Skin mount in good condition, missing ventral tip of beak, small bald patch at midline of abdomen. X-ray images of the skin mount taken in 2013 revealed a complete skull and dentaries, with several fractures in the rostrum. All other skeletal elements are absent other than complete bones of all four limbs.

Type locality. Cape York, Qld, Australia.

Comments. Mahoney (1988) cites this specimen as the holotype. In the original account, Krefft states that this taxon was discovered by J. A. Thorpe. A receipt dated 16 February 1869 in the AM Archives (AMS7 Letters Received, C:10.69.20) indicates that Thorpe received payment for "11 animals from Cape York". A subsequent annotation in 1910, evidently done during preparation of the X Register, determined that PA.389 was one of those specimens. PA.389 was not marked as a type by Palmer in the P Register.

Echidna (Tachyglossus) lawesii Ramsay, 1877b

Proc. Linn. Soc. N.S.W. (ser. 1) 2(1): 32, 1 unnumbered plate. (July 1877).

Common name. Short-beaked Echidna.

Current name. *Tachyglossus aculeatus lawesii* (Ramsay, 1877b), following Groves (2005a) and Jackson & Groves

Figure 1. AM PA.389, holotype skin of *Echidna corealis* Krefft, 1872a. (Photography by Sally Cowan).

Figure 2. X-ray images of AM PA.389, holotype skull of *Echidna corealis* Krefft, 1872a; *(a)* dorsal view, and *(b)* lateral view. (Images by James King).

(2015), who consider that subspecies of *aculeatus* and associated names require taxonomic clarification.

Holotype. PA.399 by subsequent determination. Skin mount, skull *in situ*, indeterminate sex from skin mount, given as male (Ramsay). Entered in A Register in March 1877 (predating allocation of registration numbers) as "1 Echidna sp nov. Port Moresby Rev J Lawes" and assigned a registration number in the Palmer Register in c. 1878.

Condition. Skin mount in good condition, very sparse fur on ventrum below throat. It is not clear how much of the skull is retained in the skin mount.

Type locality. Port Moresby district, Central Province, Papua New Guinea.

Comments. Ramsay states that the description was based on a single, apparently adult, male specimen obtained from Port Moresby by Rev. Lawes some months prior to publication. The original entry by Palmer in the P Register is "?type of E. lawesi?" "New Guinea" but collector, sex of specimen, and more precise locality are not given.

Zaglossus bartoni diamondi Flannery & Groves, 1998

Mammalia 62(3): 385, figs 8–9, appendix 1. (29 December 1998).

Common name. Western Long-beaked Echidna.

Current name. *Zaglossus bartoni diamondi* Flannery & Groves, 1998; following Groves (2005a), who notes that it might be a full species.

Holotype. M.7955 by original designation. Female, flat skin with skull *in situ*, collected by D. F. McMichael [on 24

November 1956,] registered on 15 May 1957.

Condition. Flat skin (skull *in situ*) in good condition with both manus and pes, apparently prepared in the field. Rear of skull visible and undamaged.

Type locality. Wissel Lakes District (alt. c. 4,500 ft), Papua Province (formerly West Irian), Indonesia.

Comments. Paratypes not designated.

Zaglossus bartoni smeenki Flannery & Groves, 1998

Mammalia 62(3): 383, figs 6–7, appendix 1. (29 December 1998).

Common name. Eastern Long-beaked Echidna.

Current name. *Zaglossus bartoni smeenki* Flannery & Groves, 1998; following Groves (2005a), who notes that it might be a full species.

Holotype. M.9682 by original designation. Male adult, study skin, skull, and skeleton, collected by Mr G. Leach, on 12 July 1972; registered September 1972.

Condition. Cranium and both dentaries complete. Near complete skeleton, partly articulated. Study skin in good condition, with skin fractures on beak.

Type locality. Collected from the confluence of Mau and Ugat Rivers [9°40'S 149°13'E], 12 miles SW of Marua Point, Collingwood Bay, Milne Bay Province, Papua New Guinea.

Comments. Paratypes not designated. Registration number of holotype given as M.96822 in the original description; this is a typographical error. Locality data including latitude and longitude taken from the M Register, type locality given as "near Marua Point, 12 miles SW of Collingwood Bay" by Flannery & Groves (1998).

Order Dasyuromorphia

Family Thylacinidae

Thylacinus breviceps Krefft, 1868a

Ann. Mag. Nat. Hist. (ser. 4) 2: 296, plate xvii. (October 1868).

Common name. Thylacine, the "Bull dog thylacine" of Krefft.

Current name. *Thylacinus cynocephalus* (Harris, 1808), following Jackson & Groves (2015).

Syntype. PA.774 by subsequent determination. Skull (Fig. 3), subadult, sex not recorded. "*Thylacinus breviceps*" is written on the frontal bone but authorship is unknown. The original Palmer Register entry (written by Palmer and entered c. 1879) is "*Thylacinus cynocephalus*, skull, Tasmania". The register has subsequently been amended with "Coll. Masters 1866? C/40/66", most likely during preparation of the X Register in c. 1907. The AM Archives document C:40.66.07 (AMS7 Letters Received) is a list of specimens collected from Tasmania by George Masters. Note that uncertainty surrounds whether the document is correctly associated with the specimen, not merely the collection date.

Possible Syntypes. (2). One or other of the following two specimens are equally likely to be the remaining syntype: **M.8331**, matching left and right dentaries (Fig. 4), right dentary marked "*Thylacinus breviceps.* Right lower j." in ink in old style handwriting; immature, sex not recorded, cranium not located. These were registered as "mandible only" on 22 March 1963. The whereabouts or fate of the matching cranium is unknown; there was no record of it when the dentaries were registered. Holes drilled through condyles indicate former attachment to a cranium. There are no associated data on collector, collection date or locality. **PA.778**, skull, immature, sex not recorded; registration details as for PA.774 and also marked as "Coll. Masters 1866? C/40/66".

Condition. **PA.774**: Cranium: in good condition; subadult status indicated by third molars not fully erupted and basicranial sutures still visible; there is a hole in the left parietal bone (possibly a bullet hole) and in the left interparietal bone; drill holes for wiring the cranium and mandible together are present in the posterior ends of the zygomatic arches and condyles of the dentaries. Dentaries: good condition, third molar fully erupted and fourth partially erupted. **PA.778**: Cranium and dentaries in good condition. Cranium missing (lost) right M^2, left M^3 detached from skull. Cranium and dentaries were wired together in the past (drill holes remain). **M.8331**: Both dentaries are in good condition and are wired together below the 1st premolars; subadult with last molars not fully erupted.

Cranial measurements (mm). **PA.774**: GL, 171.92; ConL, 171.92; BasL, 161.16; NasL, 65.24* (nasal tips worn); NasB; 20.11; UC1–C1 (alv.), 31.10; APV, 12.80; PPV, 19.41; PAL, 96.38; UPM (alv.), 11.56; UMR (alv.), 39.08* (M^1 to the partly erupted M^3, does not include socket of M^4); ZB, 97.40; POC, 31.77; BUL, 13.29; MB, 56.43; DL (angl.), 138.55; DL (condyl.), 140.56; LPM (alv.), 12.62; LMR (alv.), 52.10. **PA.778**: GL, 160.23; ConL, 160.23; BasL, 150.01; NasL, 53.06; NasB; 18.73; UC1–C1 (alv.), 26.41; APV, 11.92; PPV, 18.88; PAL, 92.25; UPM (alv.), 11.06; UMR (alv.), 35.62* (M^1 to the partly erupted M^3, does not include socket of M^4); ZB, 86.21; POC, 27.77; BUL, 12.5; MB, 51.09; DL (angl.), 126.78; DL (condyl.), 127.48; LPM (alv.), 11.35; LMR (alv.), 46.67 (M_4 not erupted). **M.8331:** DL (condyl.), 135.51; LPM (alv.), 12.29; LMR (alv.), 49.13 (M_1 to M_3) [* = estimate].

Type locality. Ouse River, Tasmania (Krefft, 1871a).

Comments. Krefft (1872d) explicitly states that "The description of this … species is based on two skulls obtained by Mr Masters" and that "Both skulls are those of young animals, being about 7 1/2 inches long" (given as 6 5/8" in his original account). These were among a total of "about twenty six skulls" obtained by Masters and both specimens were "in possession of the Trustees of this Museum" (Krefft, 1868a). The AM annual report for 1868 indicates that 25 Thylacine specimens were collected by Masters between December 1866 and March 1867 (Krefft, 1868b); all of which are listed as *Thylacinus cynocephalus* with no further details.

Ride (1964) lists 774 as being Krefft's original material but Krefft's second skull has remained unidentified (Mahoney & Ride, 1988a). In his original account, Krefft states that he had sent photographs of both specimens of *breviceps* and location of these images, if they still

Figure 3. AM PA.774, syntype skull of *Thylacinus breviceps* Krefft, 1868a. (Photography by Stuart Humphreys).

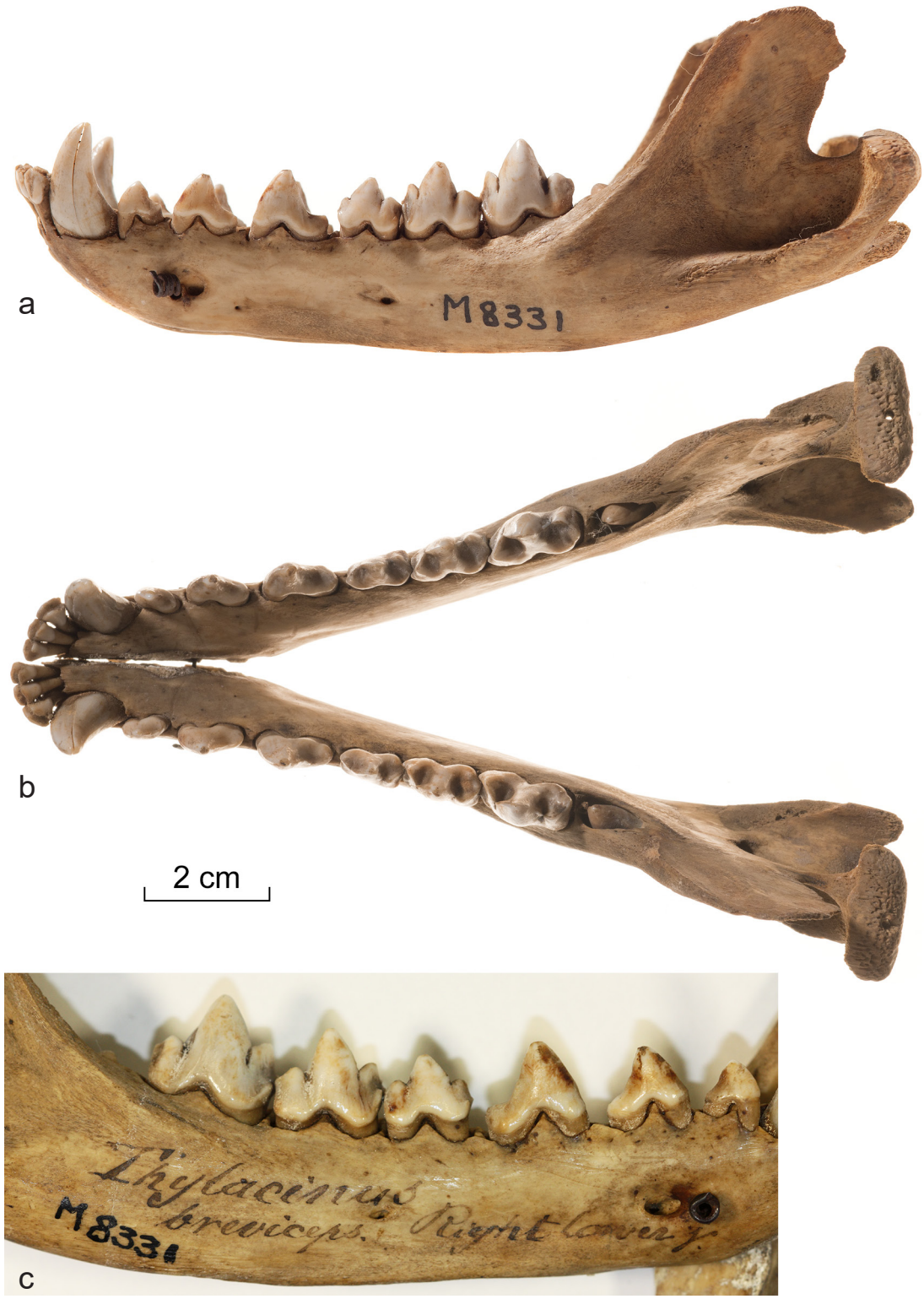

Figure 4. Dentaries of AM M.8331, suspected syntype of *Thylacinus breviceps*. Krefft, 1868a: *(a* and *b)*, with scale bar (Photography by Stuart Humphreys); *(c)* 19th century writing on right dentary (Photography by HEP).

exist, might resolve the identity of his second syntype. We are confident that cranium PA.774 is one of Krefft's original specimens. The skull illustrations accompanying the original description, drawn from photographs sent by Krefft to London, show features that are consistent with the skull of PA.774, viz., two indentations on the upper left rear cranial vault (evidently from gun pellet impacts) and the shape of the left side of the paroccipital process. The dentaries associated with PA.774 seem to be a good match and the last molars are at an equivalent stage of eruption to those figured in Krefft's original account. The remaining syntype is equally likely to be either PA.774 or M.8331, the difficulty being that it is not known how many specimens were assigned by Krefft to *breviceps* at the time of his eviction in September 1874, or if further specimens were labelled "breviceps" by subsequent workers. We have not

established the sex of PA.778. This might be established by comparison with measurements of subadults of known sex. Dentaries could have been mismatched with crania in the past. However, both mandibles PA.778 and M.8331 are too short to match cranium PA.774 and the lower forth molars of both specimens are also at an earlier stage of eruption than that depicted in Krefft's account.

We have not identified who wrote *breviceps* on M.8331 in ink in old style writing, nor for "breviceps" written in pencil on crania PA.774 and PA.778 but the latter two appears to be written by one person. Holes drilled through the condyles of M.8331 suggest that a skull did exist, but there are currently no subadult Thylacine skulls without dentaries in the AM Collection that match M.8331. We have not checked the Macleay Museum, which houses several Thylacine skulls obtained by Masters, for a possible match. It is most likely that Krefft's syntypes comprised cranial material only, without skins. In his original description, Krefft (1868a: 297) states that Masters had collected "about 26 skulls, two of which … belong to *breviceps*" and later (Krefft, 1871a) states "this species has been founded on two skulls obtained by Mr Masters from the Ouse River.", which he repeated in a newspaper account (Krefft, 1872d).

Krefft maintained confidence in the validity of *breviceps* for some time after publication of his description in 1868 (e.g., Krefft, 1872d), and stated that his proposed diagnostic criteria for *breviceps* held when comparisons were made with immature skulls of *cynocephalus* (Krefft, 1871a) but he did not specifically address the issue of sexual size dimorphism. He also claimed that he had support for his view that *breviceps* was a valid species from prominent anatomist Richard Owen (Krefft, 1871a).

Family Dasyuridae

Antechinus agilis Dickman, Parnaby, Crowther & King, 1998

Aust. J. Zool. 46(1): 5, figs 2–3, table 2. (15 April 1998).

Common name. Agile Antechinus.

Current name. *Antechinus agilis* Dickman *et al*. 1998; following Jackson & Groves (2015).

Holotype. M.33319 by original designation. Male adult, Field no. MSC02, skull, body in alc., tongue in alc., frozen tissue; captured in an Elliott trap on 8 August 1997 by M. S. Crowther; registered 14 August 1997.

Condition. Cranium complete; left dentary missing coronoid process. Body in alc. in good condition.

Type locality. South of the corner of Warks Rd. and Blundells Creek Rd., near Lees Creek (35°21'45"S 148°50'17"E, alt. 740 m), Brindabella Ranges, Australian Capital Territory, Australia.

Paratypes. (36, by original designation). *ACT* (13): from the type locality, Lees Creek, collected by M. S. Crowther (3): **M.33317**, male, body in alc., frozen tissue, collected 13 August 1997; **M.33318**, female, body in alc., frozen tissue, collected 12 August 1997; **M.33320**, female, body in alc., frozen tissue, collected 7 August 1997. **M.32888**, male, skull, study skin, Lees Creek, Brindabella Ranges, collected in August 1980 by D. H. King. **M.32914–15**, males, skulls, from Lees Creek, Brindabella Ranges [35°20'S 148°51'E], both collected in August 1980 by D. H. King.

Figure 5. Skin mount of AM PA.658, syntype of *Antechinus allanii* Krefft, 1872b. (Photography by Sally Cowan).

M.32919, male, skull, Bullen Range, Brindabella Ranges [35°21'S 148°58'E], collected August 1980 by D. H. King. **M.33157** [Lees Creek in publication], collected 21 June 1981; **M.33158** [Lees Creek in publication], collected 21 July 1980, both males, both skulls; **M.33159** [Lees Creek in publication], collected 22 July 1980, all three males, skulls and skeletons; **M.32920**, male, skull, body in alc., frozen tissue, Bushrangers Ck, Brindabella Ranges (lat. longs. not given), collected in August 1980 by D. H. King. **M.32918**, male, skull, Kangaroo Ck, Brindabella Ranges [35°32'S 148°53'E], collected by D. H. King in August 1980. **M.32913**, male, skull, Woods Ck, Kangaroo Creek Rd., Woods Reserve [33°35'53"S 150°40'05"E], collected by D. H. King in August 1980. *NSW* (23) Kioloa, collected by D. H. King in August 1980 (20 specimens): **M.32890**, male, skull; **M.32892**, male, skull; **M.32893**, male, skull and part skeleton; **M.32894–900**, seven males, skulls; **M.32901**, male, skull, body in alc.; **M.32902–03**, males, skulls and part skeletons; **M.32904**, female, skull, body in alc., frozen tissue; **M.32906**, female, skull; **M.32907–09**, three females, skulls, bodies in alc.; **M.32910**, female, skull; **M.32911**, female, skull, body in alc. **M.33160**, collected March 1979; **M.33161**, collected 25 July 1979, both females, skulls and skeletons, Bowylie [Gundaroo in publication] [35°03'S 149°16'E], both collected by C. Dickman. **M.32912**, male, skull, Bodalla State Forest [36°10'S 150°00'E], collected by D. H. King in August 1980.

Comments. Type series totals 39 specimens, the remaining two paratypes are in ANWC.

Antechinus allanii Krefft, 1872b *species inquirenda*

The Sydney Mail and New South Wales Advertiser (new series) vol. XIV, nu. 644, p. 554, col. 1. (2 November 1872).

Common name. Brown Antechinus.

Current name. *Antechinus stuartii* Macleay, 1841. Provisionally recognized here as a junior synonym of *A. stuartii* Macleay. This entity is an overlooked name and its taxonomic status awaits further enquiry; it is therefore a species inquirenda.

Syntypes. (3, by subsequent determination). All registered in c. 1878 and entered in Palmer Register as Manning River, from W. Allan. **PA.658**, male, skull, skin mount (Figs 5–6). **PA.659**, female, subadult, body in alc. **PA.660**, indeterminate sex, body in alc. (original Palmer Register entry states "headless"). Specimen not sighted in 2017.

Condition. **PA.658**, cranium missing occipital area, hole in left parietal, missing anterior part of both nasal bones, missing right occipital condyle; right dentary missing coronoid process. Skin mount, left ear torn, bald patch on the dorsal surface of the snout, bald patches on the ventral surface and ventral surface of front limbs, tail tip is fractured. **PA.659,** body in alc. somewhat faded, with bald patch on ventral surface. **PA.660**, condition unknown.

Cranial measurements (mm). PA.658: ConL, 27.99; NasL, —; NasB, 4.43; UC1–C1 (alv.), 4.65; APV, 2.17; PPV, 5.52; PAL, 14.87; UPM (alv.), 1.08; UMR (alv.), 6.45; ZB, 15.95; POC, 6.95; BUL, 3.80; MB, 12.47; DL (condyl.), 20.92; LPM (alv.), 1.01; LMR (alv.), 7.07.

Figure 6. Skull of AM PA.658, syntype of *Antechinus allanii* Krefft, 1872b. (Photography by Stuart Humphreys).

Type locality. Manning River, NSW (Krefft, 1872b).

Comments. We have not found any reference to this taxon in the taxonomic literature and Figs 5–6 appear to be the first published illustrations of what we consider is likely to be Krefft's original material and recognized here as syntypes. Although evidently either overlooked or ignored in the past, it appears to be an available name and we treat this taxon as an overlooked junior synonym of *stuartii*. Krefft

(1872b) named this taxon after Mr W. Allan of Kimbriki, who evidently provided the specimen(s) but Krefft does not indicate the number of specimens examined. Krefft states that *allanii* "… may be distinguished by its larger size, soft fur and rather longer tail" but noted that he had not had the opportunity to examine skull or dental criteria which he considered more useful in species diagnosis. Krefft diagnosed *allanii* in relation to the species arrangement recognized by Gould (1863b), in which *stuartii* was considered conspecific with *flavipes*.

We provisionally assign this taxon to *A. stuartii* but its taxonomic status needs to be assessed in light of the considerable morphological variation in NSW populations of *A. stuartii* and *A. agilis* noted by Crowther (2002). A taxonomic revision of *A. stuartii* is underway by a team led by Andrew Baker (Andrew Baker pers. comm. July 2016). Syntype skull PA.658 is not fully adult as reflected by the unfused basioccipital–basisphenoid suture. Skull dimensions of this specimen fall in a zone of overlap for the key diagnostic measurements cited by Crowther (2002) for separating adult male *A. agilis* from *A. stuartii*. Measurements taken as per Crowther (2002) are: condylobasal length (from anterior of I^1 to anterior margin of foramen magnum), c. 25.5 mm; Zygomatic breadth, 15.95 mm; Snout breadth at canines, 4.75 mm and Snout–canine depth, 4.8 mm.

Antechinus (Podabrus) froggatti Ramsay, 1887a

Proc. Linn. Soc. N.S.W. (ser. 2) 2: 552, plate xvii. (30 November 1887).

Common name. Stripe-faced Dunnart.

Current name. *Sminthopsis macroura froggatti* (Ramsay, 1887a). Status unresolved, *S. macroura* likely to be a species complex (Groves, 2005b) and *froggatti* likely to be a full species (Jackson & Groves, 2015).

Holotype. M.8019 by subsequent determination. Female, skull, body in alc., collected by W. W. Froggatt in 1887. Registered in the AM Collection on 4 March 1959, apparently on indefinite loan from Macleay Museum. Stanbury (1969) cites MMUS registration number as M.1177.

Condition. Cranium missing both zygomatic arches, missing right auditory bulla, hole in left temporal, missing 1st upper left incisor, dentaries almost detached. Body in alc., fur slip on the left side, the specimen appears faded and there is not much internal structure to the pelvic region (appears thin).

Type locality. King Sound, near Derby, Western Australia; "Found under debris near the beach in the "dindan" scrub [= Pindan scrub] bordering King Sound, near Derby" (Troughton, 1932a).

Comments. Description evidently based on a single specimen (Troughton, 1941), although Ramsay gave no indication of the number of specimens or the sex of the animal(s) upon which the description is based. Troughton (1932a) redescribed what he termed the holotype of *froggatti* in the Macleay Museum. Registration numbers were not assigned to the Macleay Mammal Collection until the mid 1960s. Photographs of the holotype skull are given by Archer (1981), who cites the AM registration number as M.8019.

Antechinus stuartii Macleay, 1841

Ann. Mag. Nat. Hist. (ser. 1) 8: 242, plate vii. (1 December 1841).

Common name. Brown Antechinus.

Current name. *Antechinus stuartii* Macleay, 1841; following Jackson & Groves (2015).

Neotype. M.5294, designated by Wakefield & Warneke (1967). Male, skull, body in alc., presented by K. A. Hindwood, registered on 8 August 1932. Collection date not given.

Condition. Cranium and dentaries complete, body in alc. in good condition.

Type locality. Waterfall, Royal National Park, Sydney, NSW, Australia.

Comments. Neotype designated by Wakefield & Warneke (1967), who state that Macleay's original material cannot be located. However, Macleay (1841) states that the only specimen was lost and that his description was based solely on the notes and drawings of Surgeon Stuart. Macleay (1842) corrected his earlier description of the dental formula and determined that the species was a marsupial, not an Insectivore as earlier thought, based on his examination of a skeleton subsequently obtained and prepared by Stuart; he did not indicate whether this specimen included a skin, although we assume that it did not. A skin and skull (with no indication of a skeleton) currently in the collection (PA.602) was originally entered by Palmer as "Antechinus stuartii, North Shore" and indicated as a gallery mount, though with no details of donor or collector. A subsequent amendment to this entry states "flavipes, type of stuarti"; the author of this entry is unknown but it likely occurred during Troughton's employment or earlier. The unpublished list of Troughton (1956) lists this specimen as the "holotype" of *stuartii* but this allocation is refuted by Macleay's original account that denied the existence of a voucher specimen. The type status of PA.602 remains unsubstantiated. We are not aware of any published statement by Troughton that would constitute neotype designation of this specimen.

Chaetocercus cristicauda Krefft, 1867a

Proc. Zool. Soc. Lond. 1866: 435, plate xxxvi. (25 April 1867).

Common name. Crest-tailed Mulgara.

Current name. *Dasycercus cristicauda* (Krefft, 1867a), following Jackson & Groves (2015).

Holotype. M.11342 (= PA.669½) by subsequent determination. Sex not determined, skull, skin mount (Figs 7–8). Original entry in Palmer's hand for PA.6691/2 states only "Chaetocercus cristicaudatus [sic] S. Australia Mounted greatly mutilated". Skin mount and skull re-registered as M.11342 in July, 1980.

Condition. Cranium: both left canines are loose, missing upper left 1st and 2nd incisors, all lower incisors are lost, right dentary is broken in two. The skull is not numbered. Incomplete and damaged skin mount on a base, both ears are torn, snout is almost detached, left front limb is almost

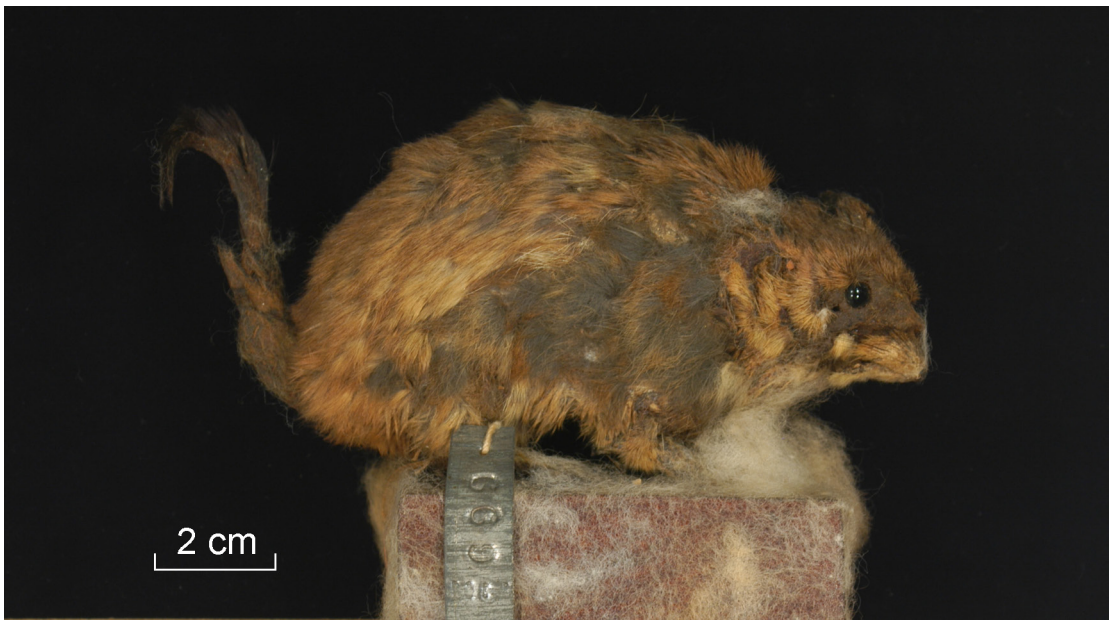

Figure 7. AM M.11342 (= PA.669½), holotype skin mount of *Chaetocercus cristicauda* Krefft, 1867a. (Photography by Sally Cowan).

detached, fur is patchy, very poor condition. Woolley (2005b) notes that the mount is a composite, having been repaired using fur and perhaps a foot, from other specimens, not necessarily of this species.

Cranial measurements (mm). M.11342: GL, 33.99; ConL, 33.99; BasL, 31.49; NasL, 10.94; NasB, 4.96; UC1–C1 (alv.), 6.09; APV, 2.85; PPV, 4.83; PAL, 17.76; UPM (alv.), 1.46; UMR (alv.), 8.81; ZB, 21.66; POC, 7.57; BUL, 7.24; MB, 18.91; DL (condyl.), 25.4 (left dentary); LPM (alv.), 1.35; LMR (alv.), 9.96.

Type locality. South Australia. Krefft states that the type locality was "probably Lake Alexandrina" but this is considered unlikely, and the specimen could have been collected by Waterhouse during a trip from Port Augusta to Coffin Springs (see Woolley, 2005b).

Comments. Krefft established *Chaetocercus* for his new species and the cranial and dental criteria used in his generic diagnosis imply that he examined a reasonably intact skull. In his original account, Krefft does not indicate the number of specimens examined, but he later categorically states that it was one specimen (Krefft, 1876). PA.669½ was registered in the Palmer Register in c. 1878, with the comment that the mounted specimen is "greatly mutilated" but there is no mention of a skull. Krefft's original skull was clearly not available to Spencer (1896b), who borrowed the holotype skin mount and had to draw on Krefft's statements for information on dental structure. Spencer expressed great difficulty deciding if his material was the same species named by Krefft, no doubt due both to the poor condition of the skin mount, and the fact that his material also included examples of *D. blythi* (Waite, 1904), see Woolley, 2005b.

Mahoney & Ride (1988b) cite M.11342 skin mount as the holotype but do not mention a skull. We are unable to either validate, or refute the association of the skull with the holotype skin. Although Krefft provided descriptions of the skull and dentition in his original and subsequent accounts, he did not publish illustrations or cranial and dental measurements. It seems likely that the putative type skull was located during collection inventories undertaken by Troughton, probably sometime after 1937, the year Tate visited the AM (Troughton, 1937a: 125), but we have not yet found any documentation on this issue. The specimen index card for PA.669½ (written after c. 1900), written in handwriting that seems to predate Troughton, indicates a skin mount but lists "Skull: ?", indicating that the skull had not been located. This is reflected by Tate (1940), who lists a skin and "Skull?" and does not provide further information on the holotype skull (Tate, 1947).

Woolley (2005b) concluded that she had no reason to doubt the authenticity of the holotype skull, which she considered to be a good match against Krefft's description. Dr Pat Woolley has drawn our attention to three letters on the dorsal surface of the holotype skull, written in old ink, that she interprets as "ch c."—perhaps an abbreviation for *Chaetocercus cristicauda*, which is written on an old label in the skull box. Another interpretation is that the letters are "ch æ." and we also note that there is another symbol, possibly "P" (see Fig. 8). Krefft erected *Chaetocercus* in 1867, but Peters (1875) proposed the replacement name *Dasycercus* (see Jackson & Groves 2015: 51). Initially this was not adopted by Australian zoologists (including Spencer) who applied *Phascogale* to this species for several decades following the arrangement of Thomas (1888a). Attempts to extract DNA from the holotype skin have not been successful to date.

Dasyuroides byrnei Spencer, 1896a

Report of the Horn Scientific Expedition to Central Australia, Zoology Part 2, 36, plate 3, plate 4, figs 1–4. (February 1896).

Common name. Kowari.

Current name. *Dasyuroides byrnei* Spencer, 1896a; following Jackson & Groves (2015).

?Paralectotype. M.1140, male, skin mount, skull *in situ*, from "Charlotte Waters, Central Australia" = NT, presented by Prof. B. Spencer, registered on 10 October 1896.

Figure 8. AM M.11342 (= PA.669½), holotype skull of *Chaetocercus cristicauda* Krefft, 1867a. (Photography by Sally Cowan).

Condition. Skin mount (on a rock platform), fur faded, left ear tip torn, stuffing protruding from near tail base, hole anterior to right ear.

Topotype. M.1141, female, skin mount, skull *in situ*, details as per M.1140.

Comments. Dixon (1970) designated a male in alcohol (specimen "a" of Spencer) as lectotype, and discussed the whereabouts of the seven original specimens listed "a–g" by Spencer. Dixon lists specimens b and c, and what she suspected to be specimen "g" in the collections of MV and notes that the whereabouts of remaining specimens are unknown, but that some are possibly in the AM. Given that "b" is the only female syntype, and assuming that Spencer correctly reported its sex, then AM.1141 must have been sent to Spencer after completion of the manuscript of the Horn report and therefore is not part of the type series. All specimens sent to Spencer before 1897 from his collectors were obtained by P. M. Byrne from Charlotte Waters, which included shipments of "males and females" in October 1895 and two specimens in July 1896 (Calaby, 1996). It is not clear if M.1140 is a paralectotype, or was sent after Spencer finished amending the proofs to the Horn Report, which Calaby states he received in September 1895. Some of Spencer's letters to the AM have not survived, and there is no correspondence entered against M.1140–41 in the M Register. In a letter dated 5 September 1895 to the AM (AM Archives AMS9 Letters Received, S:65/1895), Spencer states that he hopes to send specimens of *Dasyuroides byrnei* "next week".

Dasyurus gracilis Ramsay, 1888a

Proc. Linn. Soc. N.S.W. (ser. 2) 3(3): 1296. (7 December 1888).

Common name. Spotted-tailed Quoll.

Current name. *Dasyurus maculatus gracilis* Ramsay, 1888a. Variously treated as a synonym of *D. maculatus maculatus* (Kerr, 1792), or as a subspecies of *D. maculatus* as by Jackson & Groves (2015), who highlight the need for further clarification of its status. Woolley *et al.* (2015) did not find genetic support for subspecific status.

Holotype. M.155 by subsequent determination. Male subadult, skull, skin mount (Figs 9–10), collected by E. J. Cairn and R. Grant. Registered February 1888. The original M Register entry gives the locality only as "Queensland", to which is added "Bellenden Ker", in writing resembling that of Waite.

Condition. Rear of cranium missing including occipital area, hole in left parietal, missing tips of both nasal bones; right dentary missing 1st incisor, left dentary missing condyle, and posterior end of coronoid process. Skin mount missing claw from digit 5 of left manus, otherwise complete and in good condition.

Cranial measurements (mm). M.155: GL, —; NasL, 27.28*; NasB, 7.86; UC1–C1 (alv.), 15.16; APV, 4.86; PAL, 41.99; UPM (alv.), 3.79; UMR (alv.), 18.42; ZB, 41.68; POC, 12.40; BUL, —; MB, —; DL (condyl.), 57.77; LPM (alv.), 4.14; LMR (alv.), 24.08. [* = estimate, nasal tips worn].

Type locality. Atherton Tableland, north Qld, Australia. The AM type specimen index card, handwritten in the early 20th century, states "Shot by Grant while ascending a tree on

Figure 9. AM M.155, holotype skin mount of *Dasyurus gracilis* Ramsay, 1888a. (Photography by Sally Cowan).

the tableland. No rocks within miles fide Grant July 1907". Ramsay (1888a) does not specify a collecting locality in his account of this entity but in the opening remarks of his paper states that his new species were obtained on "a trip to the table lands of the Bellenden-Ker Ranges".

Comments. Although Ramsay does not indicate how many specimens he used to describe *gracilis*, J. Ogilby (1892) refers to Ramsay's "unique" specimen. No other specimens of this taxon were found in the M Register from north Qld. The collection date of the putative holotype is not recorded in the register, but Ramsay states that it was obtained during "January last", which from the publication date of his paper, suggests January 1888, which is also the date written on the old type specimen index card. Tate (1951a) examined the holotype skull, which appears to have been extracted in the 1940s, and reported its subadult status. He mistakenly cited the specimen as M.1551.

Myoictis leucura Woolley, 2005a

Rec. Aust. Mus. 57(3): 334, figs 4b, 4g, 6b, 7b, 7h, table 2. (30 November 2005).

Common name. Woolley's Three-striped Dasyure.

Current name. *Myoictis leucura* Woolley, 2005a; following Woolley (2005a).

Holotype. M.17122 by original designation. Male adult, Field no. U57, skull, study skin, skinned body in alc., tongue (dry), collected [8 November] 1985 by K. Aplin; registered 3 November 1986.

Condition. Cranium in good condition, missing dorsal crest of left zygomatic arch; dentaries complete. Study skin in good condition: ear tips torn, bald patches on the ventral surface near the base of front limbs, bald patch on left side of abdomen, two bald patches on right hind leg.

Figure 10. AM M.155, holotype skull of *Dasyurus gracilis* Ramsay, 1888a. (Photography by Sally Cowan).

Type locality. Agofia, [Papuan Plateau southwest of] Mt Sisa (Haliago), Southern Highlands Province, Papua New Guinea (06°17'S 142°45'E, alt. 650 m).

Paratype. M.17091 by original designation. Adult female, Field no. N42, skull, body in alc., Namosado, Mt Sisa (Haliago) (06°15'S 142°47'E, alt. 750–1000 m), collected on [27 November] 1985 by K. Aplin.

Comments. Description based on two specimens. Tissue samples of the holotype and paratype were included in the assessment of genetic lineages within *Myoictis* by Westerman *et al*. (2006).

Ningaui yvonneae
Kitchener, Stoddard & Henry, 1983

Aust. J. Zool. 31(3): 366, figs 1–2, table 1. (1 June 1983).

Common name. Southern Ningaui.

Current name. *Ningaui yvonneae* Kitchener, Stoddard & Henry, 1983; following Jackson & Groves (2015).

Paratypes. (3, by original designation). All are males, all skulls, all bodies in alc.: **M.11429**, [collected 24 March 1980 by D. Black] Wentworth, [89 miles N] (32°47'S 141°32'E), NSW; **M.12160**, subadult, Tarawi Station, [65 km N of Rufous River, SW of Broken Hill] (33°26'S 141°09'E), NSW, [collected 1 May 1981 by B. Miller]; **M.12161**, Round Hill [Nature Reserve], 33°01' S 146°11'E, NSW, [collected 16 May 1981 by J. Brickhill and A. B. Rose].

Comments. Holotype in WAM, type series includes 42 paratypes. The type locality is the Mt Manning area, Western Australian Goldfields district.

Phascogale flavipes burrelli
Le Souef, in Le Souef *et al*., 1926

Le Souef and Burrell, *The Wild Animals of Australasia*, p. 344, fig. 92. (October 1926).

Common name. Brown Antechinus.

Current name. *Antechinus stuartii* Macleay, 1841; following Jackson & Groves (2015).

Holotype. M.2593, by original designation. Male, skull, study skin, Ebor, NSW, registered on 8 November 1915, presented by the Council of the Zoological Society of NSW. Collector and collection date not given. The original M Register entry is "*Phascogale flavipes* Ebor, N.S.Wales Pres. Council Zoological Society".

Condition. Cranium and dentaries complete. Study skin has two bald patches on the ventral surface and is missing tail tip.

Type locality. Localized to Ebor, NSW by Iredale & Troughton (1934), given as "Highlands of Northern New South Wales" in the original account.

Comments. Although authorship attribution to Le Souef and Burrell is entrenched in the literature, in the original description it is clearly attributed to Le Souef alone, and is called "Burrell's Phascogale". A single specimen is mentioned by registration number in the original account and we have not found any indication from the M Register that further specimens were involved. Iredale & Troughton

(1934) note "*ex* Le Souef MS"—presumably Le Souef had prepared a more detailed account in an unpublished manuscript. Troughton (1941, and subsequent editions) doubted the validity of this taxon and he stated that it was "*described as having a smaller body, comparatively larger feet, and slightly crested tail. These characters were possibly due to a period of captivity; so the race may be disregarded until wild specimens are found with similar characters."* This taxon was confused with *A. flavipes* but Wakefield & Warneke (1967) placed it with *A. stuartii, sensu lato*. Dickman *et al.* (1998), in describing *A. agilis*, placed *burrelli* with *A. stuartii, sensu stricto*. Skull measurements of the holotype of *burrelli* are given by Dickman *et al.* (1998) and Van Dyck & Crowther (2000).

Phascogale macdonnellensis Spencer, 1895a

Proc. R. Soc. Vic. 7: 222. (January 1895).

Common name. Fat-tailed Pseudantechinus.

Current name. *Pseudantechinus macdonnellensis* (Spencer, 1895a), following Jackson & Groves (2015).

?Syntype. M.1004, ?male, adult, skull, skin mount, registered 8 September 1895, from "Central Australia" = Northern Territory, presented by Baldwin Spencer, as a skin mount.

Condition. Cranium is missing right zygomatic arch, right auditory capsule, occipital area and section of right lateral braincase wall and floor; hole in left frontal; both dentaries complete. Skin mount: faded, tail tip almost detached, left ear torn and tip missing, missing toes on the right manus, a fracture on the tail, sparse fur on the ventral surface and the right side. Considered to be adult, based on dentition and sutures. Sex not determined (skin mount has no signs of scrotum or pouch but, as an adult, it could be a male with scrotum removed).

Type locality. Alice Springs district, Northern Territory, Australia.

Topotypes. (2). **M.1145**, adult ?female, skin mount, skull *in situ*; **M.1146**, adult male, skull, skin mount; both from Alice Springs, donated by Baldwin Spencer, registered 10 October 1896. Collector and collection date not given. There is no associated correspondence listed in the M Register for either specimen.

Comments. Correspondence from Spencer dated 5 Sept 1895 (AM Archives AMS9, Letters Received, S:65/1895) clearly indicates that one male *macdonnellensis* was sent to the AM; it was registered as M.1004 but without further data. There was no indication that it was a type although Spencer used the term "type" in other correspondence. Spencer (1895a) did not indicate the number of specimens examined but more than one is implied by the statement that "the first specimen was found by Mounted Trooper South …". As noted by Calaby (1996), Spencer (1895b), published in January, states that he had three specimens for his description, a male and two females. Dixon (1970) listed C7804 (a female) as a syntype, noting an attached label marked "type", apparently Spencer's original tag. She incorrectly cites Trooper South as the collector—he obtained a male specimen. Dixon states that the only other specimen listed in the MV register is a male; presumably she had reason to doubt the type status of this specimen.

We are unable to determine whether either M.1004 or the MV male cited by Dixon (1970) is the syntype male. While it is possible that M.1004 (assuming that it is male) is the missing male syntype, it might be one of a series of specimens obtained after Spencer prepared the initial description. In his report on the Horn Expedition, Spencer (1896a) indicated that he had acquired 13 specimens by that time and M.1004 could have been one of these. Calaby (1996) provided insights into specimens sent to Spencer by collectors after the Horn Expedition. In a letter to Spencer dated 29 July 1895, F. J. Gillen, one of Spencer's collectors, indicates that he was about to ship seven or eight specimens of this species to Spencer. The AM specimen could have been one of these, given that Spencer sent it to the AM in September 1895 and the fact that other shipments to Spencer were prior to November 1895 (Calaby, 1996).

Mahoney & Ride (1988b) cited MV C7804 as the holotype, presumably because the ambiguity of Spencer's original account could allow an interpretation that it was based on one specimen. We do not recognize the inference of a holotype by Mahoney & Ride (1988b) as constituting lectotype designation because, prior to their work, there was no agreement that the species had been based on a single specimen. To the contrary, Dixon (1970) had assumed the existence of a syntype series (see Article 74.6, the *Code*).

Planigale gilesi Aitken, 1972

Rec. S. Aust. Mus. 16(10): 1, figs 1–3, tables 1–2. (12 June 1972).

Common name. Giles' Planigale.

Current name. *Planigale gilesi* Aitken, 1972; following Jackson & Groves (2015).

Paratypes. (5, by original designation). **M.7033**, female, skull, body in alc., collected 27 February 1945 and **M.7393**, male, skull, body in alc., presented 28 May 1948, both collected at Bellata (29°55'S 149°47'E), NSW, presented by June Kirkby; **M.7819**, male, skull, body in alc., and **M.7820**, female, skull, body in alc., both collected at Brewarrina (29°58'S 146°52'E), NSW, presented 3 May 1954 by K. Turnbull; **M.9190**, male, body in alc., Lake Cawndilla, 10 miles S of Menindee (32°29'S 142°13'E), NSW, collected by Dr M. R. Gray on 20 May 1969.

Comments. Type series totals 11 specimens. The holotype and five paratypes are in SAM.

Planigale ingrami brunneus Troughton, 1928

Rec. Aust. Mus. 16(6): 282, plate xxxix, figs 1a–h. (11 June 1928).

Common name. Long-tailed Planigale.

Current name. *Planigale ingrami brunnea* Troughton, 1928. We consider the status of this entity to be unresolved. Although subspecies of *P. ingrami*, including *brunnea*, were recognized by most authors in the past (see Jackson & Groves, 2015),

recent authors suspect that described forms possibly represent clinal variation (e.g., Fisher, 2008; Baker, 2015; Jackson & Groves, 2015). However, unpublished genetic evidence indicates that several species exist within populations allocated to *ingrami* (K. Aplin, pers. comm. 2016).

Holotype. M.2174 by original designation. Female adult (with one young), skull, body in alc. Donated by Fred L. Berney, registered January 1910, collection date not given.

Condition. Cranium missing right zygomatic arch, hole in right side of intraparietal; both dentaries complete. Body in alc.: faded, some internal organs removed, dorsal fur slip.

Type locality. Wyangarie, on the Flinders River, Richmond District, North Qld, Australia (Troughton).

Comments. Description apparently based on a single specimen, a lactating female. Troughton gave the nipple number as 6 but 11 are visible, and the female pouch young has 12 (Woolley & Elliott, 2015). Tate (1947) applied the name *brunnea*, which is the earliest emendation that we have found. Type locality inadvertently given as Western Australia instead of Queensland, by Jackson & Groves (2015).

Planigale tenuirostris Troughton, 1928

Rec. Aust. Mus. 16(6): 285, figs 2a–g, plate xxxix. (11 June 1928).

Common name. Narrow-nosed Planigale.

Current name. *Planigale tenuirostris* Troughton, 1928; following Jackson & Groves (2015).

Holotype. M.3933 by original designation (erroneously as M.3856). Adult female, skull, body in alc., collected by Richard Helms in "May or June, 1890", during the Darling River floods, registered 27 June 1927, re-registered from the "Old Collection".

Condition. Cranium missing both zygomatic arches, missing occipital area and fracture in the right parietal bone; both dentaries complete. Body in alc.: dorsal fur slip, tail tip is almost detached.

Type locality. Darling River, at Bourke or Wilcannia, NSW, Australia.

Paratype. M.3934 by original designation (erroneously as M.3857). Young female, skull and skin in alc., same data as holotype.

Comments. Archer (1976: 356) noted that Troughton mistakenly gave the holotype and paratype registration as M.3856 and M.3857, respectively, in his original description, a mistake that was repeated subsequently (e.g., Tate, 1947). It is likely that Troughton's citation of the incorrect registration numbers was simply an error. M.3856 and M.3857 were both registered as *Pteropus poliocephalus* in January 1927 without amendment. An undated note written in Troughton's hand in the register after M.3855 states "Special note—Two specimens of *Planigale tenuirostris* said to be registered M.3856–57 (in *Rec. Aust. Mus*. xvi, 6, 1928, p. 287) are actually registered as M.3933–34."

Podabrus albocaudatus Krefft, 1872c *nomen oblitum*

The Sydney Mail and New South Wales Advertiser (new series) vol. XIV (645): 598, col. 1 (9 November).

Common name. White-tailed Dunnart.

Current name. *Sminthopsis granulipes* Troughton, 1932a; see Parnaby *et al.* (2015).

Holotype. PA.669 by subsequent determination by Parnaby *et al*. (2015)—the same specimen as the holotype of *Sminthopsis granulipes* Troughton, 1932a, see account for that taxon. The original writing in the Palmer Register entry for PA.669, is "*Podabrus albocaudatus*, King George Sound, in alc.". Krefft (1872c) states that he obtained his original specimen from "Mr Maxwell". Collector not recorded in the original entry by Palmer, but subsequently, in different handwriting is added "Coll.? George Masters? 1869?", probably made c. 1907 during preparation of the X Register. A later entry in Troughton's writing states "*Sminthopsis granulipes* sp. nov. holotype ♀". However, the undated AM Archives document C:10.0.01 (AMS7 Letters Received) records purchase of one "Podabrus sp." from Mr George Maxwell "of King Georges Sound" which we consider most likely refers to PA.669.

Comments. We regard this taxon to be a validly published, unused senior synonym of *Sminthopsis granulipes* Troughton, see Parnaby *et al.* (2015) who declared the name a *nomen oblitum*. Troughton (1932a) designated PA.669 as the holotype of *Sminthopsis granulipes*.

Sminthopsis granulipes Troughton, 1932a

Rec. Aust. Mus. 18(6): 350, fig. 1. (20 April 1932).

Common name. White-tailed Dunnart.

Current name. *Sminthopsis granulipes* Troughton, 1932a; following Jackson & Groves (2015).

Holotype. PA.669 by original designation. Adult female, skull, body in alc., tongue and palate in alc., entered in register in c. 1878. See above account of *Podabrus albocaudatus* Krefft for details of P Register entries against this specimen.

Condition. Cranium missing occipital area, fractured left parietal bone and temporal bone; hole in ramus of left dentary, right dentary complete. Parts of dried brain are still in the skull. Body in alc.: dorsal fur slip mid back and adjoining flank.

Type locality. "King George's Sound, south Western Australia" (Troughton, 1932a). It is possible that the holotype was not collected in the immediate vicinity of King George Sound, but from an undetermined adjoining region, presumably inland (Parnaby *et al.*, 2015).

Comments. Description based on the holotype only. Troughton's *granulipes* is based on a specimen that we believe to be the holotype of *Podabrus albocaudatus* Krefft, 1872c. Troughton's name is therefore a junior objective

synonym and it was designated a *nomen protectum* by Parnaby *et al.* (2015). In his original account Troughton noted the following entry in the Palmer Register: "In the handwriting of the original entry is written a specific name which indicated that it was regarded as new …". This entry includes the name *Podabrus albocaudatus* (see account for that taxon above) which was validly published by Krefft (1872c). Troughton was probably not aware of the newspaper account of Krefft (1872c) or if he was, might not have considered it to be validly published.

Sminthopsis larapinta Spencer, 1896a

Report of the Horn Scientific Expedition to Central Australia, Zoology Part 2, 33, plate 2, 2a, 2b. (February 1896).

Common name. Stripe-faced Dunnart.

Current name. *Sminthopsis macroura macroura* (Gould, 1845), following Jackson & Groves (2015). Regarded as a subspecies of *S. macroura* by Baker (2015). Status unresolved, belongs to the *S. macroura* species complex that requires further work, see Jackson & Groves (2015). This taxon is considered likely to be a distinct species by Blacket *et al.* (2001) but we follow existing nomenclature until such time as it is formally re-instated as a species.

?Paralectotypes. (2). **M.1142**, adult male, skull, skin mount; **M.1143** (not sighted), sex not recorded, originally stamped as "Gallery" (= skin mount) in M Register entry but it is not known if skull *in situ*; both "Charlotte Waters, Central Australia", both presented by Prof. B. Spencer, registered at the AM on 10 October 1896, both as "*Sminthopsis larapinta*" but sex not indicated, nor if the animals were in alc. when first presented by Spencer.

Type locality. Charlotte Waters, Northern Territory, Australia.

Comments. Troughton (1965a) considered M.1142 to be an example of *S. larapinta*, but he does not indicate whether he considered it to be one of the specimens used in Spencer's description. Troughton stated that he had examined "four spirit specimens of the original Spencer series from Charlotte Waters" in the MV and refers to the "holotype" without citing a registration number. Spencer (1896a) described *larapinta* from three males in alc. which he designated A, B, and C. All were collected by P. M. Byrne from Charlotte Waters. Dixon (1970) designated specimen A as lectotype and stated that the remaining two male paralectotypes had not been located. The two AM specimens were registered in October 1896 following receipt of a batch of material from Spencer, though without cross references to relevant surviving correspondence (some of Spencer's correspondence to the AM was destroyed in c. 1900). Although M.1142 and M.1143 could be the missing paralectotypes mentioned by Dixon (1970), it is also possible that they were among the unknown number of specimens sent to Spencer by his collectors at various times after the Horn Expedition, after he had completed the manuscript of the Horn report. For example, Byrne, who collected the original three males, also sent specimens including a female, to Spencer in October 1895 (Calaby, 1996). Spencer received the manuscript proofs of the Horn Report in September 1895 (Calaby, 1996) and the report was published in February 1896.

Specimen M.1143 has not been sighted in the collection during the past few decades and is not mentioned by Troughton (1965a).

Sminthopsis monticola Troughton, 1965a

Proc. Linn. Soc. N.S.W. 89(3): 311, figs 1a–b. (7 May 1965).

Common name. Stripe-faced Dunnart.

Current name. *Sminthopsis macroura macroura* (Gould, 1845), following Jackson & Groves (2015). Although not recognized as a subspecies by recent authors, we regard the status of *monticola* to be in need of further research given that *S. macroura* is an unresolved species complex.

Holotype. B.9579 by original designation. Female, skull, body in alc. (Figs 11–12), "Lawson Blue Mountains" presented by Mr E. H. Palmer, registered December 1885.

Condition. Cranium has hole in left auditory bulla, hole in right temporal bone; both dentaries complete. Alc. body: left ear torn.

Type locality. Lawson, Blue Mountains, NSW, Australia.

Comments. Named from the holotype, still the only known specimen. Archer (1981) regarded *monticola* to more closely resemble inland *macroura froggatti* than the coastal nominate form. He doubted the authenticity of the locality data, based on a belief the habitat at Lawson was wet scleropyll forest and therefore out of character with habitat of other forms of *S. macroura*. Although this record is distant from other records of *S. macroura, sensu lato* and no further specimens had been reported from the area, dry forest types do occur in the Lawson area and the record should not be dismissed lightly. Magistrate E. H. Palmer had a residence at Lawson, and he donated specimens to the AM over many years. Specimen labelling error cannot be refuted but there is no indication from the register entry that would arouse suspicion about the reliability of the locality data. The taxonomic status of this taxon warrants re-evaluation given that Blacket *et al.* (2001) demonstrated multiple, highly distinct lineages within what is currently assigned to *S. macroura*.

Figure 11. Alcoholic body of AM B.9579, holotype of *Sminthopsis monticola* Troughton, 1965a. (Photography by Sally Cowan).

Figure 12. Skull of AM B.9579, holotype of *Sminthopsis monticola* Troughton, 1965a. (Photography by Sally Cowan).

Sminthopsis murina tatei Troughton, 1965a

Proc. Linn. Soc. N.S.W. 89(3): 316, figs 3a–b. (7 May 1965).

Common name. Common Dunnart.

Current name. *Sminthopsis murina tatei* Troughton, 1965a; following Jackson & Groves (2015), who state that it might warrant elevation to species rank, with further investigation required.

Holotype. M.7157 by original designation. Male adult, skull (Fig. 13), body in alc., [presented by Mr B. Shipway, collected October 1944], registered 3 December 1945.

Condition. Cranium has hole in right temporal bone; both dentaries complete. Alc. body: fracture in the tail.

Type locality. Tolga, alt. c. 2,460 ft, near Atherton, Atherton Tableland, Qld, Australia.

Comments. The description was apparently based only on the holotype. Troughton's assessment of fur colour was drawn from descriptions by Tate (1947) of AMNH skins from the same general area. This taxon is distinct morphologically (Kitchener, Stoddart & Henry, 1984) and genetically (Blacket *et al.*, 2006), and a re-assessment of its taxonomic status is needed.

Sminthopsis murina ooldea Troughton, 1965a

Proc. Linn. Soc. N.S.W. 89(3): 316, figs 5a–c. (7 May 1965).

Common name. Ooldea Dunnart.

Current name. *Sminthopsis ooldea* Troughton, 1965a; following Jackson & Groves (2015).

Holotype. M.7502 by original designation. Male sub-adult, skull, body in alc., purchased from H. E. Green, registered in June 1949. Collection date not given. The register states that Green was from the "United Aborigines Mission".

Condition. Damaged and incomplete skull, in poor condition: zygomatic arches and whole of posterior of skull shrunken and deformed, apparently by decalcification, missing left nasal bone; both dentaries missing coronoid processes and condyles. Body in alc.: fur slip on the left side.

Type locality. Ooldea, South Australia.

Comments. Description evidently based on the holotype only. Archer (1981) provides illustrations of the holotype cranium and dentaries.

Figure 13. AM M.7157, holotype skull of *Sminthopsis murina tatei* Troughton, 1965a. (Photography by Sally Cowan).

Order Peramelemorphia

Family Peramelidae

Didephilus obesula Shaw, 1797

Nat. Misc. 8: plate 298 and text. (August 1797).

Common name. Southern Brown Bandicoot.

Current name. *Isoodon obesulus* (Shaw, 1797), following Jackson & Groves (2015).

Neotype. M.11821, designation by Dixon (1981). Young male [associated No. W4288], skull, study skin, intact hyoid bones, skinned body in alc., one intact flea in alc. Collected by A. B. Rose on 18 September 1977 and registered on 27 February 1981.

Condition. Cranium complete; both dentaries have broken crowns of 2nd post-canine teeth. Study skin: bald patch on lower abdominal area, otherwise in good condition.

Type locality. Ku-ring-gai Chase National Park, north of Sydney, NSW. Dixon (1981) gives the trap site of the neotype as "a point 1.5 km south of the Hawkesbury River, 7.5 km from the Coal and Candle Creek Road turnoff on the West Head Point Road, Kur-ring-gai Chase National Park, 33°36'S 151°16'E."

Comments. Dixon (1981) provides external and cranial measurements and a detailed description of the specimen and photographs of the skull and study skin.

Echymipera davidi Flannery, 1990

Seebeck, J. H. *et al.* (ed.), *Bandicoots and Bilbies,* p. 29, figs 1–3, table 1. (December 1990).

Common name. David's Echymipera.

Current name. *Echymipera davidi* Flannery, 1990; following Groves (2005c).

Holotype. M.7154 by original designation. Adult male, list No. 100, skull, study skin, collected by E. Le G. Troughton on 28 April 1945, registered 14 October 1945.

Condition. Incomplete cranium, missing 1st, 2nd, 3rd incisors on both sides, and left upper 1st and 2nd post-canine teeth. Both dentaries missing all incisors, left dentary missing 4th and 5th post-canine teeth. Study skin: skin missing from near the tail tip, otherwise in good condition.

Type locality. Kiriwina Island (8°30'S 151°00'E), Trobriand Island Group, Milne Bay Province, Papua New Guinea. The exact collecting locality on Kiriwina Island is not given in the register.

Comments. The three paratypes are in AMNH. Good quality photographs of holotype and one paratype skull are given in the original description.

Echymipera philipi Troughton, 1945

Rec. Aust. Mus. 21(6): 373. (25 June 1945).

Common name. Common Echymipera.

Current name. *Echymipera kalubu philipi* Troughton, 1945; following Groves (2005c).

Holotype. M.6999 by original designation. Male, [Field no. Owi Is. No. 29], skull (Fig. 14), study skin, collected by Lieutenant-Colonel Cornelius B. Philip and Major Glen M. Kohls, collection date not given, registered September 1944.

Condition. Cranium missing right upper 1st and 2nd incisors; both dentaries complete. Study skin in good condition.

Type locality. Owi Island, Schouten Island Group, Cenderawasih (formerly Geelvink) Bay, Papua Province, Indonesia.

Paratypes. (3, 2 by subsequent determination). Same locality and collectors as holotype, all registered February 1945, collection dates not given: **M.7028** by original designation, female, skull, study skin (allotype); **M.7029** (two specimens), female, body in alc. with unfurred female pouch young in alc.; **M.7030**, male, skull, body in alc.

Comments. Troughton does not indicate the number of paratypes but implies that there are three, without citing registration numbers for two specimens. Paratypes are identified as such in Troughton's writing on specimen tags for the three specimens listed above and a search of the register database indicates a total of four specimens of this species from Owi Island.

Figure 14. AM M.6999, holotype skull of *Echymipera philipi* Troughton, 1945. (Photography by Stuart Humphreys).

Isoodon arnhemensis Lyne & Mort, 1981

Aust. Mammal. 4(2): 128, figs 66–68. (cover date, 13 May 1981).

Common name. Golden Bandicoot.

Current name. *Isoodon auratus arnhemensis* Lyne & Mort, 1981; following Jackson & Groves (2015), who highlight the need for taxonomic clarification of this form.

Holotype. M.6609 by original designation. Unknown sex, skull, study skin (Figs 15–16), presented by Rev. W. S. Chaseling, collection date not given, registered June 1939.

Condition. Cranium missing right upper canine; left dentary missing last post-canine tooth; right dentary complete. Study skin: bald patch on rump, bald area on left side of abdomen. Study skin in good condition but excessive elongation does not reflect correct body proportions.

Cranial measurements (mm). M.6609: ConL, 63.67; BasL, 60.56; NasL, 25.29; NasB, 5.34; UC1–C1 (alv.), 9.69; APV, 4.10; PPV, 6.48; PAL, 37.06; UPM (alv.), 2.80; UMR (alv.), 11.79; ZB, 30.31; POC, 11.18; BUL, 13.76; MB, 25.27; DL (angl.), 50.55; DL (condyl.), 48.68; LPM (alv.), 2.81; LMR (alv.), 13.70.

Type locality. Melville Bay and Cape Arnhem area, Northern Territory, Australia. The type locality in the original description is given as "Melville Bay, Cape Arnhem area, Northern Territory" but the locality given in the register for each of the three specimens is actually two combined localities "Melville Bay and Cape Arnhem area", which are separated by c. 25 km.

Paratypes. (2, by original designation). Details for both as per holotype: **M.6606**, male, skull, study skin; **M.6610**, indeterminate sex, skull, study skin.

Comments. Three specimens in the type series.

Figure 15. AM M.6609, holotype skin of *Isoodon arnhemensis* Lyne & Mort, 1981. (Photography by Sally Cowan).

Perameles broadbenti Ramsay 1879a

Proc. Linn. Soc. N.S.W. (ser. 1) 3(4): 402, figs 1–15, plate 27. (May 1879).

Common name. Giant Bandicoot.

Current name. *Peroryctes broadbenti* (Ramsay, 1879a), following Aplin *et al.* (2010).

Holotype. A.3238, by subsequent determination. Male, skull, skin mount, originally in alc., purchased from Kendall Broadbent, registered November 1878. Collection date not given.

Condition. Cranium has fractured left maxilla, right zygomatic arch glued in place, missing left upper 5th post-canine tooth, missing left upper 1st and 3rd incisors, and right upper 2nd, 3rd and 4th incisors; right dentary missing coronoid process, both dentaries have drilled wire holes through both condyles. Skin mount missing ear tips, bald patch on the left side, fracture on the base of the tail, left manus digits 4 and 5 fractured, sparse fur on the ventral surface (stomach area).

Type locality. Port Moresby district, Central Province, Papua New Guinea. Specimen obtained from "a considerable distance inland from Port Moresby, in some of the dense scrubs on the banks of the Goldie River" (Ramsay, 1879a).

Comments. Ramsay states that his description is based on a single male. Detailed measurements and high quality photographs of the holotype skull are given by Aplin *et al.* (2010), who review the limited number of specimens available in world collections.

Perameles moresbyensis Ramsay, 1877a

Proc. Linn. Soc. N.S.W. (ser. 1) 2(1): 14. (July 1877).

Common name. Northern Brown Bandicoot.

Current name. *Isoodon macrourus moresbyensis* (Ramsay, 1877a), following Groves (2005c).

Syntype. M.2554, by subsequent determination. Male, skull (Fig. 17) and skin mount, re-registered in March 1915 from the "old collection", but previous registration number (if any) or previous registration date not indicated.

Condition. Cranium missing rear of braincase including occipitals and much of the parietals; missing left zygomatic arch, missing posterior end of left auditory bulla, hole in the left maxilla through part of the palate, teeth are reinforced with glue; both dentaries complete. Skin mount missing tail tip, missing right ear tip, hole in the side of left hind leg, fur on the ventral surface appears to have been glued on.

Figure 16. AM M.6609, holotype skull of *Isoodon arnhemensis* Lyne & Mort, 1981. (Photography by Sally Cowan).

Cranial measurements (mm). M.2554: GL, —; NasL, 31.62; NasB, 8.06; UC1–C1 (alv.), 11.30; APV, 7.19; PAL, 46.85; UPM (alv.), 4.01; UMR (alv.), 15.45; ZG, —; POC, 11.60; BUL, 13.29 (right side bulla); MB, 25.07; DL (angl.), 62.05; DL (condyl.), 61.30; LPM (alv.), 3.67; LMR (alv.), 16.21.

Type locality. Port Moresby area, Central Province, Papua New Guinea.

Figure 17. AM M.2554, syntype skull of *Perameles moresbyensis* Ramsay, 1877a. (Photography by Stuart Humphreys).

Comments. Ramsay states that "the animal examined was full grown, but young". Although a single specimen is implied, it is not possible to determine from the original description if he examined other specimens, perhaps belonging to other collectors, but omitted the collector's name in the original account, and in the M Register. The dentition of M.2554 is inconsistent with Ramsay's description in that the third lower premolar appears to be smaller, not larger, than the lower canine. Dental and external measurements of M.2554 broadly concur with those given by Ramsay, taking into account the uncertainty of how some measurements were made and whether or not skin measurements were taken before the specimen was prepared as a mount. However,

our impression is that M.2554 is a larger animal than that measured by Ramsay, e.g., hind foot length taken from nail to heel is c. 3 inches (vs 2.5). We have not yet been able to trace the provenance of this specimen prior to its registration in 1915. However, Thomas (1888a: 235) stated that the type was in the "Sydney Museum" (as opposed to the Macleay Museum).

Although included in his paper on mammals of the 1875 *Chevert* Expedition (Ramsay, 1877a), material of this taxon was most likely obtained soon after the Expedition. Macleay (1875) states that several members of the *Chevert* crew had left the Expedition which ended at Yule Island, with the aim of collecting in the Port Moresby district.

Perameles cockerelli Ramsay, 1877c [not 1876]

Proc. Linn. Soc. N.S.W. (ser. 1) 1(4): 310. (March 1877).

Common name. Common Echymipera.

Current name. *Echymipera kalubu cockerelli* (Ramsay, 1877c), following Groves (2005c).

Syntype. PA.471, by subsequent determination. Male, skin mount, skull *in situ*, purchased from James Cockerell, registered in the Palmer Register in c. 1878. Original AM metal tag with "471" attached to the right hind leg. The former existence of at least one other syntype is inferred but its present whereabouts is unknown.

Condition. Skin mount (skull *in situ*), faded, hole in the left side, torn ear tips and missing tail tip.

Type locality. Given as "New Ireland" (Papua New Guinea) by Ramsay. Flannery (1995c) considered the type locality to be an error, based on the current absence of bandicoots from New Ireland, and the fact that many natural history specimens obtained by Brown had inaccurate locality data, being either from New Ireland, New Britain or one of the islands of the Duke of York group.

Comments. Ramsay did not indicate the number of specimens examined. The taxidermist's department lists preparation of "1 Perameles cockerelli sp nov" as a mount, in the AM annual report for 1876 (Ramsay, 1877h). We regard PA.471 to be a syntype and not a holotype because Ramsay appears to have based his description on more than one specimen. Ramsay's account of the species, (which was based on external characters only), includes body measurements for two individuals but it is not clear whether both specimens were in the AM at that time or whether he was using measurements from another specimen, perhaps in the possession of Cockerell or George Brown. Whittell (1954: 155) states that all of Brown's collection was sent to London, and that only Cockerell's collection remained in Sydney. However, a few of Brown's specimens (without data) were recently found in private hands in Sydney (I. McAllen, pers. comm. 2016). Ramsay (1877i) provided further brief notes on colouration and notes on dentition that would have been visible from a skin mount. Miklouho-Maclay (1884) illustrated the head of a specimen of *cockerelli* and implied (1884: 719) that there was only one specimen, a skin mount, in the AM Collection. His drawing is consistent with the head of the skin mount of PA.471.

Rhynchomeles prattorum Thomas, 1920

Ann. Mag. Nat. Hist. (ser. 9) 6: 430. (1 October 1920).

Common name. Seram Bandicoot.

Current name. *Rhynchomeles prattorum* Thomas, 1920; following Groves (2005c).

Paratype. M.29415, collectors no. 7, male, skull, study skin, collected by Pratt brothers in January 1920 from Mount Manusela, Seram Island, Maluku Province, Indonesia. Skin tag states "Alt. 6000 ft, trapped in heavy jungle". Exchanged from BMNH August 1993, registered 12 October 1993, formally BMNH 1920.7.26.33.

Comments. This specimen is from the original series of seven, all collected from the type locality by the Pratt brothers in 1920. The species does not seem to have been reported since. The specimen is considered to be a paratype rather than a referred specimen because Thomas based his species description on more than one individual, e.g., "a strongly contrasted white patch of very variable size on the chest".

Family Thylacomyidae

Macrotis lagotis interjecta Troughton, 1932b

Aust. Zool. 7(3): 227. (15 September 1932).

Common name. Greater Bilby.

Current name. *Macrotis lagotis lagotis* (Reid, 1837), following Jackson & Groves (2015). Some modern authors recognize *interjecta* as a valid subspecies, and the taxonomic status of this form remains uncertain pending a comprehensive study.

Holotype. M.4351 by original designation. Male, skull, study skin, collected by Jack Wills, presented by A. S. Le Souef, registered on 30 July 1928.

Condition. Cranium missing left upper 2nd and 3rd incisors; left dentary missing 3rd incisor; right dentary complete. Study skin missing scrotum, bald patch on the dorsal surface at the base of the tail, and bald patch on the hind left limb.

Type locality. Rawlinna, Trans-Australian Railway line, Western Australia.

Paratypes. (2, 1 by subsequent determination). **M.4639** by original designation. Female, skull, study skin, data as per holotype. **M.4640**, by subsequent determination. Young female, skull, study skin, both from Rawlinna, presented by A. S. Le Souef, and registered 12 August 1929.

Comments. Type series is an "adult pair and young female from Rawlinna" for which Troughton cites registration numbers for the holotype and allotype but not for the young female. It is likely that the young female is M.4640, registered at the same time as the adult paratype. Although M.4640 is not marked as a paratype in the register or on the specimen label, both the specimen label and skull box label has *Macrotis interjecta* written in red ink, and the specimen index card has been updated in Troughton's hand with "lagotis interjecta" in red ink, a colour usually reserved for labelling types.

Macrotis lagotis cambrica Troughton, 1932b

Aust. Zool. 7(3): 230. (15 September 1932).

Common name. Greater Bilby.

Current name. *Macrotis lagotis lagotis* (Reid, 1837), following Jackson & Groves (2015). Some modern authors recognize subspecies within *M. lagotis*, but the taxonomic status of this extinct form remains uncertain pending a comprehensive study.

Holotype. M.677 by original designation. Male adult, skull, skin mount (Figs 18–19), donated by Dr Machattie of Bathurst, registered 17 September 1891.

Condition. Cranium missing basioccipital; hole in left parietal, hole in right temporal bone; left dentary missing angular process, right dentary complete. Skin mount with bald patch around eyes, ear tips torn.

Type locality. Given as Bathurst, NSW in the original account but historical documents indicate that the holotype came from the Peak Hill district (32°44'S 148°11'E), NSW (Dr Mike R. Fleming, pers. comm., July 2015).

Paratypes. (17, 16 by subsequent determination), all from NSW. **A.18586** by original designation (allotype), young adult female, skull, skin mount, Coombie, [collected and] presented by Mr K. H. Bennett and Mr W. Adam, registered August 1883; **A.6643–44**, sex not recorded, both skulls, Mossgiel presented through Mr Broadrith, September 1879; **A.7977–78**, sex not recorded, both skulls and skeletons, both "Moolah", Mossgiel, presented by K. H. Bennett, registered January 1880; **S.420**, adult, sex not recorded, skull, Bourke, purchased in 1889 from R. L. King, registered May 1893; **S.507**, sex not recorded, skull and skeleton, 1 mile from Dubbo, donated by A. Wurfel, registered 9 August 1895; **S.616**, young adult, sex not recorded, skull and skeleton, Goulburn district, donated by J. J. Roberts, registered 20 August 1897; **S.662**, female, skull and skeleton, Groongal, Mr S. R. L. Learmonth, registered 15 September 1898; **S.707**, sex not recorded, skull, Gilgandra, presented by W. L. R. Gipps, registered 4 August 1899; **M.4** (not located in Collection), skin mount, Illaboo, presented by Mr W. Cowley, registered in June 1886 and sent to the AM Education Section in 1970; **M.1314**, female, skin mount, skull *in situ*, Narrandera, presented by F. Newby, registered July 1898; **M.1351**, male, skull, study skin, Groongal, south-west railway line, presented by Mr S. R. L. Learmonth, registered 15 September 1898; **M.1499**, male, skull, study skin, ?Bathurst district, but locality listed as "suspect" (definitely not from the Bathurst district, Dr Mike R. Fleming, pers. comm., July 2015), Dr S. H. MacCulloch, registered 10 April 1900; **M.1712**, male, skull, study skin, no locality, assumed to be NSW (marked as *cambrica* by Troughton on specimen index card), presented by Zoological Soc. of NSW, registered 4 August 1903; **M.1784**, male, skull, study skin, locality and presenter not recorded, assumed to be from NSW, Remarks column of Register states "Cold Storage", registered 5 October 1904; **M.1964**, male, skull, skin mount, Moree, presented by Hugh W. S. Christie, registered 5 June 1908.

Comments. In his original account, Troughton (1932b) states that the holotype came from Bathurst. A detailed historical review of locality data of all bilby specimens in the collection in progress by Dr Mike Fleming has revealed that the holotype definitely came from the Peak Hill district, considerably inland from Bathurst. His investigations could result in a revision of locality data for some of the specimens listed as paratypes here. Troughton gave registration numbers of the holotype and allotype but does not refer to paratypes in his original account. Troughton (1932b: 220) states that he had a series from NSW totaling "9 skins and sixteen crania for examination" and our tally matches that total. We regard the latter specimens as paratypes. The species trinomial on the specimen index card has been updated in red ink in Troughton's handwriting for the holotype and allotype, and for an additional eight specimens for which we have been able to locate original index cards. Troughton lists 13 localities for this taxon in the original description but an inspection of the register indicates that he would not have seen specimens from Grenfell or Wallendbeen, which were sent to other institutions in 1906 and 1909 respectively. A skin mount (M.4) from Illaboo listed above

Figure 18. AM M.677, holotype skin mount of *Macrotis lagotis cambrica* Troughton, 1932b. (Photography by Sally Cowan).

Figure 19. AM M.677, holotype skull of *Macrotis lagotis cambrica* Troughton, 1932b. (Photography by Stuart Humphreys).

and sent to the AM Education section in 1970, has not been located. It could be in the Mammal Collection but without its original registration number.

It seems that little, if any alcohol material of the extinct NSW populations of this taxon remains in the AM Collection and such material is possibly not part of Troughton's type series. AM.34063, two pouch young (missing back limbs and tails) were found in the collection and registered 14 January 1999 and the only data are "presented by H. K. Bennett". It is not known if the specimens were from NSW or if this is an error for Mr K. H. Bennett, stated by Troughton (1932b: 220) to be the property owner of "Moolah", Mossgiel, NSW, in the 1880s.

Order Diprotodontia

Family Phascolarctidae

Phascolarctos cinereus victor Troughton, 1935a

Aust. Naturalist. 9(6): 139. (September 1935).

Common name. Koala.

Current name. *Phascolarctos cinereus* (Goldfuss, 1817). Most recent authors assume that previously recognized subspecies of the koala represent clinal variation, see Jackson & Groves (2015). Neaves *et al.* (2016) did not find support for a Victorian subspecies.

Holotype. M.5732 by original designation. [Adult male], skull, study skin (Figs 20–21), from Victoria, presented by Noel Burnet, registered in September 1934. Collection date not recorded. Original wooden tag contains the word "Booral" but there is no entry for locality, either in the register, or on the holotype specimen index card.

Condition. Cranium missing both upper 2nd and 3rd incisors and 1st post-canine teeth, missing right upper canine, drilled wire holes in temporal bones and condyles; right dentary appears calcified (remodeled) underneath the last post-canine tooth. Study skin missing left top lip, ear tips torn (fur sparse around the ear tips).

Cranial measurements (mm). M.5732: GL, 159.34; ConL, 152.30; BasL, 144.83; NasL, 42.71; NasB, 43.36; UC1–C1 (alv.), 16.58; DIL, 24.80; APV, 5.63; PPV, 9.05; PAL, 77.63; UPM (alv.), 7.92; UMR (alv.), 28.09; ZB, 90.23; POC, 30.55; MB, 64.95; DL (angl.), 119.10; DL (condyl.), 116.78; LPM (alv.), 5.82; LMR (alv.), 33.11.

Type locality. We suggest that the type locality is Koala Sanctuary, French Island, Victoria. The type locality has generally been cited simply as Victoria, reflecting confusion about a more precise location. McKay (1988a) lists the type locality as "Booral", Victoria without further comment but presumably on the assumption that the label refers to a collecting locality. We have been unable to locate a place name of "Booral" in Victoria. Instead, we located evidence that Booral was the name of a captive male koala: "Booral and Burrendong" were a pair of koalas sent in early 1930 to Noel Burnet at Koala Park, Sydney, as a gift from the Victorian Government, from the French Island Sanctuary (Williams, 1931). The caption of a photograph of Noel Burnet, head of Koala Park, holding a koala states: "The photo shows the author with "Booral," the largest koala in the establishment" (Burnet, 1932: 29). That image shows a clear frontal view of the snout area and hirsute ears; cited as diagnostic criteria in Troughton's account. Further evidence derives from the etching titled "Booral (The Roue of Koala Park)" by artist Squire Morgan, dated c. 1932.

?Paratype. M.4841, male, skull, study skin, from French Island, Victoria, registered at the AM on 13 February 1930, received from South Australian Museum, previously SAM M.2443.

Comments. In his original description Troughton mentions two specimens only, "The holotype male, M.5732 in the

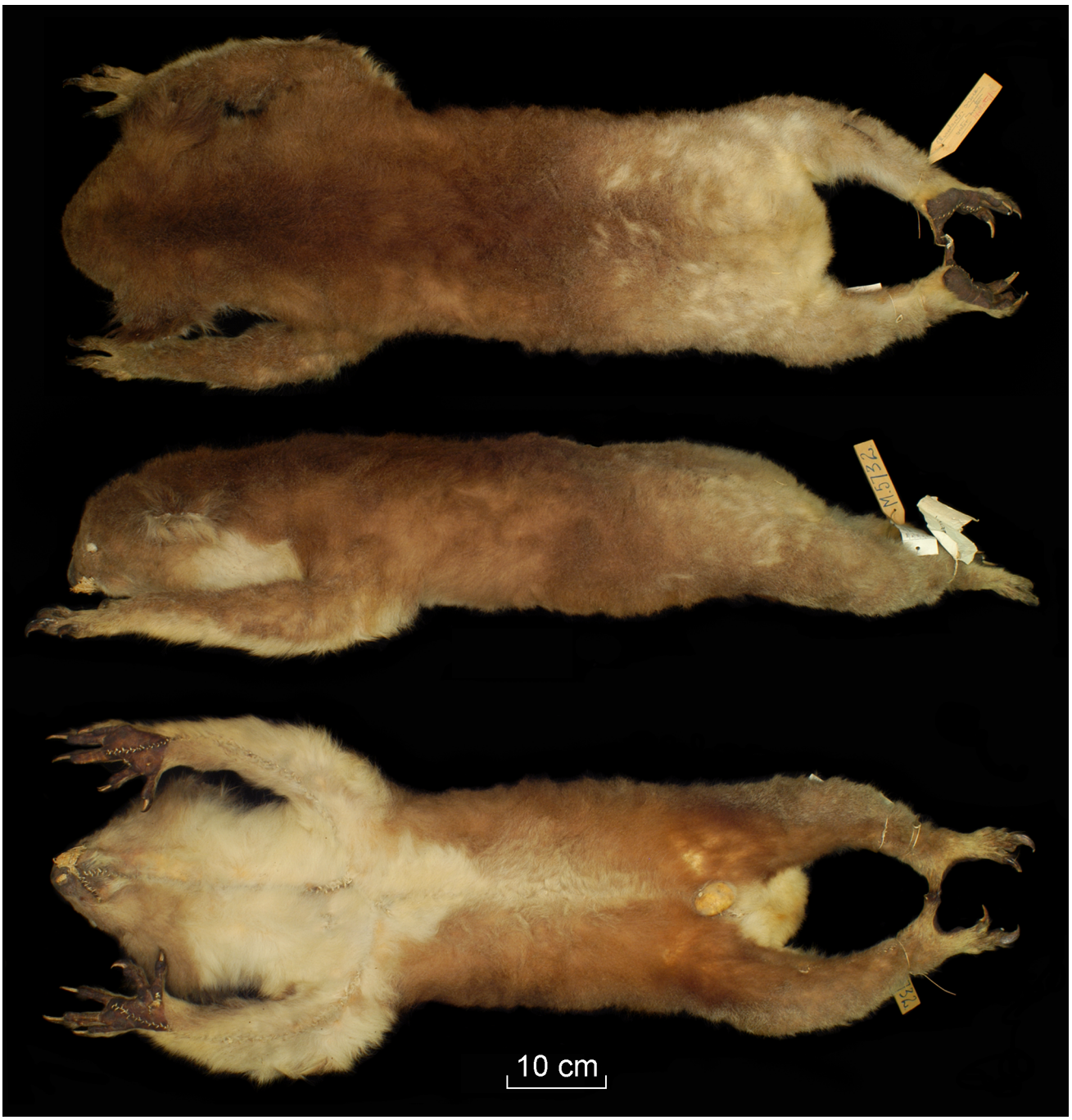

Figure 20. AM M.5732, holotype skin of *Phascolarctos cinereus victor* Troughton, 1935a. (Photography by Sally Cowan).

Museum collection, and a young male received from French Island in 1930 …". No specimen marked as paratype has been located in the collection but M.4841 is a likely candidate, despite the absence of any designation as such on its original skull and skin tags. Nevertheless, it is a young animal as indicated by an incompletely erupted M3 and small body size. Troughton did not give the sex or locality of the holotype and indicated that he was providing a preliminary diagnosis ahead of a more detailed account being prepared for "a popular work"—presumably his book (Troughton, 1941). It is possible that Troughton was unaware of the origin of the holotype sent to the AM from Burnet's Koala Park in Sydney; alternatively, he might have been aware that both specimens were from French Island and overlooked the ambiguity of his original statement.

Figure 21. AM M.5732, holotype skull of *Phascolarctos cinereus victor* Troughton, 1935a. (Photography by Stuart Humphreys).

Family Petauridae

Petaurus kohlsi Troughton, 1945

Rec. Aust. Mus. 21(6): 373. (25 June 1945).

Common name. Biak Glider.

Current name. *Petaurus biacensis* Ulmer, 1940; following Groves (2005d). Taxonomic status unclear. Although *kohlsi* is considered a junior synonym of *P. biacensis* by most authors, the status of the latter species and populations currently assigned to *P. breviceps*, require a detailed taxonomic revision (Helgen, 2007; Jackson, 2015).

Holotype. M.6998 by original designation. Female adult, [Field no. Owi Is. No. 11], skull, study skin, collected by Lt.-Col. C. B. Philip and Major G. M. Kohls, collection date not given, registered 26 September 1944.

Condition. Cranium missing section of right zygomatic arch, left zygomatic arch detached, missing upper 2nd post-canine teeth. Both dentaries complete. Study skin complete.

Type locality. Owi Island, Schouten Island Group, Cenderawasih (formerly Geelvink) Bay, Papua Province, Indonesia.

Comments. Apparently based on a single specimen. The holotype is a female with a developed pouch, although Troughton variously refers to the holotype as male and female in his original description. Photographs of the holotype skull are given by Flannery (1995c).

Family Pseudocheiridae

Petaurides cinereus Ramsay, 1890a

Rec. Aust. Mus. 1(4): 77. (30 September 1890).

Common name. Northern Greater Glider.

Current name. *Petauroides minor* (Collett, 1887), following Jackson & Groves (2015), who elevated *minor* to species rank.

Syntypes. (2, by subsequent determination). **M.362**, adult, sex indeterminate from skin but given as male in old, handwritten type specimen index card, skin mount, label with skin states "?skull", skull not sighted. An X-ray image of the specimen taken in 2013 revealed that the skull is not in the skin. **M.363**, female adult, skin mount, skull *in situ*, both registered in August 1889, both marked as "Belideus sp nov." and amended in pencil: "types of cinereus Ramsay", collected by E. J. Cairn and R. Grant. Both specimens collected in 1889 (Ramsay 1890a). The old specimen index card has one card for both specimens and states "M.362–3 (Group of 2), male, female", indicating that originally both skin mounts were displayed as a group. The original M Register entry of August 1889 for both specimens is "Belidius sp. nov." with no other data.

Condition. **M.362** and **M.363**: both skin mounts with faded fur, wire is protruding through both manus and pes on both mounts.

Type locality. "One of the spurs of the Bellenden Ker Range, North Queensland" Ramsay (1890a). The locality column of the M Register has in old handwriting "Herberton

Distr. Queensland fide Grant" against both numbers, added subsequent to the initial register entry.

Comments. Ramsay (1890a) states that two specimens were obtained but he did not cite registration numbers. He described a male specimen, giving external and cranial measurements, which is presumably M.362, but no information is given for the second specimen. We have not found any indication of the whereabouts of Ramsay's male skull, or any indication that it is in the AM Mammal Collection. McKay (1988b) designated M.12809, cranium and dentaries only, as a lectotype. A very old label in the M.12809 skull box reads "Petauroides cinereus sp nov. skull from type of the sp" on one side and on the other "Belideus (Petaurus) cinerea large grey one Cairn and Grant". Despite these indications, the skull has been identified morphologically and by DNA sequencing as a specimen of *Pseudocheirus peregrinus* (K. Aplin, pers. comm. 2013), thereby invalidating lectotype status. The systematics of *Petauroides volans* (Kerr, 1792) and associated taxa are currently under investigation (K. Aplin pers. comm.) and designation of a lectotype is premature.

Pseudochirus cooki bassianus Le Souef, 1929

Aust. Zool. 5(4): 330. (24 March 1929).

Common name. Eastern Ring-tailed Possum.

Current name. *Pseudocheirus peregrinus convolutor* (Schinz, 1821), following Jackson & Groves (2015).

Holotype. M.4450 by original designation. Male, skull, study skin, presented by A. S. Le Souef, registered November 1928, "Flinders Island, Bass Strait", collection date not provided.

Condition. Cranium, dentaries and study skin complete and in good condition. Cranium missing tip of right paroccipital process; right dentary missing anterior part of the crown of the last molar. Study skin has bald patch on the snout and two bald patches on the ventral surface, and missing tail tip.

Type locality. Flinders Island, Bass Strait, Tasmania, Australia. A more precise location was not provided.

Paratypes. (2, 1 by subsequent determination). **M.4449** by original designation. Female (allotype), skull, study skin, details as per holotype. **M.4397** by subsequent determination, male, skull, study skin, Lady Barren, Flinders Island, Bass Strait, presented by A. S. Le Souef, registered September 1928.

Comments. Le Souef states that the description is based on two males and a female from Flinders Island collected in 1928. He cited registration numbers for the holotype and allotype but not for one of the two males; this specimen is marked as a paratype in the register.

Pseudochirus dahlii Collett, 1895

Zool. Anz. 18: 464, table 1. (2 December 1895).

Common name. Rock Ring-tailed Possum.

Current name. *Petropseudes dahlii* (Collett, 1895), following Jackson & Groves (2015).

Syntype. M.1247, by subsequent determination, as specimen "C" of the original series. Male, skin mount with extracted skull, "Arnheim Land, N.A.", received in exchange from Robert Collett, register indicates "gallery mount" and "broken skull", registered in December 1897. Old cardboard tag is labelled "1213 Phalanigista Mary River 14.5.95". The skull was dissociated from the skin mount at the AM and re-registered as M.13593 in August 1985. The cranium and dentaries both have "1213" inscribed in ink. The skull also has "C" inscribed in ink.

Condition. Incomplete cranium, missing left half of braincase and part of left zygomatic arch. Skin mount: faded, bald patch on the anterior surface of the hind left limb, bald patch on the dorsal surface of the head, bald patch on the posterior surface of the hind right limb.

Type locality. Mary River, northern Australia (= Northern Territory), given as 13°30'S 131°30'E by Collett (1895).

Comments. Type series stated in the original description to be one male, five adult females and one juvenile female. Skull measurements are given for six, designated as specimens A to F, but without registration or field numbers. Collett states that the specimens were collected from the Mary River in May 1895 by Knut Dahl. The AM syntype is specimen C, the only male syntype according to the original description, but Wigg & Bachmann (2013) list the syntype series as two males and five females. The other six syntypes are in the BMNH, MV, NHMO and RMNH (Wiig & Bachmann, 2013).

Pseudochirus herbertensis colletti Waite, 1899

Rec. Aust. Mus. 3(5): 92. (17 April 1899).

Common name. Herbert River Ring-tailed Possum.

Current name. *Pseudochirulus herbertensis* (Collett, 1884), following Jackson & Groves (2015).

Lectotype. M.436, lectotype designation by McKay (1988b). Female, skull, study skin, collected by Robert Grant. Registered in AM during December 1889, originally as a skin with skull *in situ*. Original entry gives locality as "Herberton district Qld" and collected by "Cairn and Grant".

Condition. Cranium missing tips of both paroccipital processes, fracture in the right nasal bone. Both dentaries complete. Study skin: tear in left side of the snout, skin is almost flat with little stuffing.

Cranial measurements (mm). M.436: GL, 63.40*; NasL, —; NasB, 8.60; UC1–C1 (alv.), 10.61; DIL, 9.47; PAL, 36.55; UPM (alv.), 3.15; UMR (alv.), 14.73; ZB, 35.06; POC, 7.08; BUL, 8.78; MB, 29.10; DL (angl.), 44.63; DL (condyl.), 44.05; LPM (alv.), 3.23; LMR (alv.), 15.43. [* = estimated; occipital incomplete].

Type locality. "Boar Pocket" Herberton district, Qld, Australia.

Paralectotypes. (3, by subsequent determination). All from Herberton district, Qld, collected by Cairn and Grant, all registered in December 1889: **M.437**, indeterminate sex, skull, study skin; **M.442**, immature male, study skin, no skull; **M.444**, indeterminate sex, skull, study skin.

?Paralectotype. M.19611 (no associated numbers), cranium and both dentaries, locality not given with skull, registered on 19 October 1988.

Comments. Waite's description was based on five or six specimens. He included external measurements of five specimens (which he designated A to E) and skull and dental measurements for one individual, without indicating sex or registration numbers or designating a holotype. The above four were registered in December 1889 and subsequently marked "co-type var. colletti, Waite" in the register (in what could be Troughton's hand) but they are not indicated as such on the old specimen labels. The registration number of one of Waite's syntypes is not known and the specimen has not been located. It might be the unregistered adult cranium and dentaries found in the collection and registered as M.19611 in October 1988 but the only associated information was an old paper tag with "Pseudochirus n. sp" and what appears to be "measured" written in pencil, but no locality or collector given. The dimensions of the specimen are a close match with the measurements provided by Waite.

Pseudochirus mongan De Vis, 1887

Proc. Linn. Soc. N.S.W. (ser. 2) 1(4): 1130. (22 February 1887).

Common name. Herbert River Ring-tailed Possum.

Current name. *Pseudochirulus herbertensis* (Collett, 1884), following Jackson & Groves (2015).

Lectotype. M.1032, lectotype designation by McKay (1988b). Female adult, skull (Fig. 22), study skin, exchanged from C. W. De Vis and registered on 15 January 1896.

Condition. Cranium missing most of both alisphenoid bullae; missing posterior of palate; missing paroccipital processes, damage to posterior end of right zygomatic arch; a hole in anterolateral braincase wall on each side; right dentary missing tip of coronoid process, left dentary complete. Study skin complete and in reasonable condition.

Cranial measurements (mm). M.1032: GL, 67.35; ConL, 67.35; BasL, 64.31; NasL, 23.77* (nasal tips missing); NasB, 10.69; UC1–C1 (alv.), 12.38; DIL, 10.71; APV, 6.88; PPV, —; PAL, —; UPM (alv.), 3.13; UMR (alv.), 14.07; ZB, 38.91; POC, 8.81; BUL, —; MB, 31.56* (bone porous and eroded); DL (angl.), 46.65; DL (condyl.), 45.46; LPM (alv.), 3.08; LMR (alv.), 14.60. [* = estimated].

Type locality. Herbert Gorge near Herberton, Qld, Australia.

Paralectotype. M.1031, by subsequent determination. Male, skull, study skin, locality and registration details as per M.1032 and cited in the register as "co-type".

Comments. De Vis does not indicate the number of specimens in the type series, which included skins of both sex, and at least one skull. Two paralectotypes are in the QM.

Pseudochirus rubidus Troughton & Le Souef, 1929a

Rec. Aust. Mus. 17(6): 294, fig. 1, plate xlv. (28 November 1929).

Common name. Eastern Ring-tailed Possum.

Current name. *Pseudocheirus peregrinus peregrinus* (Boddaert, 1785), following Jackson & Groves (2015), who note that *Pseudocheirus peregrinus* needs taxonomic revision.

Figure 22. AM M.1032, lectotype skull of *Pseudochirus mongan* De Vis, 1887. (Photography by Sally Cowan).

Holotype. M.2791 by original designation. Female adult, skull, study skin, collected by Mr Fred Morse, on 1 October 1919; registered 26 November 1919.

Condition. Cranium: missing both 2nd upper incisors, both 1st upper post-canine teeth, last left upper molar (as per fig. 1 of original description), missing right tip of paroccipital process, small section missing from left zygomatic arch (as per fig. 1 of original description); left dentary missing first incisor; both dentaries missing lower incisors; left dentary missing tip of coronoid process. Study skin in good condition, torn right ear tip.

Type locality. From "a little north of Mount Mowbullan, at 3,000 feet" (Troughton), Bunya Mountains, south eastern Qld, Australia.

Comments. Based on one specimen.

Family Phalangeridae

Cuscus chrysorrhous var. *goldiei* Ramsay, 1877d [not 1876]

Proc. Linn. Soc. N.S.W. (ser. 1) 1(4): 395. (March 1877).

Common name. Spotted Cuscus.

Current name. *Spilocuscus maculatus goldiei* (Ramsay, 1877d), following Groves (2005d). Helgen & Flannery (2004) suggest that this and other taxa currently recognized as subspecies of *S. maculatus* (É. Geoffroy, 1803a), are likely to represent full allopatric species.

?Syntype. PA.543, adult female, skin mount without skull, entered in the Palmer Register by Palmer in c. 1878 as *"Cuscus chrysorrhous*", "f" [= female], "Port Moresby" obtained from "Gouldie" [= Andrew Goldie]. The original metal Palmer tag is attached with old wire to the right wrist.

Condition. Skin mount, missing both ears, fur colour faded.

Type locality. Port Moresby region, Central Province, Papua New Guinea.

Comments. Ramsay's original description is based on fur colour and a few body measurements, the latter given for one specimen only. However, he clearly states that his description was based on two adult females obtained from Andrew Goldie during the previous year. Ramsay does not specify the collecting locality of these two specimens, but it is implied to be the Port Moresby region from which Goldie's bird collection was "chiefly obtained". Further, he merely states that he was permitted to examine Goldie's material, and does not indicate whether the AM obtained the two adult females.

An X-ray image of the skin mount PA.543 taken in 2013 revealed that it did not contain cranium or dentaries. It is not known whether the skin mount had a skull when originally received at the AM. Ramsay does not mention skull or dental characters of this entity in either his original or subsequent publications. Body measurements given by Ramsay compared to those of PA.543 (in brackets) are: head length 4 inches = 102 mm (vs. c. 100–110 mm); head-body length, 26.5 inches = 673 mm (vs. c. 480 mm) and tail length 17 inches = 432 mm (vs. c. 320 mm). Our measurements were taken along the dorsal median surface of the stuffed skin and are necessarily approximate but it is evident that PA.543 is a much smaller animal than the one measured by Ramsay. PA.543 might, however, be the second of the two specimens used by Ramsay in his description.

We have not found any indication in the taxonomic literature that Ramsay's original material has been reexamined. Further, the authority that identified this specimen as a possible type in the AM database is not recorded, though it appears to have been done during Tim Flannery's employment by the AM and possibly derived from unpublished work by J. Mahoney (T. Flannery, pers. comm. October 2016). The AM database states that AM Archives documentation supports this specimen as being a likely syntype but we have not yet identified the relevant document. The original entry in Palmer's hand for PA.543 is "*Cuscus chrysorrhous*, F [= female], Port Moresby, Gouldie" against which is stamped "Gallery", indicating a skin mount. There is no subsequent entry indicating that it was considered to be a type. We have not yet been able to determine the fate of the skull of PA.543, nor have we found an entry in the Palmer Register that might be the other female specimen mentioned by Ramsay.

The Palmer Register entry of "Gouldie" against PA.543 is significant. It is most likely an incorrect spelling of Andrew Goldie as Ramsay consistently misspelt Goldie's name in this way during the early phase of their relationship (e.g., see Ramsay 1876a: 164, published in July); an entry in the A Register for December 1876 is the first correctly spelt entry for Goldie that we have found and all subsequent entries correctly spell his surname. If Palmer directly copied information from specimen labels into the register, it suggests that PA.543 was from the first collections received from Goldie during 1876, and not from subsequent material of this taxon obtained during Goldie's second exploration of New Guinea during 1877–78, from which further specimens of this taxon were reported by Ramsay (1879b).

The year of publication is entrenched in the literature as 1876, however Fletcher (1896) gives the publication date of part 4 of vol. 1 as March 1877.

Phalanger alexandrae Flannery & Boeadi, 1995

Aust. Mammal. 18(1): 42, figs 2d, 3d, table 1. (21 December 1995).

Common name. Gebe Cuscus.

Current name. *Phalanger alexandrae* Flannery & Boeadi, 1995; following Groves (2005d).

Holotype. M.27005 by original designation. Male adult, [Field no. FQ658], skull, study skin, collected on 2 December 1991 by T. F. Flannery and Boeadi; registered 29 June 1992. Shot using bow and arrow by an Irian hunter.

Condition. Complete cranium and dentaries; soft palate retained on skull. Study skin complete in good condition; hole in skin on left side of throat, bald patch on the dorsal surface of the neck.

Type locality. Kebun ("garden"), near airport 0°05'S 129°25'E, Gebe Island, North Moluccas, North Maluku Province, Indonesia.

Paratypes. (3, by original designation): all collected by T. F. Flannery and Boeadi: **M.25417**, juvenile female, body

in alc., Sawmill Village, Gebe Island (0°05'S 129°25'E), North Moluccas, Indonesia, collected 3 December 1991. **M.27006**, subadult male, skull, study skin, same details as holotype. **M.27008**, subadult male, skull, study skin, near Aneka Tambang HQ, Gebe Is, Moluccas (0°05'S 129°25'E), Indonesia, collected 3 December 1991.

Comments. Type series of four specimens. Photographs of the holotype skull are given in the original account but also by Flannery (1995c), as *Phalanger* sp.

Phalanger ornatus matabiru Flannery & Boeadi, 1995

Aust. Mammal. 18(1): 40, figs 2c, 3b; table 1. (21 December 1995).

Common name. Blue-eyed Cuscus.

Current name. *Phalanger ornatus matabiru* Flannery & Boeadi, 1995. Groves (2005d) considered that the morphological differences warranted full species status; treated as a subspecies of *P. ornatus* (Gray, 1860) by Helgen & Jackson (2015).

Holotype. M.23555 by original designation. Male adult, [Field no. FO236], skull (Fig. 23), study skin, collected by T. F. Flannery and Boeadi, on 9 January 1991; registered 10 April 1991.

Condition. Cranium and dentaries complete, skin retained on the palate. Study skin complete and in good condition.

Type locality. Original account states "Collected near Ayr (Creek) Tege Tege Village 0°50'N 127°20'E, elevation 400 m", Ternate Island, North Moluccas, North Maluku Province, Indonesia. Although latitude 0°50'N is given in the original description, 0°48'N given in Tim Flannery's field note book appears to be more applicable. The holotype was collected from an area called "Ayr Tege Tege", upslope from Ternate and not from a village (Tim Flannery, pers. comm. October 2015).

Paratypes. (3, by original designation): **M.23532**, subadult male; **M.23533**, adult female and **M.23534**, adult male: all study skins and skulls, same locality and collection dates as holotype.

Comments. Type series of four specimens.

Phalanger matanim Flannery, 1987

Rec. Aust. Mus. 39(4): 184, figs 2–4, table 1. (30 September 1987).

Common name. Telefomin Cuscus.

Current name. *Phalanger matanim* Flannery, 1987; following Groves (2005d).

Holotype. M.14186 by original designation. Male subadult, [Field no. FA199], skull, study skin, Collected by T. Flannery, 1 April 1986; registered 1 July 1986.

Condition. Whole cranium and dentaries; skin retained on palate. Study skin in good condition, missing scrotum, skin perforations on ventral side at base of front left limb.

Figure 23. AM M.23555, holotype skull of *Phalanger ornatus matabiru* Flannery & Boeadi, 1995. (Photography by Stuart Humphreys).

Type locality. Upper Sol River Valley, Telefomin area, West Sepik Province, Papua New Guinea, 5°06'S 141°42'E, alt. 2,600 m.

Paratype. M.14702 by original designation. Male adult, skull, study skin, collected by T. Flannery, Nong River Valley, 5°11'S 141°35'E, alt. 1,550 m, 9 July 1985.

Comments. Three specimens in type series, one paratype evidently in the PNGM.

Phalangista johnstonii Ramsay, 1888a

Proc. Linn. Soc. N.S.W. (ser. 2) 3(3): 1297. (7 December 1888).

Common name. Coppery Brush-tailed Possum.

Current name. *Trichosurus vulpecula johnstonii* (Ramsay, 1888a), following Jackson & Groves (2015), who indicate the need for further investigation. Either regarded as a subspecies (e.g., Kerle & Howe, 2008), or as a full species (e.g., Flannery, 1994; Groves, 2005d; Helgen & Jackson, 2015).

Lectotype. M.120, designated by McKay (1988c). Male adult, study skin with skull *in situ*, collected by Cairn and Grant, registered February 1888. Collection date of January 1888 stated on hand written specimen index card, probably written in early 20th century. X-ray images taken of the skin in 2013 reveal a complete cranium and dentaries.

Condition. Study skin is almost flat without stuffing, in reasonable condition.

Type locality. Atherton Tableland–Bellenden Ker Range region, North Qld, Australia.

Paralectotypes. (6). All are study skins prepared in the field without stuffing, collected by Cairn and Grant, Bellenden Ker Range: **M.115**, male adult, skin, no skull; **M.116**, male adult, skin, skull *in situ*; **M.117**, male adult, skin, skull *in situ*; **M.118**, sex indeterminate from skin but given as female on old specimen index card, skin with skull *in situ*; **M.121**, sex indeterminate from skin but given as male on old specimen index card, skin, skull *in situ*; and **M.122**, indeterminate sex, skin, skull *in situ*. An additional specimen collected at the same time (**M.119**, skin mount, sex not recorded), was not located in the collection in 2013. A note against M.119 in the M Register dated 1926 states "appears to be missing".

Comments. Ramsay did not indicate the number of specimens in the type series in his original account, but later he listed (Ramsay, 1888b: 30) "7 Phalangista johnstonei [sic], (Ramsay) sp. nov." and "1 Phalangista sp. (*nov. juv*)" as dry skins obtained by Cairn and Grant (no spirit specimens of this taxon are listed). Date of collection is not recorded, but in his description, Ramsay states that Cairn and Grant obtained the material in the "previous January" (= 1888?). We have not found a published account of the registration numbers of the type series. The register of Feb. 1888 lists eight specimens, (M.115–122, all skins) all collected by Cairn and Grant from "Bellunder Kerr Queensland" and we believe all are likely paralectotypes. M.115 to M.120 are listed as *Phalangista johnstonii*, with "type" written later in pencil against M.115 and M.120. Species is given as *Phalangista* sp nov. for M.121, which was subsequently amended to "*T. johnstonii*". M.122 is listed as *Phalangista "lemuroides"* in pen, later in pencil changed to *T. johnstonii* and "type" also added in pencil. Ramsay provides extensive cranial and dental measurements for a single skull, which could only have been taken on an extracted skull, but its whereabouts is unknown. Ramsay also gave a short description of pelage colour but did not indicate the sex of the specimen upon which his description is based. All surviving skulls from the type series remain inside the skins.

McKay (1988c: 85) cites the type locality as "probably Atherton Tableland (as Bellenden Kerr Range)". Ramsay does not mention the collecting locality of the type series, but indicates in the introduction to his original account, that Cairn and Grant had returned from a trip "to the table lands of the Bellenden-Kerr Ranges" and in the paper provides a list of mammals "inhabiting the Brushes of the slopes and tableland of the range of mountains known as Bellenden Kerr". Consequently, the type series was likely to have been collected from the Atherton Tablelands or the slopes of Bellenden Kerr Ranges, or both.

Trichosurus caninus nigrans Le Souef, 1916

Aust. Zool. 1: 64, fig. 1. (13 March 1916).

Common name. Short-eared Brush-tailed Possum.

Current name. *Trichosurus caninus* (W. Ogilby, 1836), following Jackson & Groves (2015).

Holotype. M.2301 by subsequent determination. Adult male, skull (Fig. 24), study skin, collector not given, presented by Council, Zoological Society of NSW, registered June 1913, marked in register as "*Trichosurus caninus*, var. *nigrans* Le S., type of var.", locality given as "Tweed River".

Condition. Cranium in good condition; missing right pterygoid process, wire holes drilled through both condyles and in both glenoid fossae. Study skin complete and in good condition.

Type locality. Tweed River, northeastern NSW, Australia.

Paratypes. (2, by subsequent designation): **M.2557** and **M.2558**, both male, study skins and skulls. Both bear labels with "var. nigrans" "Tweed district" and were registered in May 1915, after receipt from the Council, Zoological Society of NSW. Neither specimen is labelled with type indication or collector details.

Comments. In describing this taxon, Le Souef (1916) does not indicate the number of specimens examined but he states that "the type" is in the AM, thereby implying a holotype, but without citing a specimen registration number. He also refers to "skins" that had previously been preserved in alcohol, as being referable to his proposed subspecies without indicating whether he regarded them to be part of the type series. The type locality is not indicated in the original account, but the distribution is given as "heavy coastal scrubs in north-eastern NSW and southern Queensland." The study, as a whole, including other forms of *Trichosurus*, is stated to be based on a large series of specimens. Neither of the specimens we believe to be paratypes are labelled as such, either on specimen labels or in the M Register, but all were received from the Council of the Zoological Society, i.e. Taronga Zoo of which Le Souef was the Director, and presumably would have been seen by him.

Figure 24. AM M.2301, holotype skull of *Trichosurus caninus nigrans* Le Souef, 1916. (Photography by Sally Cowan).

Trichosurus cunninghami Lindenmayer, Dubach & Viggers, 2002

Aust. J. Zool. 50(4): 385, fig. 8. (14 November 2002).

Common name. Mountain Brush-tailed Possum.

Current name. *Trichosurus cunninghami* Lindenmayer, Dubach & Viggers, 2002; following Jackson & Groves (2015). Helgen & Jackson (2015) treat this entity as a full species but suggest that subspecific status within *T. caninus* might be more appropriate in view of slight genetic and morphological differences.

Holotype. M.35866 by original designation. Female adult, Field no. 1, skull (Fig. 25), study skin, skinned body in alc., frozen tissue; collected by David Lindenmayer on 18 March 2002; registered 18 April 2002.

Condition. Cranium missing rear margin of palate, otherwise complete. Both dentaries complete. Study skin in good condition, missing left ear tip (probably removed for DNA analysis).

Cranial measurements (mm). M.35866: GL, 86.14; ConL, 84.17; BasL, 79.17; NasL, 33.87; NasB, 12.65; UC1–C1 (alv.), 15.76; DIL, 14.40; APV, 6.52; UPM (alv.), 5.85; UMR (alv.), 18.46; ZB, 53.13; POC, 9.02; MB, 42.81; DL (condyl.), 64.56; LPM (alv.), 5.63; LMR (alv.), 21.17.

Type locality. Tommy's Bend Rd, 37°30'S 145°49'E, alt. 900 m, Cambarville region, Victoria, Australia. ["200 m from Yarra Tk from Marysville-Woods Point Rd"].

Paratypes. (4, by original designation): all captured in cage traps [on Big Tree walking track] in Cumberland Creek area 37°33'S 145°53'E, alt. 800 m, Cambarville, Victoria, same date and collector as holotype, frozen tissues for all four: **M.35867**, male, skull, study skin, skinned body in alc.; **M.35868**, female, body in alc.; **M.35869**, female, body in alc.; **M.35870**, female, body in alc.

Comments. A total of four paratypes are indicated in the description but registration numbers are inadvertently given for five: M.35871 cited in the paper should be M.35870 as no specimen is registered for this species with the number M.35871.

Trichosurus vulpecula raui Finlayson, 1963

Trans. R. Soc. S. Aust. 87: 18, tables 1–2. (December 1963).

Common name. Common Brush-tailed Possum.

Current name. *Trichosurus vulpecula vulpecula* (Kerr, 1792), following Jackson & Groves (2015).

Paratypes. (2, by subsequent determination): **M.4839** (formerly SAM M2515), male; **M.4840** (formerly SAM M2525), female, both study skins and skulls, collected by H. H. Finlayson and F. J. Rau in August 1928 from Rocky River, Flinders Island, South Australia, received from South Australian Museum in 1930.

Comments. Although the two AM specimens were sent from SAM three decades before publication of Finlayson's paper, they evidently form part of the original series of 30 specimens he referred to in his description. Aitken (1976) states that two paratypes were sent to the AM: SAM M.2515, male and SAM

Figure 25. AM M.35866, holotype skull of *Trichosurus cunninghami* Lindenmayer *et al.*, 2002. (Photography by Stuart Humphreys).

M.2525, female, both skins and skulls, with same collection data and locality as the holotype (SAM M.2518) given in the South Australian Museum register. Finlayson cites the registration number of the holotype only, in his account.

Family Hypsiprymnodontidae

Hypsiprymnodon moschatus Ramsay, 1875

Sydney Morning Herald LXXII (11,659): 2, col. 4. (1 October 1875).

Common name. Musky Rat-kangaroo.

Current name. *Hypsiprymnodon moschatus* Ramsay, 1875. Although this species is usually attributed to Ramsay (1876c), published in February, his detailed newspaper account takes precedence.

Syntypes. (2, by subsequent determination). Both entered in Palmer Register c. 1879, donated by E. P. Ramsay, collected from "Cardwell", "mounted", PA.1135 entered as "type of species", no other data. **PA.1135**, male, skin mount, no skull. Small cardboard tag tied to right pes has "3" printed. An X-ray image taken in 2013 confirmed that neither cranium nor dentaries are in the skin mount. **PA.1136**, female, skin mount, skull *in situ*. In his original account Ramsay (1875) implies that his material was obtained by K. Broadbent. Neither skin mount has original Ramsay era tags.

Condition. **PA.1135**, skin mount, both ear tips are torn, feet have remnants of glue, skin tear in the left front limb, scrotum almost detached. **PA.1136**, skin mount, both ear tips are torn, feet have remnants of glue, bald patch near elbow of both front limbs, bald patch on anterior side of both back limbs.

Type locality. Rockingham Bay area, Cardwell (Ramsay), Qld, Australia.

Comments. In his original description, Ramsay cites both cranial and external characters but does not give any measurements nor indicate the total number of specimens upon which he founded the species. He states that "the posterior and basal portions of the skull have been cut away" but the fate of the skull is not known nor is it known with which specimen it is associated. The skull has been extracted from skin PA.1135 at an unknown date. The specimen index card for that specimen, written early in the 20th century, indicates the skull is in the skin although the possibility that this was a misjudgment cannot be excluded. Cranial or dental measurements were not given by Ramsay, hindering efforts to determine if the skull is amongst material in the AM Collection. Ramsay (1875; 1876c) mentions that he obtained several specimens, without indicating how many. It is likely that only two were lodged in the AM Collection. The A Register entry for April 1875, before numbers were assigned to specimens, lists "2 skins of a new species and genus of marsupial rat Hypsiprymnodon moschatus" from E. P. Ramsay. Perhaps Ramsay retained one or more additional specimens for his private collection. He later stated (Ramsay, 1888a: 1296) that he had obtained five specimens of this species in 1874, and a further two by 1888. Two specimens, evidently the latter two, were registered in the AM in 1881 (A.9813 from Cardwell) and February 1888 (M.154, from "Queensland") and these are the only specimens on the AM database that were obtained prior to 1890 other than the two

syntypes. In his original description Ramsay describes fur colour of "the young" and stated that a half grown animal was shot by Broadbent in March 1874 but that specimen has not been accounted for since. Owen (1877) based his *Pleopus* on a male and female received from Ramsay, and Thomas (1888a) indicates that a male and female purchased from the AM are cotypes of *Pleopus* and lists both as skins and skulls. It therefore appears that the type series was at least five specimens, of which only two appear to have been registered in the AM. A skin mount from Rockingham Bay labelled "type" in the MMUS (M.458) is possibly one of Ramsay's syntypes but has not been verified because collector or year of collection is not recorded.

Family Potoroidae

Potorous tridactylus benormi Courtney, 1963a

Aust. Aviculture 17 (2): 19. (February) and 17 (6): 92. (June 1963).

Common name. Long-nosed Potoroo.

Current name. *Potorous tridactylus apicalis* (Gould, 1851), following Eldridge & Frankham (2015).

Holotype. M.8319 by original designation. Male, skull (Fig. 26), study skin, skinned body in alc., collected on 3 September 1962, by B. C. Heddle, donated by John Courtney. Died in captivity on 10 February 1963, registered 21 February 1963.

Condition. Cranium and both dentaries complete. Whole study skin with scrotum. Testes in alc.

Cranial measurements (mm). M.8319: GL, 81.37; ConL, 76.12; BasL, 70.97; NasL, 36.04; NasB, 7.22; UC1–C1 (alv.), 10.37; DIL, 14.04; APV, —; PPV, —; PAL, —; UPM (alv.), 5.61; UMR (alv.), 15.75; ZB, 39.37; POC, 15.8; BUL, 8.49; MB, 28.09; DL (condyl.), 49.51; LPM (alv.), 5.01; LMR (alv.), 15.45.

Type locality. Camp Creek, ½ mile north of Currie, King Island, Bass Strait, Tasmania Australia.

Paratype. M.8373 by original designation. Female, skull, study skin, same details as holotype. Died in captivity on 8 March 1963, registered August 1963.

Comments. Description based on two specimens. The initial description published in February (Courtney, 1963b), was corrected and extended (Courtney, 1963a). Subspecies of *P. tridactylus* were examined in the gene sequencing study of Frankham *et al.* (2012). Subsequent analysis of mitochondrial DNA indicates that the King Island population groups with the Tasmanian lineage (G. Frankham, pers. comm. July 2015).

Figure 26. AM M.8319, holotype skull of *Potorous tridactylus benormi* Courtney, 1963a. (Photography by Stuart Humphreys).

Family Macropodidae

Conoyces hageni eitape Troughton, 1937a

Rec. Aust. Mus. 20(2): 117. (27 August 1937).

Common name. White-striped Dorcopsis.

Current name. *Dorcopsis hageni* Heller, 1897; following Groves (2005d).

Holotype. M.6211 by original designation. Male adult, study skin, skull and skeleton, body originally in alc. "with trunk removed" (Troughton, 1937a: 118), collected during 1936 by Mr A. J. Marshall; registered September 1936.

Condition. Cranium is extensively damaged, with numerous small bone fragments and most of the teeth retained in the skull box. Detached from the cranium are: most of the rostrum, the entire area of the right tooth row; posterior ends of both zygomatic arches; the floor and most of the right side of the braincase. Both dentaries are broken in two near the premolars: left dentary missing coronoid process, right dentary has detached coronoid and condylar processes. Whole study skin: small holes on the dorsal side of the snout, multiple small holes on the ventral surface, some holes (stitched up) on the limbs, sparse fur on the ventral side. Although labelled "adult", it is likely to be a younger animal based on unerupted permanent premolars

Type locality. "Eitape" [= Aitape] district, [West] Sepik Province, Papua New Guinea.

Paratype. M.6098 by original designation. Subadult female, skull, study skin, same locality and collector as holotype, registered in May 1936.

Comments. Registration numbers of holotype and one paratype indicated by Troughton, but the number of specimens in type series was not given. The smashed skull is not mentioned in the original description but the limited cranial and dental dimensions given in Troughton's account are consistent with the current damaged state of the cranium. An additional specimen listed in the register, M.6212, female with juvenile, from the type locality and registered in September 1936, is possibly a paratype but the specimen has not been located during this study or sighted in recent inventories. Troughton gives the type locality as "Eitape, Territory of New Guinea", which appears to be an initial alternate spelling, as the register entry of the locality for both the holotype and paratype M.6098 is "Aitape, Sepik Division, Territory of New Guinea".

Dendrolagus deltae Troughton & Le Souef, 1936a

Aust. Zool. 8(3): 195. (29 June 1936).

Common name. Huon Tree-kangaroo.

Current name. *Dendrolagus matschiei* Förster & Rothschild, 1907; following Groves (2005d).

Holotype. M.5418 by original designation. Male, skull, study skin, no locality data entered in M Register, presented by Taronga Zoo Trust, registered 4 December 1933.

Condition. Cranium missing both upper canines, the deformed third upper left incisor has overgrown the socket of the missing 2nd upper incisor; cranium in good condition. Both dentaries complete. Whole study skin complete and in good condition. Deformed and overgrown nail of digit 5 of right pes.

Type locality. "Region of Mt Pratt, in the north-eastern area of the Delta Division of Papua" (Troughton & Le Souef, 1936a: 195). Locality data considered erroneous by Kirsch & Calaby (1977). Groves (1982) also rejected Mt Pratt as the origin of the type material, which he believed came from the Huon Peninsula. Helgen *et al.* (2011: 250) discussed this entity at length and concluded that Mt Pratt could be an eastern outlier of Mt Bosavi, Southern Highlands Province, PNG.

Paratype. M.5420 by original designation. Female subadult, skull, flat skin, "New Guinea" (M Register), registered 3 January 1934, presented by Taronga Zoo Trust, Sydney.

Comments. Description based on two specimens. The collection date and collectors of these specimens were unknown to Troughton and Le Souef, who stated that "both specimens were from the region of Mt Pratt, in the north-eastern area of the Delta Division of Papua" and were obtained "doubtless through the co-operation of Papuan authorities". Troughton regarded *deltae* to be a doubtful species based on erroneous locality data provided by Le Souef for zoo animals, as indicated by his handwritten comments on a copy of the published paper, as reported by Kirsch & Calaby (1977). The AM Mammal section library has a reprint of Troughton & Le Souef (1936a) on which Troughton has used a type writer to add a footnote on the first page: "Note: *Dendrolagus spadix* is recognized as valid, but *D. deltae* remains uncertain owing to the doubtful locality provided for Zoo specimens by co-author Le Souef. The marked interorbital inflation indicates that deltae may be a race of *goodfellowi*, pending examination of an overall series of that species. E.Le.G.T.".

Dendrolagus dorianus Ramsay, 1883

Proc. Linn. Soc. N.S.W. (ser. 1) 8(1): 17. (19 June 1883).

Common name. Doria's Tree-kangaroo.

Current name. *Dendrolagus dorianus* Ramsay, 1883; following Groves (2005d).

?Syntypes. (3): **M.792** (not located), sex unknown, skin mount without skull according to Waite (1895), originally entered in register as "Dendrolagus sp. nov. Astrolabe Range, N. Guinea, Purchased, Burns Philp Co.", registered 8 December 1892. This specimen was registered at the same time as M.788–91, also listed as purchased from Burns Philp Co. (two *Phalanger intercastellanus* Thomas, 1895; one *Dorcopsulus macleayi* (Miklouho-Maclay, 1885c) and one *Dorcopsis luctuosa* (D'Albertis, 1873)).[1] M.792 has not been located in the collection; **M.1048**, adult male, skull, study skin, the skull having been extracted by Waite; **M.1049**, sub-adult male, skin, headless, no skull; both "Astrolabe Range, New Guinea" both registered in March 1896, "Purchased, O.C. (= old collection), Burns Philp and

[1] D'Albertis (1874) is the usual citation but is predated by his overlooked but more detailed newspaper account (D'Albertis, 1873) of *Halmaturus luctuosus* which includes external measurements, body weight and a detailed description of fur colour.

Co." Comments column of register states: "see M.788 etc., not registered when received and in indifferent condition, signed ERW".

Condition. **M.792**, unknown, not found; **M.1048**, incomplete cranium, missing occipital area and right zygomatic arch; damaged flat skin, bald patches on dorsum of head, back and tail base; **M.1049**, damaged and incomplete flat skin, missing head, right pes detached; bald patches on dorsal tail base.

Comments. It is generally assumed that Ramsay based his description solely on three specimens that were originally in William Macleay's private collection and now in the MMUS (e.g., Groves 1982). For reasons outlined below, we suspect that Ramsay might have founded this species on additional specimens then in Goldie's collection, but acquired by the AM in the 1890s, that include the above listed AM material, previously regarded as topotypes. However, a further search of archival material is required to confirm this.

Ramsay provided a description and measurements for an adult male skin and skull, and mentioned an adult female and a young animal of unstated sex. He remarked that the skull was badly corroded by storage in brine which prevented him from taking detailed measurements. Ramsay does not indicate the number of specimens examined but there were at least three, given that he stated that a hunter gave three specimens to Goldie. Miklouho-Maclay (1885d) stated that Ramsay had informed him that the three specimens of *D. dorianus* in Macleay's collection had been used in his species description. Miklouho-Maclay (1885d) provided tail and body length measurements from skin mounts of an adult male and female, and a young male; significantly, he expressed regret at not being able to provide any description of dentition beyond that available from teeth visible in a stuffed skin, i.e. he did not have a skull. Miklouho-Maclay emphatically stated that, "as far as he knew", Macleay's specimens were the only specimens in existence.

Waite (1895) gave a detailed description and illustrations of the skull of *D. dorianus*, and stated that a single skull was available. He believed that this and other skins in the AM were topotypes, based on the remarks of Miklouho-Maclay (1885d). Waite indicated that he had found three skins. The first was a skin mount; most likely M.792, as revealed by his initialed remark in the M Register: "this is the specimen referred to in my paper". He stated that he subsequently found two additional skins, one headless, and "the other contained the skull". Annotations in the M Register initialed by Waite, and the AM "V" register of photographic negatives (negatives V.1533–35) indicate that Waite's skull drawings were based on photographs of M.1048. We conclude that the headless skin is M.1049, the remaining specimen registered at that time.

We suggest that it is possible that the three specimens registered in the AM were available to Ramsay prior to publication of the taxon. All were from a small consignment of mammals from Astrolabe Range. M.792 was registered in December 1892, before Waite's employment at the AM. Waite subsequently registered M.1048–49 in 1896, noting in the M Register that they belonged to an initial consignment "not registered when received and in indifferent condition, signed ERW". Consequently, although registered in 1892 as purchased from Burns Philp Co (who were agents for Goldie's material), one possibility is that Ramsay examined, but not necessarily purchased, the three specimens around 1882 or 1883 when Ramsay purchased a large collection of New Guinea material from Goldie, sold through his agents the Mason Brothers. Although over a thousand bird specimens (the "Mason Brothers collection") were registered in March 1883, not all mammal material was purchased as it was considered to be in poor condition. The comments in the M Register regarding material obtained in 1892 against both the *dorianus* and other mammal specimens "not registered when received and in indifferent condition" would fit this scenario. Alternatively, the three specimens might have been purchased by the AM in 1892 from Burns Philp and Co as implied in the M Register, perhaps as part of Goldie's estate. Goldie died in November 1891 (Mullins & Bellamy, 2012) and in 1885 had named Robert Philp of Burns Philp to act as executor to his will (Mullins & Bellamy, 2012: 32). The unpublished report of Ramsay (1892) recommended purchase of material from Goldie's collection, but that document does not specify species.

Ramsay (1883) states that his material was from the Astrolabe Ranges, but he does not state the collection or collections in which these were housed. His statement "three specimens were brought to Mr Goldie" has subsequently been taken to mean a type series of only three specimens. However this assumption is unwarranted given that a number of bird taxa described by Ramsay are now known to be based on a larger number of specimens than was alluded to in his original descriptions (McAllan, 2016). If this was the case, it raises the possibility that Ramsay's original skull description was based on a skull from the now missing AM skin mount M.792, the skull of which was not known to Waite (1895) and had possibly disintegrated in view of Ramsay's statement that the skull was much corroded by brine. An alternative explanation is that the damaged skull described by Ramsay was placed in the skin mount prepared from a brine skin, which is now the adult male specimen M.377 in the MMUS. That specimen either does not contain a skull, or has an incomplete skull augmented with a filler such as plaster of paris (Dr Jude Philp, Macleay Museum, pers. comm. 2015). It would seem that Ramsay either based his skull description on that specimen, or a then unregistered specimen in Goldie's collection. However, it seems incongruous that the only known prepared skull of the newly described species would be placed back in a skin mount, unless the skull was deemed to be so degraded that such an action would not be seen as a loss.

Dendrolagus dorianus stellarum Flannery & Seri, 1990b

Rec. Aust. Mus. 42(2): 180, figs 4–6, table 5. (6 July 1990).

Common name. Seri's Tree-kangaroo.

Current name. *Dendrolagus stellarum* Flannery & Seri, 1990b. Recognized as a species by Groves (2005d) and Helgen (2007) but treated as a subspecies of *D. dorianus* by Eldridge & Coulson (2015), who highlight the need for further analysis of populations currently assigned to *D. dorianus*.

Holotype. M.17789 by original designation. Adult male, [Field no. FB51], skull, study skin, frozen tissue; collected by T. Flannery and L. Seri on 6 April 1987; registered 15 July 1987.

Condition. Cranium missing distal part of right paroccipital process, otherwise complete. Both dentaries complete. Study skin in good condition.

Type locality. Western end of Dokfuma basin [in forest 5 km west of Dokfuma], alt. 3,000 m, Star Mountains, Western Province, Papua New Guinea (5°01'S 141°07'E).

Paratypes. (3, by original designation). **M.17790**, adult female, skull, study skin, collected on 2 April 1987 by T. Flannery and L. Seri, north side of Dokfuma Basin (alt. 3,160 m), Star Mountains, Western Province, Papua New Guinea (5°01'S 141°08'E). **M.19463**, subadult male (young of AM M 17790), body in alc., frozen tissue, data as for M.17790. **M.16699**, subadult male, skull, study skin, frozen tissue in SAM, collected on 1 April 1986 by T. Flannery, upper Sol River Basin (alt. 2,800 m), Telefomin district, West Sepik Province, Papua New Guinea.

Comments. Four specimens in the type series. Bowyer *et al.* (2003) suggest that *stellarum* could be a composite of several taxa, based on divergent cytochrome b sequences between two localities, which included tissue samples from the paratype M.16699.

Dendrolagus goodfellowi pulcherrimus Flannery, 1993a

Rec. Aust. Mus. 45(1): 38, figs 4–5, table 1. (19 March 1993).

Common name. Golden-mantled Tree-kangaroo.

Current name. *Dendrolagus pulcherrimus* Flannery, 1993a. Recognized as a species by Groves (2005d) but as a subspecies of *D. goodfellowi* Thomas, 1908 by Eldridge & Coulson (2015), who note the need for further analysis.

Holotype. M.21717 by original designation. Female, [Field no. FJ359], skull, study skin, frozen tissue; collected 9 March 1990 by Pavel German and Lester Seri; registered 12 April 1990.

Condition. Cranium with impact fracture on right nasal and adjoining area of right maxilla, soft palate retained on cranium; both dentaries complete. Study skin in good condition; right flank peppered with small holes; tear in left forearm.

Type locality. "Elevation of 1,120 m in Kukumbau area on Mt Sapau (3°32'S 142°31'E), near Sibilanga" (Flannery, 1993a), West Sepik Province, Papua New Guinea.

Paratypes. (2, by original designation). **M.22173**, unsexed trophy, partial cranium without dentaries, purchased on 10 March 1990 by Pavel German and Lester Seri, from Parkop Village, near Sibilanga, West Sepik Province, Papua New Guinea. **M.23423**, adult female, body in alc., collected 13 December 1990 by Veari Kula, Macholp area (3°21'S 142°35'E), Torricelli Mtns, West Sepik Province, Papua New Guinea.

Comments. Type series of three specimens. Considered a full species by Groves (2005d) and Helgen (2005c) and support for species status from cytochrome *b* sequencing, which included tissue from the holotype, by McGreevy *et al.* (2012). Paratype M.23423 has not been found in 2002 or by subsequent inventories and is presumed to have been stolen.

Dendrolagus mbaiso Flannery, Boeadi & Szalay, 1995

Mammalia 59(1): 66, figs 1–2, tables 1–3. (1995, before September).

Common name. Dingiso.

Current name. *Dendrolagus mbaiso* Flannery, Boeadi and Szalay, 1995; following Groves (2005d).

Holotype. M.30751 by original designation. Young adult female, [Field no. FU38], study skin, skull, part skeleton, skinned body, tongue and one eye in alc., frozen tissue; collected 24 May 1994 by T. Flannery and A. Szalay; registered 11 July 1994.

Condition. Skin and skull on permanent loan to MZB. Partial skeleton (four limb bones; assorted tail vertebrae and phalanges).

Type locality. South slopes of Gunung Ki (4°05'S 137°06'E), Tembagapura area, Papua Province (previously known as Irian Jaya), Indonesia. Altitude of 3,250–3,500 m.

Paratypes. (3, by original designation): all collected by T. Flannery and A. Szalay: **M.30719**, adult male, part flat skin, skull, part skeleton, collected on 23 May 1994 at alt. 3,200 m, same locality as holotype; **M.30749**, adult female, study skin, skull and part skeleton, collected on 11 June 1994, at an alt. of c. 4,200 m in the Milik area, Kwiyawagi region (4°0'S 138°0'E), Papua Province, Indonesia. **M.30754**, adult female, flat skin, skull, part skeleton, collected on 23 May 1994 at alt. 3200 m, same details as holotype.

Comments. Type series of four specimens.

Dendrolagus scottae Flannery & Seri, 1990a

Rec. Aust. Mus. 42(3): 238, figs 2–4, table 1. (16 November 1990).

Common name. Scott's Tree-kangaroo.

Current name. *Dendrolagus scottae* Flannery & Seri, 1990a; following Groves (2005d).

Holotype. M.19481 by original designation. Juvenile [female], [Field no. FE255], skull, study skin, skinned body in alc., frozen tissue; obtained by T. F. Flannery on 11 June 1988; registered 27 September 1988.

Condition. Cranium and dentaries complete, soft palate retained on the skull. Study skin complete and in good condition.

Type locality. At about 1,400 m on Sweipini (3°23'S 142°06'E), a ridge just to the west of the Mount Somoro summit, Torricelli Mountains, West Sepik Province, Papua New Guinea.

Paratypes. (2, by original designation): M**.19491**, adult unsexed, trophy skull (partial cranium, and dentaries) evidently of one individual, purchased on 21 July 1985 at Wigote Village (3°27'S 142°10'E), Torricelli Mountains; **M.20948**, sex unknown, partial flat skin, segment of dorsal fur of adult. Collected by an Olo hunter in Mount Somoro area, Torricelli Mountains, in April 1989 and given to Fr P. MacGeaver.

Comments. Type series of three specimens.

Dendrolagus spadix Troughton & Le Souef, 1936a

Aust. Zool. 8(3): 194. (29 June 1936).

Common name. Lowlands Tree-kangaroo.

Current name. *Dendrolagus spadix* Troughton & Le Souef, 1936a; following Eldridge & Coulson (2015).

Holotype. M.4561 by original designation. Adult male, flat skin only, collected by Captain G. F. W. Zimmer, presented by A. Le Souef, registered April 1929, collection date not given in register.

Condition. Flat skin: tail broken in two, but stitched together, five small holes in the skin; missing both manus and both pes.

Type locality. Between the Upper Awarra and Strickland Rivers, Western Province, Papua New Guinea.

Paratype. M.5978 by original designation. Indeterminate sex, subadult, skull, flat skin, Bamu River district, Western Province, Papua New Guinea, obtained by A. J. Bates, apparently received from the "Resident Magistrate" at Daru, collection date not given, presented by A. Le Souef, registered June 1935.

Comments. Description based on two specimens.

Lagorchestes leichardti Gould, 1853a

The Mammals of Australia. Part 5, plate 60. (1 November 1853).

Common name. Spectacled Hare-wallaby.

Current name. *Lagorchestes conspicillatus leichardti* Gould, 1853a; following Jackson & Groves (2015), who state that several species could be included within *L. conspicillatus*. Status unresolved.

Syntypes. (2, by subsequent determination). **PA.1103**, female adult, skin mount, ?skull removed. Krefft (1872e) states that "The skull of the [original] specimen has been removed; it is, however, so much crushed that a fair description of the original form is impossible" and that the premolars and first two molars are "much worn"; **M.11347** (= PA.1103½), sex indeterminate, subadult, skull and flat skin, both registered in Palmer Register in c. 1879. Collector(s) not recorded in register.

Condition. **PA.1103**, the skull could be in the mount, although the tag does not imply this. Skin mount: fur is faded, wire is protruding through tail tip, and pes, left ear tip torn. **M.11347**, cranium missing entire basicranium posterior to rear of palate and between glenoid fossae, fracture in the right maxilla (in the orbital area). Right dentary missing tip of angular process. Incomplete and damaged part flat skin, missing ventral side of the skin and much of the neck area (head is prepared as a study skin as opposed to a flat skin), missing back limbs, tail is detached, right front limb is detached, right ear is torn.

Type locality. Somewhere between Port Essington and Gulf of Carpentaria but, localized to probably Valley of Lagoons, west of Ingham, Qld, Australia. (J. H. Calaby unpublished data, in Calaby & Richardson, 1988). Calaby believed that Gilbert had collected the taxon at Anthill Creek (pers. comm. to S. Ingleby).

Comments. Gould states that his description was based on two specimens, an adult and subadult, collected on Leichhardt's Expedition, sent to him from the Australian Museum, but without locality, collector or date of collection. John Gilbert, Gould's collector on Leichhardt's Port Essington expedition, was killed on 28 June 1845 near the Valley of Lagoons (Whittell, 1954). Gould concluded that the specimens were obtained from somewhere between the Gulf of Carpentaria and Port Essington, as he was unable to find any reference to them in Gilbert's diary. Presumably, the specimens were either collected by Gilbert shortly before his death, were collected by other members of the expedition, or given that there are two specimens, both. According to Krefft (1872e) "Mr Gilbert … secured the animal for the Museum collection", and gave the distribution as central Qld but does not mention a second specimen. It is not known whether the two syntypes were collected in two different regions or whether the juvenile was the offspring of the adult.

Halmaturus browni Ramsay, 1877e [not 1876]

Proc. Linn. Soc. N.S.W. (ser. 1) 1(4): 307. (March 1877).

Common name. Brown's Pademelon.

Current name. *Thylogale browni browni* (Ramsay, 1877e), following Groves (2005d), but recent genetic analyses raise the possibility that this taxon is conspecific with *T. brunii* (Schreber, 1778), see Eldridge & Coulson (2015).

Syntypes. (3, by subsequent determination by Flannery 1992): **PA.1033**, subadult male, skull, skin mount; **PA.1034**, adult female, skin mount, no skull; **PA.1035**, juvenile female, skull, skin mount. All three were registered in c. 1878 but the only data entered are "*Halmaturus brownii*, New Ireland" with "Type" later written in pencil for the first two numbers. The collector or donor is not given in the Palmer Register but Ramsay stated that the type material was purchased from James Cockerell. All were originally listed as mounts.

Condition. **PA.1033**: Cranium missing rear braincase wall and basioccipital area, missing anterior tips of nasals, hole in left frontal bone, missing upper 3rd incisors and right canine; right dentary missing tips of coronoid and angular processes, left dentary missing coronoid, condylar and angular processes. Soft palate retained on the skull. Skin mount in poor condition; fur missing from lower abdomen, especially left side, wire is protruding through tail tip and pes. **PA.1034**: Unclear if the skull is in the skin mount. Skin mount in fair condition; bald patch on right hip and ventral bald patch posterior to pouch, wire is protruding through pes, missing right ear tip. **PA.1035**: Soft palate retained on the skull. Cranium missing posteroventral section of braincase, hole in left frontal bone, missing rear of left zygomatic arch, right zygomatic arch medially compressed; right dentary missing tips of angular process, left dentary missing coronoid, condylar and angular processes. Skin mount in fair condition; hole through the tail (half way down the tail), bald patch on dorsal surface of the head, missing left ear tip, wire is protruding through pes. Mount is set in partially lying position, ventral surface of which is damaged and worn.

Cranial measurements (mm). Skin adhering to skulls prevented some measurements from being taken. **PA.1033**: GL, —; DIL, 14.40; PAL, 47.19*; UPM (alv.), 5.05; UMR

(alv.), 16.39 (M^1 to M^3); ZB, 44.28; POC, 14.73; MB, —; DL (condyl.), 58.00; LPM (alv.), 4.36; LMR (alv.), 15.99 (M_1 to M_3). **PA.1035:** GL, —; NasL, 20.83*; NasB, 9.48; PAL, 35.08*; UPM (alv.), 5.51; UMR (alv.), 10.26 (M^1 to M^2); ZB, —; POC, 10.88; MB, —; DL (condyl.), 44.68; LPM (alv.), 4.28; LMR (alv.), 9.50 (M_1 to M_2). [* = estimate, measured over dried tissue].

Type locality. Given as New Ireland in Ramsay's original account, but suggested by Flannery (1992) to be from Duke of York Islands, New Britain or New Island (Papua New Guinea), given the poor documentation of locality data provided by Brown for much of his biological material.

Comments. Flannery (1992) lists three syntypes: PA.1033–35. Ramsay's original account does not indicate the number of specimens that he examined but it was probably at least three, in light of the list of mammals prepared as mounts during 1876 by the AM taxidermist department which lists "3 Kangaroos (*Halmaturus brownii sp nov*)" (Ramsay, 1877h). Ramsay's main description is based on a male, for which he gives external and cranial measurements that could only have been made on an extracted skull, and he also provides measurements for the largest specimen he saw in Rev. Brown's collection. The whereabouts or fate of Ramsay's male skull is unknown but it does not belong with any of the three specimens listed above. The skull labelled PA.1033 is inconsistent with Ramsay's description, in being smaller in key dimensions given by Ramsay (e.g., greatest skull width 44.3 mm vs 48.25 mm; "dental series" = upper tooth row length, 27.3 vs 33 mm); significantly, there is no sign of the partially erupted permanent premolars mentioned in his description. The skull of PA.1033 was evidently removed from the skin mount subsequent to its examination by Tate (1940), who reported 1033 and 1034 as mounts with skulls inside.

Halmaturus crassipes Ramsay, 1876a

Proc. Linn. Soc. N.S.W. (ser. 1) 1(2): 162. (July 1876).

Common name. Agile Wallaby.

Current name. *Notamacropus agilis papuanus* (Peters & Doria, 1875), following Jackson & Groves (2015), who elevated *Notamacropus* from subgeneric rank.

Syntype. PA.1067 by subsequent determination. Male adult, partial "flat" skin, no skull, donated by Andrew Goldie. The only data in the original entry in the Palmer Register, apparently c. 1879, is "Halmaturus crassipes, New Guinea donation Goldie mounted", with "type" added subsequently, and no indication of the sex of the specimen. The whereabouts of the skull remains unknown.

Condition. Skin is in good condition with both manus, both pes and scrotum attached. The skin was previously a skin mount, which has been cut open and from which all filling has been removed.

Type locality. "Southern New Guinea" (Ramsay), = Papua New Guinea.

Comments. Ramsay provides a description of an adult male skin and cleaned skull and a young female, and provides measurements for the male. Ramsay does not state the number of specimens that he examined but he notes that several young animals were initially obtained from Port Moresby by Broadbent and Petterd, and the adult male of his description was obtained from "southern New Guinea" by Gouldie. [= A. Goldie]. An entry in the A Register for May 1876 (before numbers were assigned to specimens in the A Register) lists "1 Halmaturus new sp. Andrew Gouldie [sic] New Guinea", and the AM annual report for 1876 indicates that one specimen was prepared as a mount (Ramsay, 1877h) but the lists of purchased specimens do not give a breakdown by species. The young female specimen described by Ramsay was not necessarily lodged in the AM Collection but could have belonged to a private collection such as his own or that of William Macleay.

PA.1067 is accompanied with a printed cardboard display card on which is printed "Macropus agilis Gould, 1067, A3642 A3648 (male, female and young) Type of Macropus crassipes Ramsay". The display card postdates Thomas (1888a) who synonymized *Halmaturus crassipes* with *Macropus agilis*. It is evident that PA.1067 was at one time set in a group display with the two A Registered specimens. Neither A3642 nor A3648 are part of Ramsay's original series as both were purchased from Goldie in 1878 and registered that year.

Halmaturus mastersii Krefft, 1871a

The Mammals of Australia, footnote to text following plate of Black-striped Wallaby (preface date October 28).

Common name. Swamp Wallaby.

Current name. *Wallabia bicolor mastersii* (Krefft, 1871a), following Jackson & Groves (2015). Status unresolved, variously recognized as a subspecies, or a synonym of *W. b. bicolor* (Desmarest, 1804) and the taxonomic status of names assigned to *W. bicolor* need re-evaluation (Jackson & Groves, 2015).

?Syntypes. (2). **PA.994** and **PA.995**, both skulls, each with dentaries wired to cranium, both with "Halmaturus mastersi" written in old ink on the dorsal surface in the same hand. Both specimens were originally entered by Palmer in the P Register in c. 1879 as "Halmaturus mastersii Queensland" but without donor, collector or any other data, and both are currently in the AM Collection.

Condition. **PA.994** and **PA.995:** both crania and dentaries in good condition, all teeth intact.

Other potential syntypes. The following nine specimens were originally entered by Palmer in the Palmer Register in c. 1879 as "Halmaturus mastersii Queensland" without donor, collector or any other data, only four of which, PA.992–995, are known to be currently in the AM Collection: **PA.988**, male, skin mount, not located in collection or sighted in recent inventories; **PA.989**, skin mount, destroyed by order of the Trustees in 1901; **PA.990**, (skin mount?), sent to Christchurch Museum, New Zealand, exchanged 23 May 1906; **PA.991**, skin mount, sent to St Petersburg, exchanged 1901; **PA.992**, one pouched young in alc., sighted in April 2015; **PA.993**, one pouched young in alc., sighted in April 2015. **PA.993½** "skeleton", re-registered as M.11345 in 1980, not sighted in the collection in 2014 or in previous inventories (presumed stolen). An annotation "C.40.65" in old ink writing against Register entries of both PA.993 and

PA.993½ refers to AM Archive document AMS7 Letters Received, C:40.65.05. This is a letter from George Masters to Krefft, dated May 1865 from Ipswich, in which Masters states that he has just come from Pine Mountains (Qld) and that he had obtained "another new wallaby", of which he preserved a skeleton of an adult female with one pouched young, preserved in spirits.

Cranial measurements (mm). **PA.994:** GL, 124.80; ConL, 119.74; BasL, 113.43; NasL, 44.55* (nasal tips worn); NasB, 20.04; DIL, 23.05; APV, 6.40; PPV, 15.59; PAL, 73.85; UPM (alv.), 8.64; UMR (alv.), 30.80; ZB, 66.29; POC, 14.32; MB, 48.58* (left distal tip broken); DL (condyl.), 88.46; LPM (alv.), 6.85; LMR (alv.), 30.16. **PA.995:** GL, 129.26; ConL, 122.81; BasL, 117.37; NasL, 45.66* (nasal tips worn); NasB, 21.01; DIL, 23.78; APV, 8.28; PPV, 15.62; PAL, 75.10; UPM (alv.), 8.05; UMR (alv.), 30.53; ZB, 67.48; POC, 18.56; MB, 50.05; DL (condyl.), 95.64; LPM (alv.), 6.96; LMR (alv.), 29.25. [* = estimate].

Type locality. "Occurs in some of the Queensland districts at the Burnett and other rivers" (Krefft, 1871a: text page, opposite plate of The Black-striped Wallaby), Qld, Australia.

Comments. The first valid publication of the name *mastersii* was by Krefft (1871a), but his most detailed account of fur colour and dentition appeared in a newspaper account (Krefft, 1872f), in which he expressed his belief that *mastersii* only occurred in the "Maryborough district" of Qld.

The specimens used by Krefft as the basis of this taxon have not been determined. Some or all of the above listed specimens probably qualify as syntypes but further archival work at the AM and in overseas institutions is needed to decide which might qualify. A broad interpretation of syntypes would include any material assigned to this taxon by Krefft, from the Burnett River district and other localities, collected by George Masters and possibly others, between about 1865 until the first valid publication of the name in *Mammals of Australia* in 1871.

The nine specimens listed above were originally entered as *H. mastersii* in the Palmer Register c. 1878 and were almost certainly specimens seen by Krefft and identified by him as *mastersii*. Given that Krefft was probably denied access to the collections following his forced eviction from the Museum premises in September 1874, we cannot discount the possibility that some of these specimens were added to the collection during the three remaining years of his curatorship following publication of *Mammals of Australia*. During that period no additional specimens were listed in the AM Annual reports or newspaper reports of donations to the AM, but those documents might not have included purchased specimens. Ramsay commenced duties soon after Krefft's eviction and some of the Palmer specimens could have been added to the collection during the first 3–5 years of his curatorship before Palmer registered the *mastersii* material. Ramsay commenced the A Register in January 1875 but items were not assigned a registration number until A.1 in June 1877. We have not found any entries in the A Register for *mastersii*, or any "*Halmaturus ualabatus*" from Qld from January 1875 to the end of 1879.

Specimens of *Halmaturus mastersii* sent by Krefft to other institutions are also likely to qualify as syntypes, including material sent to the BMNH and to Peters at ZMB, Berlin. The AM annual report for 1871 (Krefft, 1872g) lists "4 wallabies (*Halmaturus ualabatus* and *Halmaturus mastersii*)" sent to Dr Peters, Royal Museum, Berlin and the AM annual report for 1872 (Krefft, 1873a) lists 3 skulls and 1 skeleton of "*Halmaturus mastersii*" sent to the BMNH.

The material used by Krefft to form the basis of his concept of *mastersii* would primarily have been obtained by the AM collector George Masters, but Krefft also had a number of correspondents who probably sent him material from Qld and it is possible that he visited the region himself. The earliest indication we have found that Krefft believed he had a new species was a letter from Masters to Krefft, dated 23 May 1865 from Ipswich, in which Masters refers to another specimen of the "new wallaby" (AM Archives AMS7 Letters Received, C:40.65.5).

Masters was first engaged as a collector on the AM staff in June 1864 but he also sold specimens to Krefft while employed by the AM. A detailed collecting itinerary of Masters has not been published, but he is known to have made three collecting trips to Qld during the seven years prior to publication of *Mammals of Australia*. His first trip was in 1865 to the Wide Bay region (Whitley, 1971), which includes Burnett River and Maryborough districts as then recognized. The AM annual report for 1865 does not list any specimens that could be *mastersii*, and if any were collected it is possible that they were purchased from Masters and therefore not listed in the annual report. The collection dates of bird specimens listed by Longmore (1991) indicates that Masters collected again in the Wide Bay region during October and November 1867, but again, his collecting list (AM Archives AMS7 Letters Received, C:40.67.12) does not include any specimens that could have been *mastersii*. Masters collected during August and September 1870 in the Gayndah area, Burnett River (Whitley, 1971), and it is likely that he obtained material listed by Krefft (1871a) during that period. We have not seen the original collecting list but the specimens obtained during 1870 listed in the AM annual report (Krefft & Thomson, 1871) probably include material referred to by Krefft (1871a).

A narrow interpretation of the syntype series would include only material collected by George Masters from "the Burnett River and other rivers", Qld, the area specifically mentioned by Krefft (1871a) as the then known distribution of *mastersii*. Krefft (1871a) states that "Mr Masters has lately collected a fine series of these Wallabies from the Burnett River, Queensland". The AM annual report for 1870 lists material collected by Masters (locality not indicated) as "*Halmaturus mastersi*—2 skeletons, 3 skins, 2 young in spirits, 1 skull" (Krefft & Thomson, 1871: 6). However, deciding which of the specimens currently held in the AM Collection or sent to overseas institutions were part of this initial series of *H. mastersii* is problematic and beyond the scope of this paper.

The two adult skulls PA.994 and PA.995 closely fit the dimensions and diagnostic criteria proposed by Finlayson (1931) to distinguish Qld populations of *W. bicolor mastersii* (as *Macropus ualabatus ingrami* Thomas & Dollman, 1909) from nominate southern Australian *bicolor*. These include the smaller size, e.g., basal skull length of 113 mm and 117 mm for PA.994 and PA.995 respectively; relatively greater posterior expansion of the nasal bones (ratio of nasal length/breadth, 2.2, 2.1) and shorter diastema (ratio of diastema/basal skull length, 5.2, 5.7).

Macropus jukesii Miklouho-Maclay, 1885a

Proc. Linn. Soc. N.S.W. (ser. 1) 9(4): 891, pl. 39, figs 1–5. (4 March 1885)

Common name. Dusky Pademelon.

Current name. *Thylogale brunii* (Schreber, 1778), following Flannery (1992).

?Syntype. M.2033, female, study skin without skull; listed as "?New Guinea", received as alcohol skin from Macleay Museum Committee in 1907 and registered 4 February 1909.

Condition. Study skin complete and in reasonable condition, prominent pouch, ear tips frayed.

Type locality. Port Moresby, Central Province, Papua New Guinea; "From the hills near Anuabada (Port Moresby)" Miklouho-Maclay (1885a: 891).

Comments. Stanbury (1969) cites MMUS 380 in the Macleay Museum as the "holotype" of *M. jukesii* and the skin, and the skull associated with the skin at that time, was identified as *Thylogale brunii* by Flannery (1992). However, Miklouho-Maclay's text is ambiguous and it is unclear if he had one or two specimens. A recent assessment of MMUS material (Parnaby *et al.* unpublished) has concluded that his description was based on at least two specimens—a female skin mount (skull *in situ*) and a skin and skull preserved in "brine" and possibly salt affected, for which he did not indicate the sex. He comments that the latter specimen enabled him to examine skull and dental features not visible in the skin mount. Prior to 2016, the complete skull figured in the original account has been incorrectly associated with the female skin mount MMUS M380, the skull of which was extracted in 1960 but its association with the skin mount had remained confused. We suspect that M.2033 could be the second syntype of Miklouho-Maclay's species, the skull of which is illustrated in the original account. Our reasoning is three fold. First, there are no candidates for the second syntype amongst the remaining skins in the MMUS (Parnaby *et al.* unpublished). Second, M.2033 was sent to the AM in a batch of alcohol preserved wallaby skins, probably in 1907. The M Register entry for the Dorcopsis and Thylogales from that consignment remarked "includes co-types!" but did not indicate which specimens were thought to be types. Third, while three of the ten wallaby skins sent to the AM in 1907 were Thylogales, two are unlikely to be the second *jukesii* syntype because they contained skulls whereas the missing syntype is anticipated to be a skin only, the skull being in the MMUS. The available evidence thus supports M.2033 as being a likely candidate for Miklouho-Maclay's second skin of *M. jukesii*, the skull of which is illustrated in his original account. Head length of the stuffed study skin M.2033 is c. 10.5 cm, which is consistent with the skull length of 9.4 cm taken from the skull illustrated in Miklouho-Maclay's original account. Molecular methods could be used to test the association of the skull and skins.

Despite these arguments, we remain cautious regarding the status of M.2033 because there is one other potential and realistic scenario: that M.2033 was received by Macleay after 1884, probably from Goldie, and after Miklouho-Maclay had prepared his description of *M. jukesii*.

Macropus tibol Miklouho-Maclay, 1885b

Proc. Linn. Soc. N.S.W. (ser. 1) 10(2): 141, pl. 19, figs 1–11. (31 July 1885).

Common name. New Guinea Pademelon.

Current name. *Thylogale browni* (Ramsay, 1877e), following Flannery (1992).

?Syntype. M.2031, unsexed study skin with extracted skull, entered in the M Register as "?New Guinea", received from Macleay Museum Committee in 1907 and registered 4 February 1909.

Condition. Cranium and dentaries largely intact but bone porous and crumbling; both dentaries fused to cranium. Cranium: most incisors have disintegrated and are lost; soft palate adhered to palate; hole in anterior of braincase roof and much of roof has been crushed inward. Study skin intact and in reasonable condition; claws of both manus corroded by salt; claw sheaths missing from left pes digits 4 and 6.

Type locality. "Macleay coast" = north of Finisterre Range and east of Madang, Madang Province, Papua New Guinea.

Comments. We cannot exclude the possibly that M.2031 is a syntype but on balance it possibly is not. Although the dimensions of the skin and skull match those provided for one specimen in Miklouho-Maclay's description (see below), the condition of the skull is inconsistent with the skull figured in the original description. The skull is badly corroded, encrusted with deposits and partly cleaned, in contrast to the cleaned skull illustrated by Miklouho-Maclay. The corroded skull is typical of specimens obtained from Andrew Goldie, who as far as we are aware, is the only collector of that period to store New Guinea material in "brine" rather than alcohol. One possibility is that the syntype skins were initially stored in alcohol by Miklouho-Maclay and later transferred to brine barrels with Goldie material at the Macleay Museum, although this seems unlikely to us. Further, it seems unlikely that having extracted the brine corroded skull, Miklouho-Maclay would have subsequently returned it to the preserving solution. The documentation associated with the transfer of these specimens from the Macleay Museum in 1907 makes no mention of skulls, but this might have been an oversight.

In his original account Miklouho-Maclay stated that he obtained two specimens only, both males of similar body size. Evidently he provided illustrations of both syntype skulls as revealed by his fig. 6 illustration of palatal ridges showing fully erupted rear molars, compared to incompletely erupted molars of the cleaned skull in his fig. 9. Miklouho-Maclay indicates that he shot the first specimen in 1871 and that his published illustrations and body measurements were taken of the second specimen the same day that it was killed by dogs in 1876. He states that both specimens are adult, but Thomas (1888a) regarded them as juvenile.

The two syntypes, which are not listed by Stanbury (1969) as being in the Macleay Museum, do not appear to have been reported since the original description. A search of the MMUS collection by HEP and MMUS staff in 2016 failed to locate candidate specimens. Miklouho-Maclay does not reveal whether either specimen reached Sydney after his field work in Papua New Guinea but if so, it would likely have been held in his private collection given his habit of acknowledging specimens in Macleay's private collection in his published works of other proposed mammal taxa. The caption to his

fig. 1 of the whole animal states that it was based on a sketch from life and a photograph of a stuffed specimen, implying that he did not necessarily have access to a study skin while preparing the description.

Although it is not known whether Miklouho-Maclay's original specimens have survived and whether they left Australia with him on returned to Russia in 1886 (Maclay, 1974), it is possible that the AM material contains one of his syntypes of *Macropus tibol*. The MMUS sent a number of containers of specimens in alcohol to the AM, which were registered on 4 Feb 1909. Included were ten specimens of wallabies: M.2031, *Macropus browni*; M.2032–33, *Thylogale brunii* originally entered in the register as *?Macropus browni*, and M.2034–40, seven specimens originally entered as *Dorcopsis macleayi* (now *Dorcopsulus macleayi*). The original M Register entry states "possibly co-types" and "?New Guinea", meaning that cotypes are possibly included amongst the ten specimens. Given that *Dorcopsulus macleayi* appears to have been described from a single specimen now in the MMUS (MMUS M381, see Stanbury, 1969), any "co-types" are more likely to be amongst the specimens of *Thylogale*: M.2031–33. The skulls in this series are badly decalcified by storage in brine rather than alcohol, as described by Miklouho-Maclay for material sent from Goldie in Macleay's private collection.

The skull of M.2031 is decalcified but it closely resembles one of the skulls illustrated in the original description, being a young animal at the same stage of molar eruption. Further, M.2031 closely approximates the size of the skull illustrated by Miklouho-Maclay at nature size, taking into account likely distortion from the camera lucida drawing by Miklouho-Maclay, and likely shrinkage of the salt affected skull. Cranial measurements are not given in the original account but greatest skull length and zygomatic breadth, measured from the published hardcopy plate, are greater than M.2031: greatest skull length 80.3 mm vs 72.8; zygomatic breadth 44.6 vs 40.4 mm. However, unlike the skull illustrated in the original account to which M.2031 closely resembles, M.2031 retains the skin on the palate. Further, the mandible is now fused with the cranium. While this might suggest that M.2031 is not a syntype, it is possible that the skin of the palate was loosened for the illustration, and that both the palate tissue and mandible have subsequently adhered to the salt affected skull. The study skin M.2301 is a close match with the dimensions given for one syntype in the original description considering the imprecise demarcation of the tail base in the study skin: nose tip to base of tail c. 13.5 inches vs. 13 inches for the syntype; tail length 9.5–10 inches vs. 9.3 inches and ear length c. 35 mm vs. 34 mm.

Of the two *Thylogale* specimens with associated skulls sent from MMUS, M.2031 is the only candidate syntype of *Macropus tibol*, if Miklouho-Maclay's statement that both syntypes are of similar size is correct. The other specimen, M.2032 (not listed by Flannery (1992)) is a male study skin with a very badly decalcified and distorted skull that far exceeds the dimensions given by Miklouho-Maclay (nose tip to tail base = 20–21 inches vs 13 inches, tail length c. 13.5 inches vs 9.3 inches). However, the stage of molar eruption and the presence of palatal skin ridges, which are firmly adhered to the skull unlike M.2031, are consistent with the illustration of one of the skulls in Miklouho-Maclay's account but there is no strikingly individual feature such as damage that would secure the association.

The type series of the two other thylogales described by Miklouho-Maclay, both from New Guinea, are accounted for: *Macropus gracilis* Miklouho-Maclay, 1885a (= *Thylogale brunii*) based on the holotype skin and skull in the MMUS (Stanbury, 1969) and *Macropus jukesii* Miklouho-Maclay, 1885a (= *Thylogale brunii*), see above account.

Petrogale celeris Le Souef, 1924

Aust. Zool. 3 (7): 273. (7 October 1924).

Common name. Yellow-footed Rock-wallaby.

Current name. *Petrogale xanthopus celeris* Le Souef, 1924; following Jackson & Groves (2015).

Holotype. M.3219 by original designation. Near adult female, skull, study skin, registered 31 October 1922, presented by M. Tully. Locality given in register is "Terachy Station, Upper Diamantina R., Western Queensland", Australia.

Condition. Cranium missing left upper 3rd incisor; left dentary missing extreme tip of coronoid process. Right dentary complete. Study skin: missing right ear tip, bald patch on the throat.

Type locality. Terachy Station, near Adavale, south-west Qld, Australia.

Paratype. M.3220 by original designation. Male, flat skin without manus or pes, without skull, details as per holotype.

Comments. The description is based on two specimens.

Petrogale herberti Thomas, 1926

Ann. Mag. Nat. Hist. (ser. 9) 17: 626. (1 June 1926).

Common name. Herbert's Rock-wallaby.

Current name. *Petrogale herberti* Thomas, 1926; following Jackson & Groves (2015).

Paratype. M.3885 by subsequent determination. Female, skull, study skin, previously BMNH No. 1925.8.1.63 (collectors No. 345), collected by G. H. Wilkinson 3 March 1924 from Westwood near Rockhampton alt. 500 ft, Qld, Australia. Received from the BM in 1926, registered in AM February 1927.

Comments. Thomas (1926) states that he examined 17 specimens from the type locality of Eidsvolt, the rest from Westwood. In addition to the holotype, 16 specimens were registered in the BMNH and these probably comprised 1922.12.29.6–8, 10–13 (7 specimens) and 1925.8.1.55–63 (9 specimens), so there is little doubt that M.3885 is a paratype (P. Jenkins, BMNH, pers. comm. 18 February 2014).

Petrogale longicauda Krefft, 1865a

Proc. Zool. Soc. Lond. 1865: 324. (13 June 1865).

Common name. Brush-tailed Rock-wallaby.

Current name. *Petrogale penicillata* (J. Gray, 1827) following Jackson & Groves (2015).

Holotype. PA.1068 by subsequent determination. Male, skin mount, collected by George Masters. Registered in c. 1879, collection date not recorded in register, but the AM annual report (Krefft, 1865b) lists one specimen of "*Petrogale longicauda* (new)" in a list of specimens collected by Masters during 1864.

Condition. Skin mount in reasonable condition, part of ear tips are torn and missing; missing claw and pad of right pes digit 4; tail fractured near base; scrotal sac present.

Type locality. "Dabee Rylstone NSW" = Rylstone [32°48'S 149°58'E], NSW. [Dabee is a homestead name].

Comments. Krefft states that a single specimen was obtained, with a smashed skull but the skull fragments have not been located in the collection.

Petrogale puella Thomas, 1926

Ann. Mag. Nat. Hist. (ser. 9) 17: 627. (1 June 1926).

Common name. Allied Rock-wallaby.

Current name. *Petrogale assimilis* Ramsay, 1877f; following Jackson & Groves (2015).

Paratype. M.3884, by subsequent determination. Female, skull, study skin, Torrens Creek, alt. 1600 ft, north Qld, sent from BM, former number BM 1925.8.1.54, Field no. 145, collected by B. Hore on 27 September 1923. Received from the BMNH in 1926, registered in AM on 14 February 1927.

Comments. The six specimens mentioned in the original description (Thomas, 1926) were all registered in the BMNH: BM 1925.8.1.49–54 (P. Jenkins, BMNH, pers. comm. 18 February 2014).

Petrogale purpureicollis Le Souef, 1924

Aust. Zool. 3(7): 274. (7 October 1924).

Common name. Purple-necked Rock-wallaby.

Current name. *Petrogale purpureicollis* Le Souef, 1924; following Jackson & Groves (2015).

Holotype. M.3405 by original designation. Male adult, skull (Fig. 27), flat skin, collected by Wilson B. Sinclair, registered 14 June 1924. Collection date not given.

Condition. Cranium missing upper right 3rd incisor, missing posterior boundary of palate; right dentary missing 1st molariform tooth. Flat skin: missing both manus and pes, missing tail tip, one hole in the mid back area. A tag probably dating from the 1920s and attached to the flat skin states "skin 27, skull ?", implying doubt that the skull is correctly matched with the skin. However, we have found no other indication that the skull is mismatched.

Type locality. Ardmore Station, 20 miles SW of Dajarra, north-west Qld, Australia.

Paratypes. (6, by subsequent determination), all collected by W. Sinclair and presented by A. S. Le Souef: **M.3404**, male, skull, flat skin, and **M.3406**, female, skull, flat skin, both from "Ardmore Station, Dajarra", both registered 14 June 1924; and **M.3450**, female, flat skin, both from "near Ardmore Station, Dajarra", both registered 8 September 1924; three skulls: **S.1678** male, and **S.1680**, female, both 20 miles SW of Dajarra; **S.1681**, female, 50 miles North West of Dajarra, all three registered 12 September 1924.

Figure 27. AM M.3405, holotype skull of *Petrogale purpureicollis* Le Souef, 1924. (Photography by Stuart Humphreys).

Comments. Le Souef states that he examined five flat skins and seven crania, citing the registration number only for the "type". All were initially donated to the AM. Annotations in the M Register, likely by Troughton, indicate that in addition to the "type," all were regarded as paratypes. A note in the remarks section of the M Register against M.3449 and M.3450, probably in Troughton's hand, states: " paratypes, these skins were received with four skulls, S.1678–1681, the two skins could not be associated with any of the skulls with certainty." The remaining two specimens of Le Souef's original series were sent to the BMNH in October 1926: M.3449, male flat skin from "50 miles NW of Dajarra" and the unassociated male skull S.1679 from "near Ardmore Station, Dajarra".

Thylogale eugenii decres Troughton, 1941

Furred Animals of Australia, 1st edition, p. 194. (20 November 1941).

Common name. Tammar Wallaby.

Current name. *Notamacropus eugenii eugenii* (Desmarest, 1817a), following Eldridge & Coulson (2015). Jackson & Groves (2015) elevated *Notamacropus* to generic rank and highlighted the need for further taxonomic resolution of the status of names included within *N. eugenii*. Eldridge *et al.* (2017) demonstrated that the Kangaroo Island population was genetically distinct, but its taxonomic status remains unresolved as they were unable to include definitive samples from extinct South Australian mainland populations.

Syntypes. (5, by subsequent determination): **M.2821**, male, skull, study skin, collected 13 February 1920 by E. Le G. Troughton, Deep Creek, 20 miles from Kingscote, Kangaroo Island, South Australia, registered 31 July 1920; **M.2820**, male, subadult, skull, study skin, collected 8 February 1920, other details as per M.2821; **M.5332**, female, adult, skull, study skin, (ex Taronga Zoo, Sydney), from Kangaroo Island, registered 16 March 1933; **S.1808** and **S.1809**, both male skulls, collection dates not given, Kangaroo Island, registered 18 June 1928 collected by A. S. Le Souef.

Condition. **M.2821**: Cranium missing last erupted upper right molar and right alisphenoid bone, hole in left maxilla in the orbit area; right dentary missing coronoid and condylar processes. Study skin complete, in good condition. **M.2820**: Cranium and dentaries complete, in good condition; study skin missing tail tip and scrotum. **M.5332**: Cranium and dentaries complete. Study skin in good condition, slither of skin missing from the right ear. **S.1808**: Cranium missing left 3rd upper incisor; both dentaries complete. **S.1809**: Cranium and both dentaries complete.

Cranial measurements (mm). **M.2821**: GL, 90.64; ConL, 84.87; BasL, 79.59; NasL, 31.12; NasB, 14.85; DIL, 17.82; APV, 3.95; PPV, —; PAL, —; UPM (alv.), 4.42; UMR (alv.), 16.76 (M^1 to M^3); ZB, 49.07; POC, 17.10; MB, 37.19; DL (condyl.), 59.58 (left dentary); LPM (alv.), 2.82; LMR (alv.), 16.57 (M_1 to M_3). **M.5332**: GL, 97.83; ConL, 92.45; BasL, 87.86; NasL, 31.46; NasB, 17.07; DIL, 23.89; APV, 4.84; PPV, 12.69; PAL, 55.59; UPM (alv.), 4.13; UMR (alv.), 23.12 (M^1 to M^4); ZB, 51.20; POC, 16.22; MB, 40.71; DL (condyl.), 70.23; LPM (alv.), 3.61; LMR (alv.), 22.41 (M_1 to M_4). **S.1808**: GL, 101.79; ConL, 96.42; BasL, 90.36; NasL, 33.68; NasB, 18.63; DIL, 22.85; APV, 4.09; PPV, 11.86; PAL, 57.02; UPM (alv.), 4.64; UMR (alv.), 17.61 (M^1 to M^3); ZB, 54.24; POC, 16.34; MB, 40.21; DL (condyl.), 71.51; LPM (alv.), 3.88; LMR (alv.), 16.55 (M_1 to M_3). **S.1809**: GL, 101.95; ConL, 96.88; BasL, 92.54; NasL, 36.62* (tips worn); NasB, 17.51; DIL, 21.74; APV, 5.45; PPV, 10.51; PAL, 56.95* (posterior margin slightly eroded); UPM (alv.), 5.17; UMR (alv.), 17.08 (M^1 to M^3); ZB, 53.16; POC, 18.20; MB, 42.06; DL (condyl.), 71.05; LPM (alv.), 4.12; LMR (alv.), 16.60 (M_1 to M_3). [* = estimate].

Type localities. Deep Creek, 20 miles from Kingscote, Kangaroo Island, South Australia. Other syntypes are from "Kangaroo Island".

Comments. Troughton (1941) stated that the subspecies was based on "specimens in the Australian Museum, including a male and female collected by the author in 1920" but does not cite registration or field numbers nor indicate the number of specimens in the type series. Calaby & Richardson (1988) listed registration numbers of the five specimens listed above, which they recognize as syntypes. Troughton did not nominate a holotype in his description, but the specimen tag of M.2821 is labelled holotype, M.5332 as allotype and M.2820 as paratype, all in Troughton's characteristic handwriting; they are listed here as syntypes because Troughton's attributions remain unpublished. Specimen index cards for S.1808–9 are not marked as paratypes but they are recognized as syntypes because they were available to Troughton in 1941. Publication date drawn from Whitley (1975).

Thylogale calabyi Flannery, 1992

Aust. Mammal. 15: 18, figs 5–6, table 5. (28 June 1992).

Common name. Calaby's Pademelon.

Current name. *Thylogale calabyi* Flannery, 1992; following Groves (2005d).

Holotype. M.12864 by original designation. Adult male, [Field no. 28], skull and study skin, gut and gut content in alc., collected 9 December 1981 by T. Flannery and K. Aplin; registered 12 June 1984. [Captured by dogs].

Condition. Cranium missing left paroccipital process and the tip of right paroccipital process, missing part of right jugal bone; both dentaries missing coronoid, condylar, and angular processes. Study skin has bald patch on the dorsal surface of the neck area, scrotum missing, no long bones present in limbs. The study skin is in good condition; body proportions distorted during taxidermy process.

Type locality. South side of Neon Basin (alt. 3000 m), Mt Albert Edward, Central Province, Papua New Guinea.

Paratypes. (3, by original designation): collection locality and collectors as per holotype: **M.12865**, female, skull and study skin, collected 9 December 1981; **M.12866**, female, skull and flat skin, collected 7 December 1981; **M.12891**, juvenile female, cranium and dentaries, collected on 6 December 1981.

Comments. Four specimens in the type series. Recent genetic analyses indicate the need for further clarification of the taxonomic status of this entity, see Eldridge & Coulson (2015).

Order Artiodactyla

Infraorder Cetacea

The original register entries by Palmer in c. 1877 identified only one cetacean specimen (PA.368) as a type. Difficulties were encountered by Palmer and subsequent workers, both in their attempts to identify types, and in some cases to correctly associate skeletal elements of each specimen. Perhaps this partly arose from the confusion left by Krefft's dismissal, as he was working on cetaceans in the turbulent three years leading up to 1874. Subsequent annotations to the Palmer Register were made by several people. Waite sorted the osteological collection and identified several of Gray's types, as indicated in the AM annual report for the year 1896 (Etheridge, 1897: 7), and McCulloch identified additional suspected types and made annotations to the Palmer Register, signed and dated 1918. We have primarily drawn from original published descriptions in combination with other published and unpublished sources, along with the limited surviving information associated with the specimens. Although we have resolved a number of important issues, many others remain. A complete inventory of the cetacean collection, along with further examination of archival documents, particularly those of Krefft, might resolve some remaining issues.

Family Balaenidae

Macleayius australiensis Gray, 1865a

Proc. Zool. Soc. Lond. 1864: 589, figs 1–2. (May 1865).

Common name. Southern Right Whale.

Current name. *Eubalaena australis* (Desmoulins, 1822), following (Perrin, 2009a).

Holotype. M.47763 by subsequent determination. A single bone mass consisting of fused atlas bone and cervical vertebrae 2 to 7, registered 26 October 2015.

Condition. Bone mass is in good condition.

Type locality. "Australian seas" Krefft, cited in Gray (1873a: 134).

Comments. Gray (1865a) erected *Macleayius* as a monotypic genus based on photographs sent to him by Krefft, of cervical vertebrae in the AM Collection. Gray initially misinterpreted the photography and letter from Krefft, and thought that the atlas bone was separate from the fused mass of 2nd to 7th cervical vertebrae. He later corrected this, based on clarification from Krefft (Gray, 1866a: 371). In his original account, Gray applied the name *Macleayius australiensis* beneath the figures. Gray (1873a) subsequently gave a species description of *australiensis* based on a specimen sent to the British Museum from New Zealand, but Gray (1865a) has precedence. An unnumbered specimen with fused cervical vertebrae located in the collection in 2013 is likely to be the holotype. It closely resembles the amended drawings of Gray (1866a: 372), which Gray stated are based on photographs sent by Krefft, and is a good match to measurements given by him (Gray, 1873a: 130). We have not yet located a registration number for the holotype in the old registers or specimen card index and it is possible that the specimen was never registered, or that a metal registration tag might have disintegrated, as observed for a number of other early cetacean specimens in the collection.

Family Delphinidae

Grampidelphis exilis Iredale & Troughton, 1933

Rec. Aust. Mus. 19(1): 32, figs 1–5, plate x. (2 August 1933).

Common name. Risso's Dolphin.

Current name. *Grampus griseus* (G. Cuvier, 1812), following Perrin (2009b).

Holotype. S.1776 by original designation. Female, skull and complete skeleton, stranded on 28 February 1927. Purchased from "Harry Hay and Party", registered June 1927.

Condition. Incomplete cranium, missing posterior half of the right zygomatic arch; both dentaries missing angular processes; left dentary has three teeth only, and right dentary only four teeth. Skeleton complete, each flipper has been wired to a board.

Type locality. From the Ocean Beach at Manly, Sydney, NSW, Australia.

Paratype. S.1832 by original designation. Male, skull and atlas bone, stranded on 18 February 1929 on Dee Why Beach, north of Manly, Sydney, NSW. Presented by Dee Why Surf and Life Saving Club, registered on 26 February 1929.

Comments. The type series consists of two specimens; registration numbers for both are cited in the original description. We were unable to locate or determine the fate of the coloured body cast mentioned in the original description. Photographs of the skulls of both specimens are given in the original description. See Hershkovitz (1961) for a scathing critique of Iredale & Troughton's justification for proposing *Grampidelphis* as a replacement name for *Grampus*.

Family Physeteridae

Catodon australis Wall, 1851

Aust. Mus. Mem. 1: 1, plate 1. (31 December 1851).

Common name. Sperm Whale.

Current name. *Physeter macrocephalus* Linnaeus, 1758; following Perrin (2009c).

Holotype. PA.326 by subsequent determination. Male, skull without dentaries. The original specimen was a skull and whole skeleton. An old index card (i.e. post 1900) for PA.326 cites "parts of skeleton" which included an atlas. An unnumbered skull, previously articulated but without dentaries, matches the dimensions given by Wall and is identified here as possibly part of Wall's original specimen that was towed into Port Jackson (Sydney harbor) on 5 December 1849 (Wall, 1851: 4).

Condition. Incomplete cranium, missing distal tip of rostrum, detached right side of rostrum (maxilla and premaxilla), some skull fractures and eroded dorsal parts

of parietal bones. Dentaries and skeletal elements not yet located. Many skeletal elements of this species in the AM Collection do not have associated numbers, and it is likely that the original small metal registration number tags have disintegrated or that no numbers were ever assigned. A complete evaluation of skeletal elements and dentaries will be required to identify surviving parts of the skeleton amongst material in the collection.

Type locality. Ocean off Port Jackson, Sydney, NSW, where the carcass was found dead, floating in the open sea (Wall, 1851: 4).

Comments. Wall clearly attributes the name *australis* to the animal towed into Port Jackson but also mentions four other specimens in addition to the holotype during the course of his extended description. These are a lower jaw from Twofold Bay, presented by B. Boyd; a lower jaw, location not specified, presented by G. Blaxland; a few post-cranial bones of a female washed up in Botany Bay: badly decomposed, likely female; and a skull of a very young "sperm whale" washed up near Botany (Wall, 1851). Attempts to locate these have not yet been successful and some might not have survived. Although Wall referred to these specimens in his account, they are not included in the type series because he was uncertain if the observed variation between these specimens was interspecific or intraspecific. This is one of the earliest names applied to Southern Hemisphere populations; see Hershkovitz (1966) for a detailed synonymy. Tomilin (1957), cited in Perrin (2009d), applied the name *Physeter catodon australis* as a southern subspecies, which is regarded by Perrin (2009d) as a *nomen dubium*.

Catodon (Meganeuron) krefftii Gray, 1865b

Proc. Zool. Soc. Lond. 1865: 440, figs 1–4. (October 1865).

Common name. Sperm Whale.

Current name. *Physeter macrocephalus* Linnaeus, 1758; following Perrin (2009e).

Holotype. PA.339 by subsequent determination. Atlas bone, and fused cervical vertebrae 2–7. Not marked as a type in the original entry by Palmer, which states "vertebra of whale" but no other information and no species entry.

Condition. **PA.339.** Vertebrae and epiphyses are intact and in good condition.

Type locality. "Australian seas" (Gray, 1865b: 439).

Comments. Both elements registered as PA.339 accord well with the drawings in the original description. Gray erected the subgenus *Meganeuron* and the new species using photographs sent by Krefft, of two bones held in the AM: the atlas vertebrae and several cervical vertebrae fused into one mass. The fused cervical vertebrae were deemed by Krefft and Gray to be a good fit with the atlas bone, and these appear to be the only bones obtained from the specimen. Subsequently, Gray (1866a: 389) reported that he had just received a letter from Krefft, in which Krefft stated that he had changed his mind, and now considered the cervical vertebrae to belong to "*Catodon australis*". Consequently, Gray (1866a) attributed his captions to figs 96–97 of the vertebrae to "*Meganeuron krefftii* ? or *Catodon australis*".

Family Kogiidae

Euphysetes grayii Wall, 1851

Aust. Mus. Mem. 1: 37, plate 2. (31 December 1851).

Common name. Pygmy Sperm Whale.

Current name. *Kogia breviceps* (de Blainville, 1838), following Perrin (2009f).

Holotype. PA.368 by subsequent determination. The original entry against PA.368 in Palmer's hand states only "Kogia greyi [sic] Maroubra nr Coogee skeleton Type specimen". A subsequent entry in red ink "C.40/64" was most likely done during preparation of the X Register and refers to documentation thought to be associated with the specimen. Sex not determined, skull, right dentary and incomplete skeleton. The animal was stranded during September 1850 (Wall, 1851: 37) on "Maroobrah beach" and Wall describes how he collected the skeletal material. The donor or presenter of the specimen is not given in Palmer's entry in the P Register.

Condition. Incomplete cranium; right dentary only, both the cranium and dentary are missing all teeth. Cranium missing anterior tip of rostrum, hole in the right dentary. Incomplete skeleton. A letter associated with the specimen (AM Archives AMS7 Letters Received, C:40.64.03) mentions that the type specimen was a mounted but "very imperfect" skull and skeleton: left dentary is missing (never recovered), teeth that have been recovered but not all have been placed in the skull (artificial teeth have been fitted), left anterior flipper is incomplete (never recovered), left ribs are missing (never recovered), sternum missing (middle and terminal bones recovered), also missing were the hyoids, four chevron bones and pelvic bones.

Type locality. Maroubra beach, Sydney (Wall, 1851), NSW, Australia.

Comments. The P Register indicates that the holotype is PA.368. The skull currently thought to be PA.368 does not have the original metal Palmer tag and further work is required to validate that it is Wall's original. During the 19th century authorship was commonly attributed to William Sharp Macleay and cited as *Euphysetes grayii* Macleay, 1851 or *Euphysetes grayii* Macleay (Wall), 1851, in the belief that it was Macleay's work published dishonorably under Wall's name (see Schulte, 1917) but Wall is the correct citation.

Euphysetes macleayi Krefft, 1866a

Proc. Zool. Soc. Lond. 1865: 708, figs 1–6. (24 April 1866).

Common name. Pygmy Sperm Whale.

Current name. *Kogia breviceps* (de Blainville, 1838), following Jackson & Groves (2015).

Holotype. Not determined, possibly skeleton PA.366. A detailed investigation is required to establish whether Krefft's original material is amongst *Kogia* material currently in the AM Collection. Krefft's original specimen was a male, skull and skeleton (Krefft, 1866a), and stuffed skin (Krefft, 1873b). The animal was obtained from a Mr Skinner on 13 August 1865 (Krefft, 1865c) and purchased by Krefft (Krefft, 1873b).

Type locality. Manly Beach, Sydney, NSW (Krefft, 1866a).

Comments. Krefft based his description on a "colt whale" stranded at Manly beach, which he initially examined and photographed as an intact beach stranding in 1865. His detailed account is clearly based on a single specimen and it was in the AM Collection in 1873 (Krefft, 1873b).

The current identity of Krefft's original specimen amongst the AM *Kogia* material has remained in doubt following Krefft's dismissal from the AM in 1874. Assuming that Krefft's specimen was registered by Palmer, the only entry with matching data would seem to be PA.365 (skin, not found) and PA.366 (skeleton). Prior to this study, PA.366 was suspected for more than a century to be Krefft's type. However, the donor of PA.366 is given as "Hon. W. Macleay" in Palmer's hand in the P Register, and Palmer did not indicate that PA.366 was a type, whereas he did indicate type status for PA.368, the holotype of *Euphysetes grayii* Wall, 1851. One possibility is that Krefft's specimen was not registered by Palmer, given that Palmer was dismissed before completing the backlog of unregistered material. Further, it is not known if Krefft's type left the AM prior to his dismissal in 1874. Confusion is compounded by uncertainty as to which skull in the Collection is PA.366. Bannister (1988a) cited registration numbers for the holotype as "P365, 366, 367 and 369 skeleton from Manly Beach" but it is possible that these numbers refer to several different individuals. We suspect that the modern paper tag labelled PA.366 was attached to the unmarked skull in the 1960s to 1980s. Krefft did not provide skull measurements in his original account to enable comparisons with the skull labelled PA.366, but he did provide woodcuts depicting three views of the skull and dentaries. According to Schulte (1917), Krefft's specimen is illustrated in plate xxii, fig. 8 of Van Beneden & Gervais (1880), based on photographs sent by Krefft to the Paris Exhibition of 1867. Skull shape of the specimen currently labelled PA.366 is inconsistent with illustrations in both the original account and in the account of Van Beneden & Gervais (1880), assuming that those depictions are accurate.

Family Ziphiidae

The following three names proposed by Krefft and Gray were quite likely based on the same individual, a whale stranded in 1870 at Little Bay, Sydney. The scant data associated with the material currently in the collection prevents resolution of this problem. An extensive search of Krefft's correspondence and Archival documents might resolve this issue.

Mesoplodon guentheri Krefft, 1871b

Ann. Mag. Nat. Hist. (ser. 4) 7: 368, figs 1–2. (1 May 1871).

Common name. Strap-toothed Beaked Whale.

Current name. *Mesoplodon layardii* (J. Gray, 1865c), following Perrin (2009g).

Holotype. All material by subsequent determination. The holotype is thought to be the following material, but further verification is required: PA.358, PA.358.001, skull and artificial dentaries, the skull has also been labelled PA.363; PA.358.002, near complete, partly articulated skeleton, (pelvic bones listed in Palmer Register not yet located); PA.359, original dentaries; PA.363, three hyoid bones; PA.364, three sternum bones.

The original entries written by Palmer in the P Register for PA.358 and PA.359 are "Mesoplodon Thomsonii, Little Bay nr Long Bay" and the Remarks column lists 358 as "Skeleton. Jaws restored" and for 359 "fractured jaws of above". Palmer did not mark either entry as being a type. A subsequent entry against PA.358 and PA.359 in 1918 signed by A. R. McCulloch states: "evidently the holotype of the name *Callidon guntheri*". Bannister (1988b) cites registration numbers for the holotype as "P358, 359, and 364 skeleton" but this reflects confusion about the registration numbers and material in the collection at that time.

The holotype was stranded in late 1870 (Scott, 1873: 116). The sex of the holotype was not recorded in the original description (perhaps because the body was "very much hacked and lacerated"), or in the Palmer Register entry. Sexual dimorphism was later recognized in this taxon and the specimen was considered to be female (e.g., by J. Ogilby, 1892).

Condition. PA.358.001: damaged whole skull, missing anterior part of rostrum which has been replaced by wood/cast, left side of braincase missing and replaced with wood/cast; both dentaries and teeth are artificial, modelled from wood. PA.358.002: damaged whole skeleton; some ribs are broken, but have been repaired. The skeleton is partially articulated (rib cage separate to vertebrae). PA.359 (original dentaries): incomplete and damaged dentaries: both dentaries missing teeth, left dentary is broken in two places, wired together; right dentary is fragmented and wired together; missing coronoid and condylar processes; angular process broken off but wired together.

Type locality. Little Bay, near Long Bay, Sydney, NSW (Krefft, 1871b,c).

Comments. Krefft's brief description was based on one complete skeleton of a whale which he states was 18 feet long. A drawing of a tooth accompanied his description but he did not provide cranial measurements or illustrations of the skull. He also mentioned some preserved viscera, which are no longer in the collection. Krefft stated that the skeleton was complete but that the body was badly lacerated. P Register annotations made in the late 19th and early 20th century indicate uncertainty about the identity of Krefft's original specimen, which remains unresolved pending a comprehensive assessment of *Mesoplodon* material at the AM and archival photographs.

Gray (1871a), in a footnote to Krefft's paper (Krefft, 1871b), proposed the genus *Callidon*, based on tooth morphology of the holotype of *guentheri,* which he believed was radically different from his concept of tooth morphology of *Mesoplodon*. However, Flower (in Krefft, 1871c) expressed the view that such differences in tooth morphology were likely to be due to age or sex. Krefft (1873c) does not mention *guentheri* in his comprehensive summary of Australian whale taxa, implying that he no longer recognized it as a valid species. (Article 32.5.2.1 of the *Code* dictates that diacritic marks of German names must be amended, thus *güntheri* becomes *guentheri*.)

Mesoplodon longirostris Gray, 1873a

Proc. Zool. Soc. Lond. 1873: p. 145. (June 1873).

Common name. Strap-toothed Beaked Whale.

Current name. *Mesoplodon layardii* (J. Gray, 1865c), following Perrin (2009h).

Holotype. Probably the same specimen as the holotype of *Mesoplodon guentheri* Krefft, 1871b, see previous account.

Type locality. Little Bay, Sydney, NSW according to Gray (1873b).

Comments. The basis and authorship of the name *Mesoplodon longirostris* has remained confused and is discussed in detail below. We present new insights into the origin of this name, and suggest that potentially embarrassing mistakes are possibly the reason the basis of this name has remained obscure in the literature. It is likely that Gray, who was responsible for publishing the name, was misled by photographs sent by Krefft of an inaccurately reconstructed rostrum of the damaged holotype skull of *Mesoplodon guentheri* Krefft, stranded at Little Bay, Sydney in 1870. The initial reconstruction by AM preparator Henry Barnes resulted in an excessively elongated rostrum but it appears that Gray published the name *Mesoplodon longirostris* before being alerted to the mistake.

Support for this scenario is found in a letter from Krefft to Gray dated February 11, 1873 (BMNH Library Krefft letter 258, no. 22). Krefft refers to a *Mesoplodon* skeleton that he had named but did not describe. Although Krefft does not mention the name *longirostris* in the letter, no other name applied to *Mesoplodon* by Krefft matches the details given in the letter. Krefft states: "The other whale skeleton which you refer to is *Mesoplodon Sowerbiensis* … There are only two teeth, one in each mandible and of these I must have sent you photographs [Krefft included drawings indicating that the tooth scarcely emerged from the bone] … I named this specimen without describing it which is very reprehensible, but I thought it would turn out to be a known species and save me the trouble of enlarging upon it. Van Beneden's figure Plate XXII [= Van Beneden & Gervais, 1880 [1868–1879]) is very much like ours, there is however some difference in the shape of the skull and in the mandible … Van [Beneden] gives another figure Plate XXVI which shows only one tooth in each very similar to ours—see photograph enclosed. The head was very much broken in particular the rostral portion of it and it has been clumsily mended but I shall get it altered when there is time to do so."

Further support stems from a newspaper account of Australian whales, in which Krefft (1873c, published in December) makes oblique remarks that resonate with his letter to Gray. Krefft writes: " *a smaller whale, of a rare genus, was stranded at Little Bay … It took Henry Barnes several days to patch the lower jaw together, and the beak being restored rather larger than the original (as was found out afterwards from Van Beneden and Gervai's splendid book); this misrepresentation multiplied by photographs sent to scientific institutions abroad, has caused considerable confusion ever since."* Krefft provided a comprehensive list of the cetacean species recorded from Australian waters in his newspaper article but makes no mention of *Mesoplodon longirostris*, perhaps implying that he no longer regarded it to be a valid species.

Gray (1873a: 145; published in June) established the name *Mesoplodon longirostris* when he remarked that "*Mesoplodon longirostris* of Krefft" was either "*Berardius hectori*" or a new species, based on a photograph of a skeleton sent by Krefft. Gray noted that the specimen appeared to have no teeth (evidently not visible in the photograph), and had a "beak" nearly twice the length of the head compared to 1.5 times the length in "Dr Hector's figure" (presumably of "*Berardius hectori"*). In August 1873 Gray presented a paper repeating these remarks verbatim (Gray, 1874: 89), including attribution of *longirostris* to Krefft but this was already outdated by his earlier remarks that *longirostris* was a synonym (Gray, 1873a, published June). Hershkovitz (1966) cites Gray (1873a) as the author of *longirostris*. Although Gray clearly attributed authorship of the name *longirostris* to Krefft, attribution is to Gray, given that diagnostic criteria were proposed by him (Article 50.1, the *Code*).

The first publication of the name *Mesoplodon longirostris*, as a *nomen nudum*, was by Gray (1873b), published in January 1873 (publication date per Evenhuis, 2003) thus predating his paper of June establishing *longirostris* (Gray 1873a). In his January paper, Gray (1873b) concluded that the photograph sent by Krefft, on which Krefft had written "*Mesoplodon longirostris* Krefft" was the same animal stranded at Little Bay to which Krefft (1871b) had earlier applied the name "*Mesoplodon Güntheri"*. He stated that his conclusion was based on the fact that both were full skeletons (apparently rare in world collections at that time) about 18 foot long. In that paper, Gray (1873b) stated that he regarded " *longirostris* Krefft" to be an unpublished name, and regarded the photographed specimen to be "*Callidon güntheri"*—Gray (1871a) had earlier erected *Callidon* for the holotype of *Mesoplodon guentheri*, on the mistaken belief that its tooth structure differed from *Mesoplodon*. Although Gray (1873b) published the name *longirostris* as a junior synonym of *Mesoplodon guentheri* the name is not available (a *nomen nudum*) because he did not provide a description or diagnosis (Article 12.1, the *Code*).

Perhaps Gray did not have time to amend his publication of the name *longirostris* in his June paper (Gray, 1873a) after being informed in Krefft's letter of February, that the rostral reconstruction of the Little Bay whale was highly inaccurate.

We have not located any reference to *longirostris* in either the AM registers or on any specimen labels but this would not be surprising if our interpretation of the history of this name is correct.

Mesoplodon thomsoni Krefft in Scott, 1873

Mammalia, Recent and Extinct, 116. (preface dated 21 July 1873).

Common name. Strap-toothed Beaked Whale.

Current name. *Mesoplodon layardii* (J. Gray, 1865c), following Perrin (2009i).

Holotype. Not determined. Possibly the same specimen as the holotype of *Mesoplodon guentheri*.

Material. All of the following entries in the Palmer Register were originally entered in Palmer's hand as "*Mesoplodon thomsoni"*, none of which are marked by Palmer as a type: PA.356, original entry by Palmer is Fairy Ck Wollongong, 25 vertebrae; and PA.357, Fairy Ck, portion of skull, but registration or collection dates are not provided for either and it is not clear if they are of the same individual; PA.358, from Little Bay, skeleton jaws restored; PA.359, fractured

jaws of above; PA.363, no locality given, 2 pelvic bones and 3 hyoid bones; PA.364, no locality given, 3 portions of sternum. *Mesoplodon thomsoni* is also written on four of the six bones registered under PA.363 and PA.364 in very old style writing.

Type locality. Uncertain. Generally assumed to be Little Bay, Sydney (e.g., J. Ogilby 1892; Iredale & Troughton, 1934) but possibly also Fairy Ck Wollongong if the name was based on PA.356 and PA.357.

Comments. There appears to be no published description of this taxon, which is usually cited as a manuscript name of Krefft. A search of Krefft's archival documents might resolve current uncertainty surround the type material and type locality of this name. Ogilby (1892) has been cited as the author of the name but the overlooked compilation of Scott (1873) is the earliest published use of the name *thomsoni* that we have found but he did not provide a description. Scott (1873: 116) lists "*Mesoplodon Thomsoni* Krefft MSS" as a possible synonym of "Sowerby's Ziphius *Mesoplodon sowerbiensis* de Blainville" [= *Mesoplodon bidens*]. He states: "*The skeleton in the Australian Museum, which, for the present is considered as a synonym, is that of an animal stranded at the latter end of 1870 on the beach near Little Bay* ". This could be interpreted to mean that *thomsoni* is the same taxon as the animal stranded near Little Bay, or that *thomsoni* was based on that specimen.

In a newspaper article on Australian whales published after Scott (1873), Krefft (1873c) states that "A splendid specimen in the Australian Museum collection has been named in honour of the late Professor A. M. Thomson, *Mesoplodon Thomsonii*; it appears, however, to be identical with the above species *[Mesoplodon Sowerbiensis]*". Krefft did not cite authorship of *thomsonii* or mention an associated locality in his newspaper article of October 1873 and it appears that he no longer believed that it was a valid species. The name had apparently fallen into disuse, although Ramsay (1890b: 109) lists a whale skeleton on display at the AM as "*Mesoplodon thomsoni"*.

The only information provided by Ogilby (1892: 71) is a passing comment that the name *Mesoplodon thomsoni* used by Krefft in an unpublished manuscript of a whale stranded at Little Bay, was in his opinion likely to be a female example of *Mesoplodon layardii* (Gray, 1865c). Assuming that Ogilby examined Krefft's manuscript, and was not paraphrasing Scott, it would appear that the type locality is Little Bay.

Given that *thomsoni* has been linked with an animal from Little Bay (Scott, 1873; Ogilby, 1892), it is possible that Krefft simply recycled the holotype of *guentheri* by applying the name *thomsoni* to honour the premature death of his colleague Professor Thomson (Alexander Morrison Thomson, 1841–1871). However, it is also possible that Krefft based the name on another specimen, perhaps P.356, a *Mesoplodon* stranded near Wollongong and originally entered as *thomsoni* by Palmer. However, *thomsoni* was the only species name entered by Palmer for PA.358 and 359, the holotype of *Mesoplodon guentheri* Krefft. Rediscovery of Krefft's unpublished manuscript describing *thomsoni*, if it has survived, could resolve this.

Iredale & Troughton (1934) mistakenly attribute *thomsoni* to Flower (1878: 416) as noted by Hershkovitz (1966). Bannister (1988b) attributes *Mesoplodon thomsoni* to Ogilby, 1892 but misspelt it as "*thompsoni"*.

Order Carnivora

Family Canidae

Canis familiaris var. *papuensis* Ramsay, 1879b

Proc. Linn. Soc. N.S.W. (ser. 1) 3(3): 242. (?Jan–?April 1879).

Common name. ?Papuan Village Dog.

Current name. *Canis familiaris* Linnaeus, 1758; following rationale of Jackson & Groves (2015: 288) and Jackson *et al.* (2017); also see Dwyer & Minnegal (2016) for a review of the relationship between New Guinean village and feral dog populations.

Holotype. A.3652, designated here. Skull (Fig. 28), sex not recorded, purchased from Andrew Goldie, registered December 1878. Collection date and collector not given in the A Register. No specific locality is entered against this specimen, but an earlier register entry indicates that it was part of a large collection from the "Port Moresby district" purchased from Andrew Goldie. In his original account, Ramsay states that the specimen was obtained on Andrew Goldie's second expedition to New Guinea. No associated skeletal elements or skin have yet been located in the collection but it is possible that the holotype was originally a mounted skeleton, as "1 dog, from New Guinea" is listed amongst mammal specimens articulated during 1881 in the AM Annual report (Ramsay, 1882c). Alternatively, the mounted specimen may have been a specimen acquired from another source, possibly from Miklouho-Maclay. The skull has the registration number written in what is likely to be Troughton's handwriting.

Condition. Cranium missing upper right 1st and 2nd premolars (possibly lost while the animal was alive), missing medial side of right auditory bulla, anterior tips of nasal bones eroded, hole in occipital. Left dentary has two holes in ramus, right dentary complete.

Cranial measurements (mm). A.3652: GL, 165.25; ConL,154.36; BasL, 147.39; NasL, 50.78*; NasB, 17.22; UC1–C1 (alv.), 30.25; APV, 10.58; PAL, 82.42; UPM (alv.), 16.73; UMR (alv.), 16.32; ZB, 88.73; POC, 24.86; BUL, 19.95; MB, 58.74; DL (condyl.), 123.28; LPM (alv.), 10.14; LMR (alv.), 29.92. [* = estimate, nasal tips broken].

Type locality. Port Moresby district (Ramsay, 1879b), Central Province, Papua New Guinea.

Comments. Volume 3 issue 3 of the *Proc. Linn. Soc. N.S.W.* is the only issue for which Fletcher (1896) could not determine the publication date; it was probably between January–May 1879, based on publication dates of conjoint issues.

Previous assessments of the status of this taxon have presumably been made without examination of Ramsay's original material that has remained unreported in the AM Collection since its description. Troughton (1971) reported that Ramsay's specimen had been destroyed but we are confident that the dog skull labelled A.3652 is the specimen reported by Ramsay. Although he did not specify the collection locality, sex, or provide any measurements of the specimen, Ramsay stated that it was obtained from Goldie and his wording implies a single specimen. Only one "*Canis*

Figure 28. AM A.3652, holotype skull of *Canis familiaris* var. *papuensis* Ramsay, 1879b. (Photography by Stuart Humphreys).

papuensis" is listed in the AM specimen acquisitions for 1878, purchased from Goldie and listed, remarkably, under "Collection of fish specimens from New Guinea (in spirits)" (Ramsay, 1879c).

Specimen A.3652 was registered in December 1878 as part of a large consignment of specimens in spirit purchased from Goldie; these were entered in the register under the heading "Collection of spirit specimens Andrew Goldie not in the best state" and many were later marked as "destroyed". Taken along with Ramsay's comment that the dog specimen was received from Goldie in a poor state of preservation in spirits, these entries may have influenced Troughton (1971) to state that Ramsay's holotype was no longer in the collection. However, A.3652 was actually marked as being transferred to the Palaeontology Dept. (no date given) where it was found in 2012 during preparation of this paper. Troughton (1957) initially treated *papuensis* as a *nomen nudum* but he later equivocated and even commented that the name had been ignored by most authors (Troughton, 1971).

The ratio zygomatic breadth/condylobasal length (87.8/168.5 mm) of 0.52 for A.3652 falls below the range 0.64–0.74 given for Koler-Matznick *et al.* (2003) for New Guinea Singing Dogs "*C. hallstromi"* and it is also below 0.61–0.62 given by those authors for Papuan village dogs.

Ramsay stated that his knowledge of this taxon, including its small body size and inability to bark, drew from the observations of Morton and Broadbent about Papuan dogs. Although it is not known who collected the holotype during Goldie's expedition, it is possible that the specimen came from a moderate to high elevation in the Owen Stanley Range behind Port Moresby, given that collecting occurred quite early over a wide range of altitudes (Moore & Mullins, 2012; Morton, 1885a). In an account of his work with Goldie, Morton (1885b) indicates in relation to "the New Guinea dogs" that "we did not find them in a wild state", only in villages. However, Broadbent had a separate collecting camp and might have obtained the holotype as a feral animal. It is possible that the holotype was a village dog but that Ramsay's description reported observations of the singing calls heard by field workers.

Canis hallstromi Troughton, 1957

Proc. R. Zool. Soc. N.S.W. 1955–1956: 93. (8 May 1957).

Common name. New Guinea Singing Dog.

Current name. *Canis familiaris* Linnaeus, 1758; following Jackson *et al.* (2017). Taxonomic status has been contested; variously considered to be a feral lineage of the domesticated dog (e.g., Helgen, 2007; Oskarsson *et al.* 2012; Jackson & Groves, 2015); a valid species (e.g., Crowther *et al.,* 2014; Koler-Matznick *et al*., 2007; Troughton, 1971) or a synonym of *Canus lupus dingo* Meyer, 1793 (e.g., Wozencraft, 2005).

Holotype. M.8502, by subsequent designation (Troughton, 1971). Male, skull (Fig. 29), flat skin and skeleton, collected by J. A. Sinclair in 1956. Registered 6 November 1964. An entry against the specimen "KBO 6 November 1964" possibly means "killed by order".

Condition. Cranium and both dentaries: bones are porous on the labial side of all gum lines, exposing the tooth roots; cranium missing 1st upper right incisor and 1st upper right post-canine tooth. Whole skeleton is partly articulated. Flat skin: minor holes present throughout the skin.

Cranial measurements (mm). M.8502: GL, 162.72; ConL, 152.85; BasL, 145.36; NasL, —; NasB, 14.60; UC1–C1 (alv.), 26.33*; APV, 10.23; PAL, 79.02; UPM (alv.), 14.51*; UMR (alv.), 13.22*; ZB, 101.05; POC, 27.78; BUL, 22.76; MB, 61.65; DL (condyl.), 121.58; LPM (alv.), 9.50*; LMR (alv.), 29.77*. [* = estimate, bone eroded].

Type locality. Lavani Valley, Huri Duna, Southern Highlands, Papua New Guinea. The provenance of the holotype remains unsubstantiated as it is not clear whether it came from the Lavani Valley or an adjoining region, nor is it known if the type specimens were wild or village animals (Dwyer & Minnegal, 2016).

Paratype. M.8917 by subsequent designation (Troughton, 1971). Female, skull, flat skin and skeleton, donated by Taronga Park Zoo, 1967. Same locality and collection data as holotype. Registered 5 July 1967.

Comments. Troughton's description was based on external criteria taken from two live animals (adult male and young female), sent to Taronga Zoo, Sydney in 1956. Troughton (1971) cited the registration numbers of holotype and paratype. A re-diagnosis is provided by Koler-Matznick *et al.* (2003). Jackson & Groves (2015: 287) consider *hallstromi* to be an ancient breed of the domestic dog, and provide a useful discussion of the problems of applying subspecific nomenclature to introduced populations.

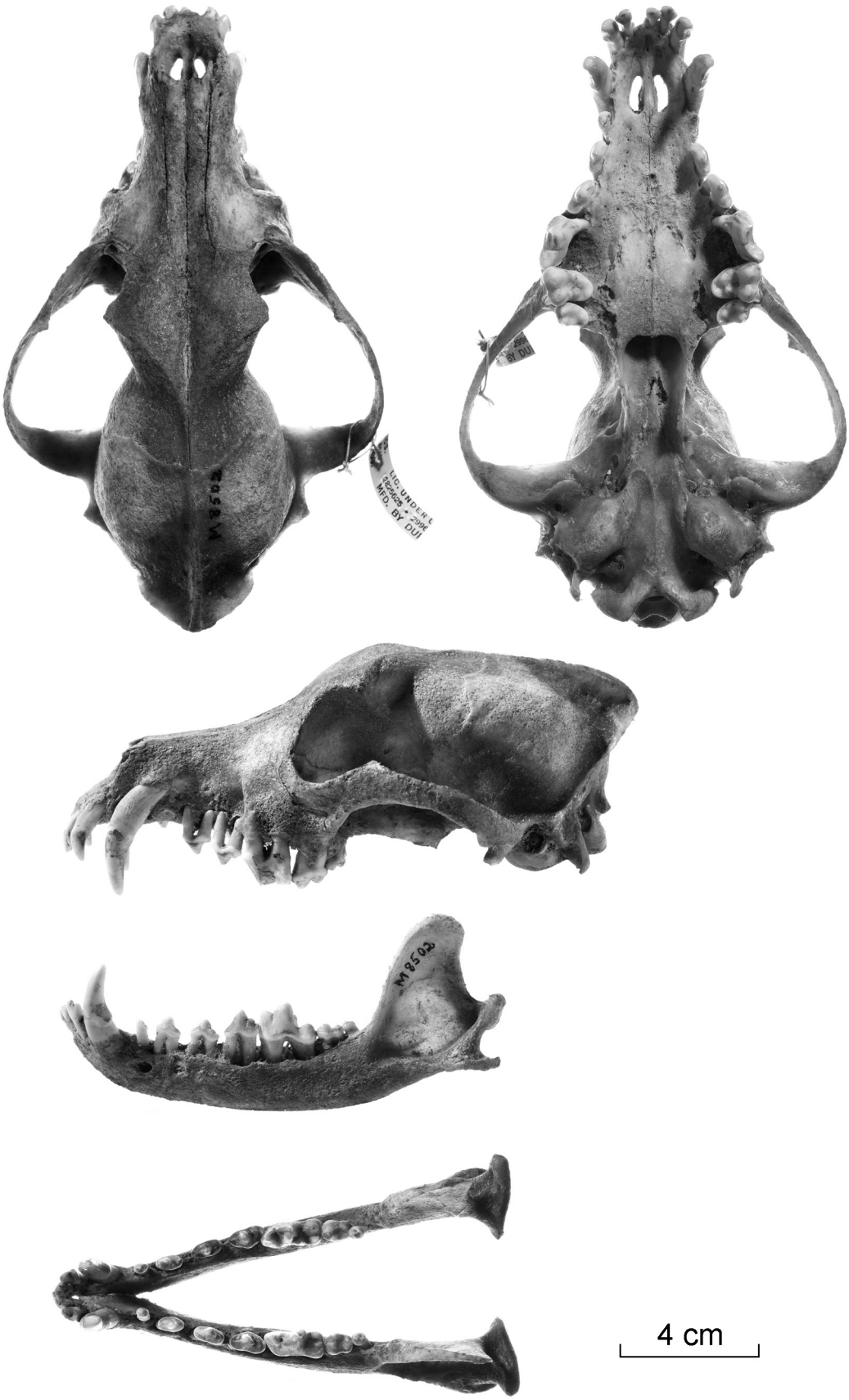

Figure 29. AM M.8502, holotype skull of *Canis hallstromi* Troughton, 1957. (Photography by Stuart Humphreys).

Order Rodentia

Family Muridae

Conilurus pedunculatus Waite, 1896

Report of the Horn Scientific Expedition to Central Australia, Zoology Part 2, 395, plate 25, fig. 1, a–f. (February 1896).

Common name. Central Rock-rat.

Current name. *Zyzomys pedunculatus* (Waite, 1896), following Jackson & Groves (2015).

Lectotype. M.1064, lectotype designation by Kitchener (1989). Sex indeterminate, skin mount with skull *in situ*, collected by J. Field. Specimen "A" of Waite's description: marked "Spec. A of paper. TYPE" by Waite in the register. Presented by Baldwin Spencer, registered on 11 April 1896. Waite (1896) indicates that specimen A is a male.

Condition. Skin mount: missing both ears, transverse tear on chest area, missing fur from distal third of tail, tail tip is almost detached, skin otherwise intact and in reasonable condition.

Type locality. Alice Springs, Northern Territory, Australia.

Paralectotype. M.1158, sex not determined, skin mount, skull *in situ*, "Central Australia", received from W. Horn, registered 12 November 1896.

?Topotype. M.1298, sex not recorded, skull, study skin, Alice Springs, received from B. Spencer, registered 8 July 1898.

Comments. Waite based his description on five specimens: four males which he designated A–D, and a female E, but the location of four of these specimens has remained confused. Dixon (1970) cited an adult male syntype in the MV, noting a possible mix up of syntype labels, and cited AM M.1158 and M.1298 as possible syntypes. Aitken (1976) listed several male skulls (without bodies) and a female along with other potential syntypes in the SAM. Spencer's contacts in Central Australia sent him an unknown number of additional specimens of this taxon after the Horn Expedition and after the preparation of the Horn Expedition report.

It is very likely that M.1158 is one of Waite's syntypes. This specimen was registered in November 1896, soon after receipt of a letter from Spencer to the AM dated 28 October 1896 (AM Archives AMS9 Letters Received, S.93/96) advising that accompanying specimens donated to the AM were from the Horn Expedition, with an attached inventory listing "1 *Conilurus pedunculatus*".

Waite (1898a) reports a female and three males of this species that were sent from Alice Springs after the expedition and forwarded to Spencer. Waite's paper was read on 21 October 1897 and M.1298 was the next specimen of this species from Spencer to be registered, on 15 July 1898. This specimen might be a syntype as suggested by Dixon (1970) but it might also be one of those collected after the Horn Expedition.

Kitchener (1989) discussed the confused provenance of specimens suspected to belong to Waite's type series and recognized that M.1064 is unambiguously Waite's specimen A, marked as "type". We concur—this specimen is without doubt, Waite's type. Correspondence from Spencer dated 25 March 1896 to Waite (AM Archives letter S.26/96), states that Spencer was sending rodent specimens of new taxa named by Waite in the Horn Expedition report, requesting that Waite select and retain type specimens, and return the remainder. In his original description, Waite states that the specimens of his description were all supplied by Spencer, who did not collect any of them. As noted by Troughton, Waite wrote in the remarks column of the register, opposite registered specimens of a range of rodent taxa presented by Spencer, that "the balance of the specimens were returned to Prof Spencer, one of each species, (the type) being retained." Although Waite does not refer to specimen A as the holotype, this is implicit by him writing "TYPE" in the remarks column against M.1064, along with his reference to the return of other specimens to Spencer, which in this context implies that the returned specimens were not the type.

The lectotype (M.1064) is the only one of the five syntypes with a certain provenance, contrary to the view of Aitken (1976). Dixon (1970) and Aitken (1976) discuss the uncertainty of locating and identifying syntypes of *pedunculatus* and *pedunculatus* var. *brachyotis*, and suggest a possible mix up of specimen labels. This is further compounded by disassociation of skulls from bodies, the dispersal of specimens to at least three institutions, and the problems of distinguishing syntypes from additional specimens sent to Spencer in the years following the Horn Expedition. Kitchener (1989) considered the type locality of Alice Springs as suspect on the grounds that Spencer did not collect the specimens himself. However, the specimen was obtained by J. Field, who was based in Alice Springs and forwarded the material to Spencer (Calaby, 1996).

[Conilurus pedunculatus] var. *brachyotis* Waite, 1896

Report of the Horn Scientific Expedition to Central Australia, Zoology Part 2: 397. (February 1896).

Common name. Central Rock-rat.

Current name. *Zyzomys pedunculatus* (Waite, 1896), following Jackson & Groves (2015), no subspecies recognized.

Syntype. M.1065 by subsequent determination. Skin mount, skull *in situ*, sex not determined from mount, marked in the M Register (probably by Troughton) as collected by Cowle. Presented by Baldwin Spencer, registered on 11 April 1896. This specimen is unambiguously marked in the M Register as the type of *brachyotis* by Waite, in his hand, and is unambiguously Waite's specimen G, a female.

Condition. Skin mount: missing left ear tip, missing three toes from left manus, vertical tear in left midrift, tail tip almost detached.

Type localities. Alice Springs, and Illamurta, James Range, Northern Territory (Waite, 1896). The M Register locality entry of "Illamurta" is written in Waite's handwriting for M.1065.

Comments. This taxon is based on two specimens, a male "F" and a female "G" in Waite's description. M.1065 is marked as "var. *brachyotis*" and "TYPE" and as specimen "G" of Waite's description, all in Waite's writing (signed ERW) in the M Register. Under Article 72.4.7, the annotation "Type" on specimen G in the Museum register does not validate it as a holotype; the two specimens represent syntypes.

Specimen F was perhaps returned to Spencer by Waite, but its current whereabouts is uncertain. Finlayson (1941) believed that he had examined the skull of Waite's specimen F and Aitken (1976) lists specimen F as SAM M.2412, male, skull only. However, Kitchener (1989) expressed doubt, noting discrepancies in cranial measurements with those of F provided in the original description. Kitchener (1989) examined both putative syntypes in the AM and SAM and concluded that *brachyotis* was not a valid taxon on the grounds that the specimens fall within the range of intraspecific variation of *pedunculatus*. He also considered both to be either subadult or young adults, and noted that Finlayson (1941) had determined that SAM M.2412 (a skull) was "definitely young". Kitchener (1989) did not designate a lectotype for *brachyotis*, citing possible confusion over syntype recognition; he was evidently unaware of Waite's unambiguous entry for this taxon in the M Register.

Gyomys berneyi Troughton, 1936b

Mem. Qld. Mus. 11(1): 15. (17 April 1936).

Common name. Central Short-tailed Mouse.

Current name. *Leggadina forresti* (Thomas, 1906a), following Jackson & Groves (2015), currently no subspecies recognized.

Holotype. M.6000 by original designation. Male, [Field no. 44], skull, study skin, registered September 1935, presented by F. Berney.

Condition. Cranium in good condition, both auditory bullae damaged, skull otherwise complete. Both dentaries complete except left dentary missing coronoid process. Study skin with bald patches on both flanks, tail tip is almost detached.

Type locality. "Barcarolle Station, 135 miles south of Longreach", Qld (Troughton, 1936b). Troughton subsequently (1965b: 318) states that Barcarolle Station is on the Thompson River.

Paratypes. (3, by original designation): details as for holotype: **M.6001**, female, skull, study skin; **M.6002**, male, skull, study skin; **M.6003**, male, body in alc.

Comments. Troughton cites registration numbers for the holotype and the three paratypes lodged in the AM, and states that the remaining six paratypes were in the QM. In his original description, Troughton (1936b: 14) indicates that the type series was stored for several years in formalin by the collector.

Gyomys pumilus Troughton, 1936b

Mem. Qld. Mus. 11(1): 16. (17 April 1936).

Common name. Delicate Mouse.

Current name. *Pseudomys delicatulus pumilus* (Troughton, 1936b), following Ford (2008). Recent authors either recognize this taxon as a subspecies of *P. delicatulus*, or as a synonym of *P. delicatulus delicatulus* (Gould, 1842). Subspecies within *P. delicatulus* are not recognized by Jackson & Groves (2015) who indicate the need for further taxonomic work on the group.

Holotype. M.6032 by original designation. Female, skull, study skin, palate in alc., collected in October 1924 by Anthony Musgrave, registered on 4 October 1935.

Condition. Cranium has fracture in the posterior end of the left zygomatic arch; right dentary missing coronoid and angular processes; left dentary complete. Study skin with bald patch on right flank and missing tail tip.

Type locality. Byfield, 25 miles north of Yeppoon, Qld, Australia.

Paratype. **M.6033** by original designation. Female, skull in alc., dentaries not located, body in alc.; other data as per holotype.

Comments. The type series consists of the two adult specimens, with registration numbers of both cited by Troughton. The AM Collection holds the following associated material in alc: M.46707, female juvenile of M.6033, M.33929, male juvenile of M.6033.

Hapalotis boweri Ramsay, 1887b

Proc. Linn. Soc. N.S.W. (ser. 2) 1(4): 1153, plate 18. (22 February 1887).

Common name. Golden-backed Tree-rat.

Current name. *Mesembriomys macrurus* (Peters, 1876a), following Jackson & Groves (2015), no subspecies recognized.

Syntype. M.1350 by subsequent determination. Male, skin mount (Fig. 30), skull not in skin. The M Register entry for M.1350 has "holotype" written next to it in what appears to be Troughton's handwriting. M.1350 was registered from the Old Collection in September 1898 with the following entry: "Conilurus boweri Rams. male NW Aust. OC [= Old Collection], skin, skull in skin?. Type. Figured. (found in stores)" but without a collection date or collector.

?Syntype. **?M.1350.** A cranium and dentaries (Fig. 31) have been matched with the skin subsequent to the Register entry for skin mount M.1350, but when and by whom is not recorded and there is doubt that the cranium and dentaries belong with the skin. An unsigned, undated note in the skull box, probably written by J. Mahoney, suggests that the cranium and dentaries are mismatched with the skin, "see my notes in checklist of Muridae"—presumably a reference to the conclusion of Mahoney & Richardson (1988) that the holotype skull remains unlocated. The registration number of M.2350 cited for the type by Mahoney & Richardson (1988) is an error.

Condition. **M.1350**. Skin mount: five fractures in the tail, ear tips torn, snout torn. **?M.1350**. Cranium is in good condition but has jugal missing from both zygomatic arches, hole in the left orbitosphenoid bone; both dentaries complete.

Cranial measurements (mm). M.1350?. GL, 56.04; ConL, 56.04; BasL, 52.15; NasL, 20.49; NasB, 6.25; DIL, 15.10; APV, 10.45; PPV, 1.54; PAL, 33.50; UMR (alv.), 9.40; ZB, 27.05; POC, 8.58; BUL, 8.30; MB, 19.45; DL (condyl.), 31.67; LMR (alv.), 8.81. See Table 5 for additional measurements.

Type locality. Derby district, northern Western Australia.

Comments. We are unable to unequivocally determine whether the skull marked M.1350? is Ramsay's original specimen. Our initial conclusion based on comparisons of the skull with Ramsay's illustrations was that it could not be the skull upon which the illustrations were based. However, for reasons set out below, a more detailed assessment suggests that the possibility remains open that the skull possibly is the one used by Ramsay.

Ramsay indicated that his original description was based on two specimens. The external description was based on an adult male skin without a skull, while the illustrations of skull and dentition, and possibly also manus and pes, were based on a skin and skull for which Ramsay did not state the sex. As the original description was based on both specimens, we regard them to be syntypes, contra Mahoney & Richardson (1988), who refer to the "holotype" which they state was not found in the AM. Ramsay's original specimens were: (1) an adult male skin, now unlocated, probably without skull, collected by T. H. Bowyer-Bower from the Derby area, northern Australia, and probably collected in 1886, given that Bowyer-Bower died on a field trip in December 1886 (see Mahoney, 1965). Ramsay (1887b) stated that the type specimen was sent in one of Bowyer-Bower's last batches of specimens; (2) a skin with cranium and dentaries of unspecified sex, from the Derby district, northern Australia, collected by E. J. Cairn. The collecting date is not recorded but likely to have been during 1886, given that Cairn collected in the Derby region with Bowyer-Bower, who arrived there in the first half of 1886.

Ramsay describes the initial specimen as the "type" and specifically states that it was forwarded to him by Bowyer-Bower but its whereabouts remains undetermined. It is not clear if Ramsay lodged the skin in the AM Collection, retained it in his private collection, or perhaps sent it in exchange to another institution. It appears that the skin mount M.1350 is the one collected by Cairn. However, we do not know if Ramsay's first specimen was a skin mount or flat skin subsequently turned into a mount, nor is it known if Ramsay received the first specimen as a dry or wet skin. The tail of the skin mount is set in an unusual position (Fig. 30), being drawn between the legs, but in a manner that would aid transportation—perhaps the specimen was prepared in Northern Australia. Lacerations on the head of the skin mount are consistent either with skull extraction, or to assess whether a skull was *in situ*.

The text description is based on a male skin, the skull of which Ramsay states is missing. Mahoney (1965) points out that Ramsay might never have received the skull from the collector, and that the skull could have been lost during field preparation of the skin. A footnote in Ramsay's original account (Ramsay, 1887b: 1154) indicates that after writing the description, he received another specimen from "Mr. Cairn's collection" (presumably E. J. Cairn) from the same district, upon which the skull illustrations would be based, "together with the hand and foot". The ambiguity in Ramsay's footnote means that it is not clear which specimen was used to illustrate manus and pes, perhaps his second specimen. We see no grounds for rejecting skin mount M.1350 as being one of Ramsay's original specimens, as

Figure 30. AM M.1350, syntype skin of *Hapalotis boweri* Ramsay, 1887b. (Photography by Sally Cowan).

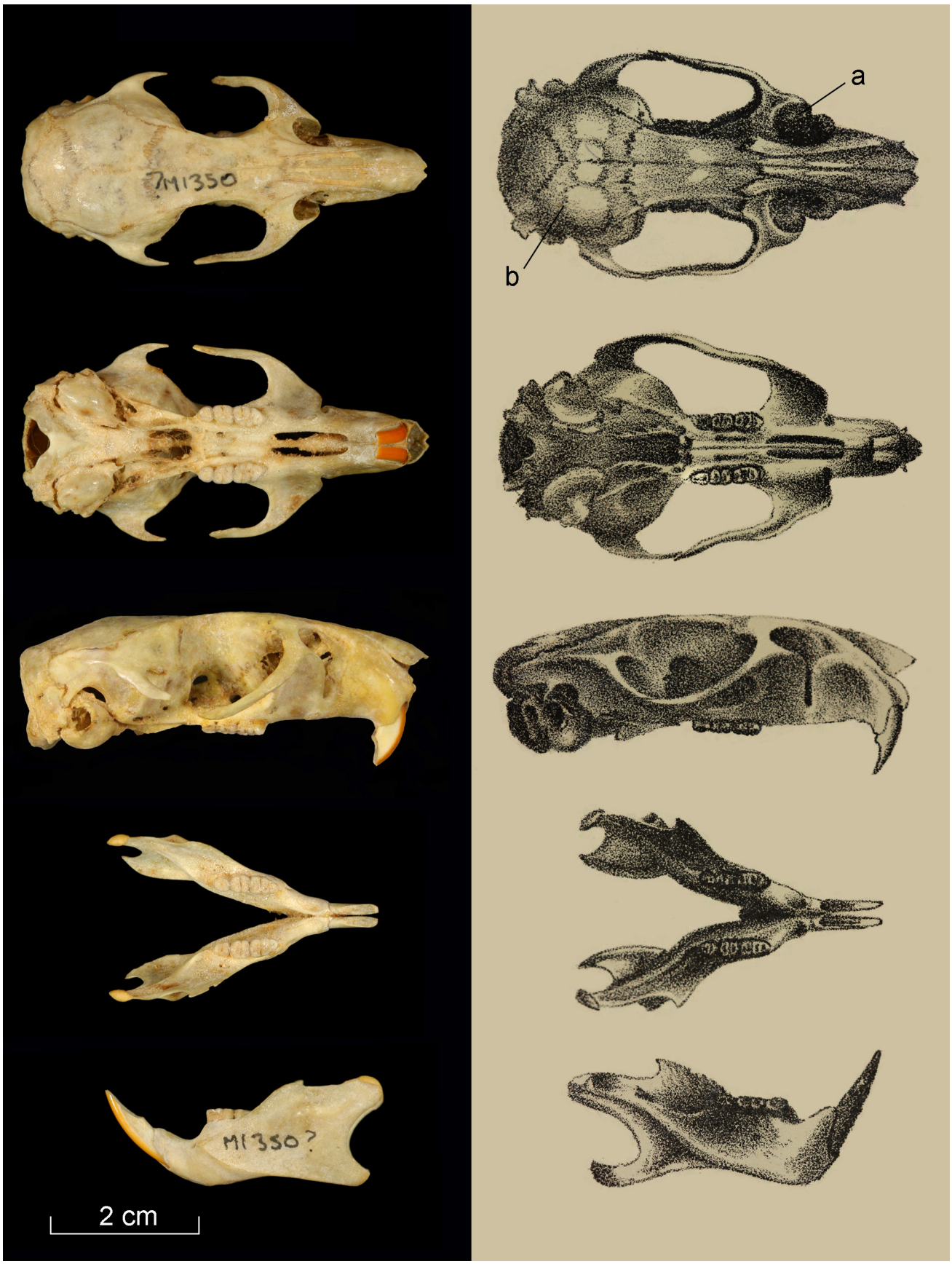

Figure 31. Comparisons between, left, AM M.1350?, the alleged syntype skull of *Hapalotis boweri* Ramsay, 1887b and right, skull illustrations from Ramsay's original account. *(a)* infraorbital foramen; *(b)* circular band of bone discolouration. (Photography by Sally Cowan and Jennifer Hull).

indicated in the M Register. However, establishing whether skin mount M.1350 is the first or second of Ramsay's skins is problematic. The head-body and tail length given by Ramsay for his first skin approximate those of M.1350, but the imprecision of those measurements combined with possible shrinkage limits further interpretation. Although the digits of the right pes of skin mount M.1350 are widely splayed, unlike those illustrated, comparisons would be void if the illustrations were prepared on the skin before it was fixed in its current configuration as a mount. This also applies to differences between the unsplayed digits of the left pes of the mount, had that been used in the illustration after appropriate image reversal. The right manus of M.1350 does resemble the illustration.

The skull currently matched with skin M.1350 has "M.1350 ?" in black ink written on the skull. The right dentary also has "M.1350 ?", which partly obscures a faded ink circle with a central dot, possibly remnants of ♀ (Ramsay often included a dot in female, but not male, symbols). Significantly, the right dentary of M.1350? has "H. boweri" clearly written in faded ink, in contrast to *Conilurus boweri*, the name entered when registered in 1898 during Waite's curatorship. Ogilby (1892) was the first to apply the name *Conilurus* to this entity, and assuming that the person who wrote "H. boweri" on the dentary was conversant with the latest generic nomenclature, it appears that it was written prior to 1892, during Ramsay's curatorship.

If the drawings accompanying Ramsay's description are an accurate representation, skull M.1350? cannot be the skull illustrated by Ramsay. There are a number of discrepancies between the two (Fig. 31), the most obvious of which include: *(a)* the pronounced posterior taper of the nasals contrast with those of the matched skull; *(b)* the infraorbital foramina are relatively much larger than those of the matched skull (marked "a" in Fig. 31), as seen from both dorsal and lateral drawings, yet not the ventral skull illustration; *(c)* the less anteriorly rounded braincase and broader interparietals of the matched skull; and *(d)* the greatly expanded angular processes of the dentaries contrast with those of the matched skull. Further, a cavity that appears to be the result of damage to the anterodorsal margin of the right orbit is evident in dorsal and lateral skull illustrations but not in the matched skull, while the anterior accessory cusps on M^1 of the matched skull are not present in the illustrations. The dorsal drawing of both dentaries closely resemble those of the matched skull (other than the angular processes) but the lateral depiction of the left dentary bears no resemblance. Both dentaries are attached in the matched skull and do not appear to have been glued together and this might have forced the artist to draw freehand, with a less than accurate outcome.

Despite significant discrepancies between skull M.1350? and the illustrations of Ramsay's account, several considerations support the skull as a possible match. First, at our request rodent specialist Dr Ken Aplin examined the skull and compared it with Ramsay's plate. He drew our attention to several unusual circular bands of bone discolouration across the frontals of M.1350? which he regarded as a possibly unique feature of that skull and which match the three circular marks of Ramsay's dorsal skull drawing ("b" in Fig. 31). He concluded that, in spite of the obvious differences between the skull and illustrations, M.1350? was possibly the skull illustrated by Ramsay (pers. comm. 2016). Further support stems from skull dimensions. Ramsay did not provide cranial or dental measurements but stated that his illustrations are reproduced at life size. A comparison of measurements of the matched skull with those taken from a hardcopy of Ramsay's plate 18 from the journal (Table 5) show a remarkable agreement for the majority of the 16 measurements, bearing in mind measurement error. Notable exceptions include posterior width across nasals, breadth of the infraorbital foramen and dentary length. The close match between measurements of skull and illustrations are significant considering that few specimens of this taxon were

Table 5. Selected cranial and dental measurements of skull matched with skin M.1350, versus measurements taken from hardcopy of plate 18 of *Hapalotis boweri* Ramsay, 1887b. (Both sets of measurements by HEP).

		Ramsay's (1887b) plate 18, views natural size				
measurement	M.1350	skull lateral	skull dorsal	skull ventral	jaw lateral	jaw dorsal
greatest length from nasals, dorsal	55.90	—	56.60	—	—	—
greatest length from nasals, lateral	56.00	57.70	—	—	—	—
zygomatic breadth	27.00	—	30.70	29.15	—	—
diastema (upper molar aveola to incisor alveola)	15.80	15.80	—	—	—	—
$M^{1–3}$ left side (anterior alveola to posterior crown)	9.17	—	—	9.77	—	—
nasals length	20.60	—	21.2	—	—	—
nasals max anterior breadth	6.25	—	7.51	—	—	—
nasals max posterior breadth	3.20	—	2.63	—	—	—
incisive foramina length	10.44	—	—	10.36	—	—
least interorbital breadth	8.50	—	8.65	—	—	—
infraorbital foramen breadth	13.90	—	17.36	—	—	—
nasal-maxillary suture to maxillo-frontal suture at midline	18.60	—	17.25	—	—	—
breadth maxillary bones at suture with frontals	11.80	—	10.93	—	—	—
interparietal maximum breadth	13.0	—	c. 10.0	—	—	—
left dentary length (angular process to posterior I alveola)	27.60	—	—	—	34.00	—
left dentary height (condyle to base angular process)	15.00	—	—	—	14.23	—
$M_{1–3}$ left side (crowns)	8.85	—	—	—	—	8.85

ever likely to have been in the AM Collection. Only three specimens additional to M.1350 have been registered in the AM, two in 1932. It appears that there were no registered specimens of this species in the Collection when M.1350 was registered. Only one specimen (A.4783) had been registered previously but had been exchanged. We do not know how many unregistered specimens existed at the time, but presumably there were few if any.

We do not know how the artist prepared the images accompanying the original description, nor the technique used to produce the plate for publication but they appear to have been prepared from photographic images. The simplest explanation for discrepancies between the matched skull and Ramsay's illustrations is that the illustrator, possibly not familiar with details of rodent cranial morphology and molar loph patterns, produced an inaccurate rendition. Under this scenario, the artist might have achieved correct size and proportions for most of the skull, yet failed to accurately draw all of the skull proportions. The lateral drawing of the dentary, and the relatively large upper incisor in the lateral skull drawing are likely examples of poor draftsmanship, as is the incongruent depiction of upper molar lophs between left and right molar rows Although we cannot discount this scenario, the pit in the right orbit seen in lateral and dorsal skull views, the sharp posterior nasal taper and possibly the enlarged infraorbital foramen seem incongruent to us. If the matched skull is accepted as being Ramsay's original, it would be necessary to attribute the later discrepancies to artistic license or poor draftsmanship. This would appear to be a distinct possibility, given the poor renditions accompanying other descriptions of rodent taxa by Ramsay (e.g., *Mus burtoni*). Another possibility, however remote, is that the skull was originally selected as a match for the skin on the basis of fortuitous similarities in skull and dental dimensions with the illustrations. This would seem improbable given the small number of specimens of *M. macrurus* likely to be in the AM Collection.

Figure 32. Cranium of AM S.1848, syntype of *Hapalotis caudimaculata* Krefft, 1867b. (Photography by Sally Cowan).

Hapalotis caudimaculata Krefft, 1867b

Proc. Zool. Soc. Lond. 1867: 316, figs 1–7. (22 October 1867).

Common name. Giant White-tailed Rat.

Current name. *Uromys caudimaculatus caudimaculatus* (Krefft, 1867b), following Jackson & Groves (2015).

Syntype. S.1848 by subsequent determination. Unsexed, cranium without dentaries (Fig. 32), registered from the "old collection" on 21 August 1929. The S Register entry, most likely in Troughton's hand, for S.1848 states "Skin nil" and the Remarks column states "Skull only discovered unregistered. Absence of an upper incisor + injury to basisphenoid suggest this is the skull of the type of *Hapalotis caudimaculata* figd in *Proc. Zool. Soc*. 1867 p. 317, fig. 1–7".

Condition. Cranium missing upper right incisor, hole in the left side of the basisphenoid.

Cranial measurements (mm). S.1848: GL, 69.45; ConL, 66.96; BasL, 63.31; NasL, 24.89; NasB, 6.92; DIL, 20.60; APV, 7.76; PPV, 1.41; PAL, 40.27; UMR (alv.), 12.87; ZB, 36.95; POC, 11.62; MB, 22.31.

?Syntypes. (4). **PA.88**, sex not recorded, skin mount, not sighted; **PA.89**, sex not recorded, skull, skin mount; **PA.90**, sex not recorded, skin mount, unclear if skull *in situ*, and **PA.91**, male, study skin, uncertain if skull *in situ*. All were originally entered in the Palmer Register c. 1878 as "Hapalotis caudimaculata, Cape York", with "Krefft" given as the presenter against PA.89.

Type locality. Cape York, north Qld, Australia.

Comments. Krefft indicates in his original account that he had purchased "several" specimens a "few months earlier". His description was evidently based on several skins and one complete skull. He provides external measurements for "one of the dried skins" and notes that the molars are very worn in the skull he described. The alleged syntype S.1848 has damage to the presphenoid bone resembling that seen in the skull illustrated in fig. 3 of Krefft's original description. However that illustration depicts a relatively broader skull than S.1848, with shorter nasals that do not extend posteriorly to contact the frontal suture. Krefft does not provide skull or dental dimensions for his specimen. We suspected that PA.88–PA.91 might be syntypes, before we became aware of the unpublished manuscript of Troughton (1956), who had reached the same conclusion. However, we cannot exclude the possibility that one or more of the latter specimens might have been obtained by Krefft after publication of his account. *Mus macropus* Gray, 1866b is a primary homonym, and thus the first available name for the species is *Hapalotis caudimaculata* Krefft, 1867b (see Groves & Flannery 1994).

Hapalotis personata Krefft, 1867b

Proc. Zool. Soc. Lond. 1867: 318. (22 October 1867).

Common name. Cape York Rat.

Current name. *Rattus leucopus* (J. Gray, 1867); following Jackson & Groves (2015).

Lectotype. PA.77, lectotype designation by Mahoney (1973). Female adult, skull, skin mount, the only data entered in Palmer's hand in the Palmer Register is "Hapalotis personata Cape York" and "Gallery" (= skin mount) has been stamped in Remarks column.

Condition. Cranium missing right zygomatic arch; right dentary has a broken ramus. Skin mount in reasonable condition; bald patch posterior to each eye; bald patch on throat; bald patch on body behind each hind leg; ventral fur crudely repaired, tail fractured near tip.

Type locality. Cape York, north Qld, Australia.

Paralectotypes. (2). **PA.75**, male, skull, skin mount; **PA.76**, indeterminate sex, skin mount without skull, both have Palmer entries that are identical to that of the lectotype.

Comments. Troughton (1923) discussed the type series and regarded the taxon to be a synonym of *Rattus rattus*. Mahoney (1973) regarded PA.75–77 to be Krefft's original specimens and provided detailed skull measurements and photographs of the designated lectotype. He rejected Troughton's assessment of Krefft's taxon but found it to be a synonym of another taxon described in the same volume and also from Cape York—*Acanthomys leucopus* Gray, 1867. Although Krefft's name had page preference, Mahoney designated *Acanthomys leucopus* as senior synonym to preserve existing use.

Hydromys grootensis Troughton, 1935b

Rec. Aust. Mus. 19(4): 252, fig. 1. (19 September 1935).

Common name. Water Rat.

Current name. *Hydromys chrysogaster* É. Geoffroy, 1804; following Jackson & Groves (2015). Taxonomic status unresolved: several authors have noted the need for a detailed taxonomic review given the extensive size and colour variation within *Hydromys chrysogaster* (see Jackson & Groves, 2015).

Holotype. M.4476 by original designation. Male adult, skull, study skin, collected and presented in 1928 by Reverend H. E. Warren, registered January 1929.

Condition. Incomplete cranium, missing braincase and posterior half of the right zygomatic arch. Right maxillary tooth row and posterior half of palate are detached. Right dentary missing distal half of angular process, left dentary complete. Study skin has two bald patches on the mid dorsal surface, fur has faded.

Type locality. Groote Eylandt, Gulf of Carpentaria, Northern Territory, Australia. Troughton (1941) states that the original specimen was collected "near the Mission".

Comments. Apparently based on a single specimen. Most authors since Ride (1970) have not recognized *grootensis* as a valid taxon but its status has not been subject to detailed evaluation.

Hydromys hussoni Musser & Piik, 1982

Zool. Med. 56 (13): 157, figs. 1–2; Plate 1, fig. b, Plate 2 fig. b, Plate 3 fig. b. (7 May 1982).

Common name. Western Water Rat.

Current name. *Hydromys hussoni* Musser & Piik, 1982; following Musser & Carleton (2005).

Paratype. M.18627 (= RMNH 29176), female, skull, study skin, collected on 1 October 1939 by "New Guinea Expedition K.NAG" [= Royal Netherlands Geographical Society].

Type locality. Via Enarotali village (3°55'40"S 136°22'6"E), 1765 m, on the east side of Paniai Lake, Paniai Lakes district (= Wissel Lakes district), Irian Jaya (= Papua Province, Indonesia).

Comments. Specimen RMNH 29176 is listed in the original account as a referred specimen but is treated here as a paratype because it was part of the series used to describe the taxon. Exchanged from RMNH (now the National Museum of Natural History Naturalis in Leiden); registered at the AM on 15 February, 1988. See Helgen (2005c) for photographs of the skin and skull of this specimen.

Hydromys lawnensis Troughton, 1935b

Rec. Aust. Mus. 19(4): 253. (19 September 1935).

Common name. Water Rat.

Current name. *Hydromys chrysogaster* É. Geoffroy, 1804; following Jackson & Groves, (2015). Taxonomic status unresolved: several authors have noted the need for a detailed taxonomic review given the extensive size and colour variation within *Hydromys chrysogaster* (see Jackson & Groves, 2015).

Holotype. M.5650 by original designation. Male, [list No. 125], skull, study skin (Figs 33–34), collected by E. Le G. Troughton on 16 June 1934, registered August 1934.

Condition. Incomplete cranium, jugal missing from both zygomatic arches, missing both upper left molars. Dentaries missing both lower right molars and the 1st lower left molar. Study skin, missing right ear tip and torn left ear tip.

Type locality. Lawn Hill Creek, Adel's Grove, c. 12 miles south of Lawn Hill Station, Qld, Australia. [Adel's Grove is the name of a homestead].

Paratype. M.5651 (allotype) by original designation. Female, skull, study skin, collected 17 June 1934, same details as holotype.

Comments. Evidently based on two specimens, registration numbers are given for both in the original description.

Hydromys lutrilla Krefft, in Gould, 1863a

The Mammals of Australia Part 13, page xxxvii. (1 May 1863).

Common name. Water Rat.

Current name. *Hydromys chrysogaster* É. Geoffroy, 1804; following Jackson & Groves, 2015). Taxonomic status unresolved: a detailed taxonomic review of the extensive variation within *Hydromys chrysogaster* is needed, and two

Figure 33. AM M.5650, holotype skin of *Hydromys lawnensis* Troughton, 1935b. (Photography by Sally Cowan).

Figure 34. AM M.5650, holotype skull of *Hydromys lawnensis* Troughton, 1935b. (Photography by Sally Cowan).

species could be present in south-eastern Australia (Jackson & Groves, 2015).

Holotype. PA.125, by subsequent determination. Indeterminate sex, skin mount, part skull *in situ*. Registered in Palmer Register in c. 1878 but no entry for locality, collector, donor or collection date. An entry in the notes column of the register, possibly written by Palmer, states: "drawing of this specimen by Angas, is referred to by Gould, is preserved in Australian Museum". Donated by W. S. Macleay.

Condition. Skin mount (part skull *in situ*), missing upper incisors, snout area is damaged (parts of skin missing), tear in the right front limb, fracture in the proximal end of the tail. The sex could not be determined from the skin.

Type locality. Foreshore outside Elizabeth Bay House, Elizabeth Bay, Sydney (Gould, 1863a), NSW, Australia.

Comments. Gould (1863a) states that *lutrilla* was known from a single specimen and Krefft (1864a) states that is was known from a single half grown specimen. Gould (1863a) remarked that, not having examined the specimen, he was unable to determine if it was a valid species. Although Gould attributed discovery of this entity to Macleay, Gould reproduced a description provided by Krefft and authorship is therefore attributed to Krefft (Article 50.1, the *Code*). The specimen currently believed to be the holotype is fully furred. Although this is inconsistent with the remark by Krefft (1871a) that "the original specimen in the Australian Museum has lost much of the fur …" , it is possible that

the skin mount has been repaired. Krefft in Gould (1863a) gave four body measurements of the holotype which are a good fit with PA.125, given the relatively imprecise nature of the characters and possible skin shrinkage. These are (our measurements in brackets): "length from tip to tip", 17 inches (16¾ inches); length of tail about 7 inches (7 inches); "length of face to base of ear", 2 inches (2 inches); length of tarsi and toes, 2 inches (pes length without claws, 48 mm = 1.89 inches).

Mahoney & Richardson (1988) list 13 names under *chrysogaster* but do not discuss subspecific status. Troughton (e.g., 1941; 1974) recognized eight species of *Hydromys* in Australia, including *H. chrysogaster lutrilla*, one of several subspecies he recognized of *H. chrysogaster*. In the absence of any comprehensive taxonomic studies during the past 50 years, modern authors have defaulted to treating "*chrysogaster*" as a single variable species without recognizing subspecies, most of which are treated as invalid.

Hydromys moae Troughton, 1935b

Rec. Aust. Mus. 19(4): 254. (19 September 1935).

Common name. Water Rat.

Current name. *Hydromys chrysogaster* É. Geoffroy, 1804; following Jackson & Groves (2015). Taxonomic status unresolved: several authors have noted the need for a detailed taxonomic review given the extensive size and colour variation within *Hydromys chrysogaster* (see Jackson & Groves, 2015).

Holotype. M.4558 by original designation. Adult, indeterminate sex, skull, flat skin (Figs 35–36), presented in April 1929 by Mr A. S. Le Souef, registered in April 1929.

Condition. Cranium missing left auditory capsule and small posterior section of the left zygomatic arch; both dentaries complete. Damaged flat skin, distal third of tail is detached

Figure 35. AM M.4558, holotype skin of *Hydromys moae* Troughton, 1935b. (Photography by Sally Cowan).

Figure 36. AM M.4558, holotype skull of *Hydromys moae* Troughton, 1935b. (Photography by Sally Cowan).

and front left limb is almost detached.

Type locality. Moa Island, Torres Strait, Qld, Australia.

Paratype. M.4559 by original designation. Immature [male], skull, flat skin, same data as holotype.

Comments. Troughton gave no indication of the number of specimens in the type series and his original account mentions only the holotype and paratype, for which he cites registration numbers for both.

Hydromys oriens Troughton, 1937a

Rec. Aust. Mus. 20 (2): 127. (27 August 1937).

Common name. Water Rat.

Current name. *Hydromys chrysogaster* É. Geoffroy, 1804; following Musser & Carleton (2005). Taxonomic status unresolved: extensive morphological variation within *H. chrysogaster* is in need of review (Flannery 1995b; Musser & Carleton, 2005).

Holotype. M.4683 by original designation. Adult male, [No. 43], skull (Fig. 37), study skin, collected and presented in 1929 by Mr C. T. McNamara, registered in September 1929.

Condition. Cranium and left dentary complete; right dentary missing coronoid process. Study skin in good condition, with no obvious external genitals.

Type locality. Mount Lamington district, Northern Province, Papua New Guinea.

Comments. Evidently based on one specimen, for which Troughton provides measurements taken from a body in alcohol. There are no other specimens of *Hydromys* collected by McNamara from Papua New Guinea in the AM Collection. Flannery (1995b) lists 18 names from the Australo-Papuan region under "*chrysogaster*" and states that the species is "profoundly in need of revision".

Mallomys gunung Flannery, Aplin & Groves, in Flannery *et al.* 1989

Rec. Aust. Mus. 41(1): 101, figs 1–2, 11–12; tables 4–5. (30 June 1989).

Common name. Alpine Woolly Rat.

Current name. *Mallomys gunung* Flannery, Aplin & Groves, in Flannery *et al.* 1989; following Musser & Carleton (2005).

Paratypes. (3, by original designation): all three AM paratypes collected by R. G. Peters, "pickup" skulls, of unknown sex. **M.19028**, anterior part of cranium and both dentaries, collected at alt. 3,780 m, and **M.19029**, anterior half of cranium only, collected at alt. 3,760 m, both collected on 9 December 1983. Original account gives locality for both as "Moraine Camp, Meren Valley", specimen labels state "Morraine near Camp Meren V", Mount Carstensz (4°05'S 137°11'E), Papua Province, (previously West Irian), Indonesia. **M.19030**, anterior part of cranium, collected at 3,500 m on 9 December 1983, Ertzberg Meadow, Mount Carstensz (4°05'S 137°11'E).

Comments. Six specimens in the type series, holotype and one paratype are in the AMNH, the remaining paratype is in the ANWC.

Figure 37. AM M.4683, holotype skull of *Hydromys oriens* Troughton, 1937a. (Photography by Stuart Humphreys).

Mallomys istapantap Flannery, Aplin & Groves, in Flannery *et al.* 1989

Rec. Aust. Mus. 41(1): 96, figs 1–2, 11–12; tables 4–5. (30 June 1989).

Common name. Subalpine Giant-Rat.

Current name. *Mallomys istapantap* Flannery, Aplin & Groves, in Flannery *et al.* 1989; following Musser & Carleton (2005).

Holotype. M.7328 by original designation. Female, skull, study skin, collected on 17 July 1945 by Captain Neptune B. Blood, registered in February 1948.

Condition. Cranium missing left auditory capsule, interorbital area has impact indentation with fractures. Both dentaries complete. Study skin has three bald patches on the snout.

Type locality. Korelum, Mount Hagen district (5°52'S 144°14'E), Western Highlands Province, Papua New Guinea.

Paratypes. (2, by original designation). **M.12908**, female, skull, manus and pes in alc., collected from the margin of the Neon Basin, 2,900–3,000 m, Mount Albert Edward (8°28'S 147°20'E), Central Province, Papua New Guinea, on 20 December 1981 by [T. F. Flannery and] K. Aplin. **M.12875**, juvenile female, skull, flat skin (young of M.12908).

Comments. Eight specimens in the type series, the other five paratypes are in ANWC.

Mayermys germani K. Helgen, 2005a

Mammal. Biol. 70(1): 62, figs 2–3; table 1. (11 February 2005).

Common name. Eastern small-toothed moss-mouse.

Current name. *Pseudohydromys germani* (K. Helgen, 2005a); following Helgen & Helgen (2009).

Holotype. M.29245 by original designation. Male adult, Field no. FR341, skull, study skin, skinned body in alc. includes reproductive tract; frozen tissue. Collected by Pavel German on 11 August 1992; registered 23 August 1993. Captured in a snap trap.

Condition. Cranium and both dentaries intact and in good condition other than detached upper left molar. Study skin is complete.

Type locality. Munimun Village (9°53'S 149°23'E, alt. 1300 m), [Maneau Range], Agaun area, Milne Bay Province, Papua New Guinea.

Comments. Based on the only known specimen at that time. A further two specimens are reported by Helgen & Helgen (2009), who provide additional photographs of the holotype skull and skin. Publication date established from journal editorial staff (Dr Alrun Albrecht, Senior Publishing Editor, Elsevier, pers. comm. Nov. 2012)

Melomys bougainville Troughton, 1936a

Rec. Aust. Mus. 19(5): 344. (7 April 1936).

Common name. Bougainville Mosaic-tailed Rat.

Current name. *Melomys bougainville* Troughton, 1936a; following Musser & Carleton (2005).

Holotype. M.5757 by original designation. Male, [Field no. 346], skull, study skin, presented by J. B. Poncelet, registered 27 December 1934. Body originally in alcohol, later converted to skull, study skin.

Condition. Cranium and both dentaries complete. Study skin: bald patches on the ventral surface and a tear (stitched up) near the right eye.

Type locality. Buin district [6°50'S 155°45'E], southern Bougainville, North Solomons Province, Papua New Guinea.

Comments. Troughton based the description on a single specimen, adding that a second adult male, evidently received after preparing the initial description, had external dimensions similar to those of the holotype. The latter specimen is still in the AM Collection and is M.6045, male adult, body in alc., Buin, presented by J. B. Poncelet, registered 18 December 1935. It is considered to be a referred specimen. Poncelet presented four additional specimens (topotypes) that were registered as *M. bougainville* by Troughton during 1937 to 1939, all from the Buin district: M.6343–44, M.6493 and M.6650, all listed as female in the register. Flannery & Wickler (1990) re-instated this taxon, which had been relegated to a subspecies of *M. rufescens* since earlier treatments including Tate (1951b).

Melomys cervinipes pallidus Troughton & Le Souef, 1929b

Aust. Zool. 6: 97. (13 August 1929).

Common name. Fawn-footed Melomys.

Current name. *Melomys cervinipes* (Gould, 1852), following Jackson & Groves (2015), no subspecies recognized.

Holotype. M.4379 by original designation. Male adult, skull, study skin, collected by A. S. Le Souef, registered on 7 September 1928.

Condition. Cranium and left dentary complete; right dentary missing coronoid process. Study skin, tail tip is fractured.

Type locality. Hinchinbrook Island, North Qld, Australia. Field work was restricted to the "foreshores" of the Island (Troughton & Le Souef, 1929b)

Paratypes. (2, by subsequent determination). **M.4380**, female, body in alc.; **M.4381**, juvenile male, body in alc., details for both as per holotype.

Comments. Type series stated to be the holotype, allotype and one juvenile but registration number cited for the holotype only. Troughton marked M.4380 as a paratype in the register.

Melomys hadrourus Winter, 1984

Mem. Qld. Mus. 21(2): 519, figs 2–4, pl. 1–3, tables 1–2 (cover date March 1984).

Common name. Pygmy White-tailed Rat.

Current name. *Uromys hadrourus* (Winter, 1984), following Musser & Carleton (2005).

Paratypes. (2, by original designation). **M.12520**, female adult, skull, study skin, body in alc., collected by H. Posamentier, between 3–13 November 1975, from south face of Thornton Peak at alt. of 640 m (16°10'30"S 145°21'45"E), North Qld. **M.12521**, male subadult, skull, body in alc., collected by H. Posamentier, 13 November 1975, from south face of Thornton Peak at alt. of 1020 m (16°10'15"S 145°22'00"E), North-eastern Qld, Australia.

Comments. Five specimens in the type series, holotype and other paratypes are in QM. Although this species was described by Winter (1984), it is evident that the name was inadvertently published in his earlier account (Winter, 1983) of "*Melomys* sp." and the caption to his figure states that the species "had not been formally described when this book went to press and still lacked a scientific name". Subsequent authors have variously accepted the publication date as 1983 (e.g., McAllan & Bruce, 1989; Jackson & Groves, 2015) or 1984 (e.g., Mahoney & Richardson, 1988; Musser & Carleton, 2005). We accept the publication date as 1984 on the grounds that the description was in two parts, with the initial incomplete description that referred to Winter's paper in press.

Melomys hageni Troughton, 1937a

Rec. Aust. Mus. 20(2): 124. (27 August 1937).

Common name. Black-tailed Mosaic-tailed rat.

Current name. *Melomys rufescens hageni* Troughton, 1937a; following Musser & Carleton (2005).

Holotype. M.6113 by original designation. Adult male, skull (Fig. 38), study skin, collected and presented by Dr G. A. M. Heydon during 1936. Registered on 22 May 1936.

Condition. Cranium has holes in left temporal bone, right parietal and frontal; left dentary missing ramus, right dentary missing angular process. Study skin missing left ear and tail tip is fractured.

Type locality. The upper Wahgi River valley, alt. 5–6,000 ft., near Mt Hagen, Western Highlands Province, Papua New Guinea (Troughton, 1937a).

Comments. Apparently described from one specimen.

Melomys limicauda Troughton, 1935b

Rec. Aust. Mus. 19(4): 255, fig. 2a. (19 September 1935).

Common name. Fawn-footed Melomys.

Current name. *Melomys cervinipes* (Gould, 1852), following Jackson & Groves (2015).

Holotype. M.5928 by original designation. Adult male, skull, study skin, collected in January 1935, by Mr F. A. McNeill; registered 21 January 1935.

Condition. Damaged cranium, right side of braincase, zygoma and posterior half of right orbit are crushed, otherwise complete; right dentary missing angular process. Study skin: large patch of skin and fur missing on right side of dorsum posterior to ear.

Type locality. Hayman Island, Whitsunday Group, Qld, Australia.

Comments. Description based on an adult male specimen. Troughton mentioned a young female received from Hans Kroyer but did not cite the registration number. The specimen appears to be M.5953, (body in alc.), from Hayman Island,

Figure 38. AM M.6113, holotype skull of *Melomys hageni* Troughton, 1937a. (Photography by Stuart Humphreys).

registered on 8 April 1935. He also mentions an adult specimen to be forwarded by Kroyer, which is presumably included in the six specimens from the type locality (M.6049–54) from Kroyer registered in December 1935 and identified in Troughton's hand as *M. limicauda*. We regard M.5953 to be a referred specimen, rather than a paratype because it is implicitly excluded from the species description.

Melomys littoralis insulae Troughton & Le Souef, 1929b

Aust. Zool. 6: 96. (13 August 1929).

Common name. Grassland Melomys.

Current name. *Melomys burtoni* (Ramsay, 1887a), following Jackson & Groves (2015).

Holotype. M.4382 by original designation. Male, skull, study skin, originally in alc., collected in September 1928 by A. S. Le Souef, registered on 7 September 1928.

Condition. Cranium missing jugal from left zygomatic arch; left dentary missing angular process; right dentary complete. Study skin complete.

Type locality. Hinchinbrook Island, Qld, Australia.

Paratypes. (7, by subsequent determination): details as per holotype: **M.4383**, **M.4384** both males, bodies in alc.; **M.4385**, female (allotype), skull, study skin; **M.4386–89** females, bodies in alc.

Comments. Type series stated to be eight specimens, of which the registration number is only given for the holotype. All paratypes are marked as such in Troughton's handwriting in the M Register.

Melomys matambuai Flannery, Colgan & Trimble 1994

Proc. Linn. Soc. N.S.W. 114(1): 39, fig. 4, table 3. (27 May 1994).

Common name. Manus Island Mosaic-tailed Rat.

Current name. *Melomys matambuai* Flannery, Colgan & Trimble, 1994; following Musser & Carleton (2005).

Holotype. M.19639 by original designation. Female, [Field no. FE302], skull, study skin, skinned body in alc., frozen tissue; collected by T. F. Flannery, 15 June 1988; registered 23 November 1988.

Condition. Cranium has hole in the right maxilla; both dentaries complete. Study skin: missing most of tail (only c. 4 cm present), missing left ear and all digits of left and right manus are contorted.

Type locality. Near Polomou D.P.I. [= Department of Primary Industries] Station, (2°08'S 147°05'E), south-central Manus Island, Manus Province, Papua New Guinea.

Paratype. M.22277 by original designation. Female, skull, study skin, skinned body in alc., collected by F. Kinbag, collection date not recorded, registered 3 August 1990, west end of Manus Island, Manus Province, Papua New Guinea.

Comments. Described from two specimens.

Melomys mixtus Troughton, 1935b

Rec. Aust. Mus. 19(4): 257. (19 September 1935).

Common name. Grassland Melomys.

Current name. *Melomys burtoni* (Ramsay, 1887a), following Jackson & Groves (2015).

Holotype. M.5397 by original designation. Male adult, skull,

study skin, collected and presented by Mr H. L. Perriman in 1933 and registered in October 1933.

Condition. Cranium complete; left dentary missing coronoid process, right dentary complete. Study skin: a bald patch on each side of the rear flank, left ear tip frayed.

Type locality. Groote Eylandt, Gulf of Carpentaria, Northern Territory, Australia.

Paratypes. (3, by subsequent determination): **M.5051** young female (allotype) and **M.5052**, male, both study skins and skulls from Groote Eylandt, collected by Rev. H. E. Warren in 1930; **M.5396**, male, body in alc., same data as holotype.

Comments. Only the holotype and allotype are mentioned in the original description. The registration number of the allotype is not cited in the original account but the original skin tag attached to M.5051 is labelled "Allotype" in red ink in Troughton's hand. Although Troughton does not mention other paratypes, two specimens (M.5052 and M.5396) are marked as paratypes in what appears to be Troughton's hand in the M Register. Troughton did not consistently mark paratypes as such in the register but these are likely to be the only paratypes as there are no other specimens in the AM database with suitable dates.

Melomys muscalis froggatti Troughton, 1937a

Rec. Aust. Mus. 20(2): 123. (27 August 1937).

Common name. Grassland Melomys.

Current name. *Melomys burtoni* (Ramsay, 1887a), following Musser & Carleton (2005) and Aplin & Dickman *et al.* (2008). Status uncertain. Considered to be a junior synonym of *Melomys lutillus muscalis* (Thomas, 1913) by Menzies (1996). Aplin & Dickman *et al.* (2008) regard *M. burtoni* and *M. lutillus* (Thomas, 1913) to be an unresolved species complex of Northern Australia and Papua New Guinea.

Holotype. M.2374 by original designation. Adult male, skull (Fig. 39), study skin, registered 16 December 1913. The only data in the original register entry is "Royal Geographical Society Expedition to New Guinea", "Old Collection", later marked "Holotype" by Troughton. Collected in 1885 by W. W. Froggatt (Troughton's account). The AM type specimen card index gives the collection date as September–October 1885.

Condition. Cranium missing both zygomatic arches, both auditory capsules fractured and damaged, small section of posterior palate missing; both dentaries missing coronoid processes. Study skin: missing both ear tips and fractured tail tip.

Type locality. "The banks of the Strickland River, about 100 miles above the junction with the Fly River", Western Province, Papua New Guinea (Troughton, 1937a: 124). It seems conceivable that Troughton obtained locality data of the holotype from his contemporary Froggatt. Dwyer *et al.* (2015) concluded that "Fossil camp" was the furthest upstream location on the Strickland River reached by the Geographical Society's Expedition, located between the junctions of the Murray and Carrington Rivers at approximately 5°51'20"S 142°8'50"E, and they state that Froggatt had estimated this site to be about 100 miles (along the river) from the junction with the Fly River. The Expedition stayed one night at Fossil

Figure 39. AM M.2374, holotype skull of *Melomys muscalis froggatti* Troughton, 1937a. (Photography by Stuart Humphreys).

Camp (27 September 1885) and returned to the Fly junction on 29 September. It is likely that the holotype was collected in late September, and the type locality was Fossil Camp or an adjoining site downstream.

Comments. Troughton erroneously gives the holotype registration as M.2377, presumably a typographical error. His description appears to be based on a single specimen.

Melomys rufescens paveli K. Helgen, 2003

J. Zool. 261(2): 168, tables 3–4. (cover date October 2003).

Common name. Pavel's Seram Mosaic-tailed Rat.

Current name. *Melomys paveli* K. Helgen, 2003; following Musser & Carleton (2005).

Holotype. M.31923 by original designation. Female adult, [Field no. GT199], skull (Fig. 40), study skin, skinned body in alc., collected 30 May 1993 by Pavel German and Elizabeth Tasker; registered 22 June 1995.

Condition. Incomplete cranium, missing most of braincase and both auditory capsules, both zygomatic arches; right dentary missing angular process; left dentary complete. Study skin complete.

Type locality. Near the village of Piliana (c. 3°15'S 129°30'E, alt. c. 400 m), south coast of Seram, Maluku Province, Indonesia.

Comments. Described from the only known specimen (Gerrie & Kennerley, 2016).

Mus burtoni Ramsay, 1887a

Proc. Linn. Soc. N.S.W. (ser. 2) 2(3): 553, pl. xvii. (30 November 1887).

Common name. Grassland Melomys.

Current name. *Melomys burtoni* (Ramsay, 1887a), following Jackson & Groves (2015).

Holotype. S.427, by subsequent determination (Mahoney, 1965). Sex not recorded, skull, registered in S Register 12 August 1893 from the Old Collection. The S Register has an annotation that there was no skin.

Condition. Incomplete cranium missing braincase, both zygomatic arches, left upper last molar; both dentaries have chipped angular processes, and missing coronoid processes.

Type locality. Near Derby, Western Australia (Mahoney, 1965).

Comments. Apparently described from one specimen, obtained by T. H. Bowyer-Bower in 1886. See Mahoney (1965) for reasoning behind holotype determination, and photographs and detailed measurements of the skull and dentition.

Mus colletti Thomas, 1904

Nov. Zool. 11: 599. (12 September 1904).

Common name. Dusky Rat.

Current name. *Rattus colletti* (Thomas, 1904), following Jackson & Groves (2015).

Paratype. M.3370 by subsequent determination. Female, study skin with skull *in situ*, collector's No. 1826, Alligator River, collected by J. T. Tunney, 31.8.1903. Received from the BMNH in 1923, registered in AM on 10 December 1923.

Comment. Thomas states that he examined 25 specimens, apparently all from the South Alligator River, the type locality. Ten of these were registered in the BMNH (1904.4.4.3–12), including AM M.3370 (formerly BM 1904.4.4.8) which is thus a paratype (P. Jenkins, BMNH, pers. comm. 18 February 2014).

Figure 40. AM M.31923, holotype skull of *Melomys rufescens paveli* K. Helgen, 2003. (Photography by Stuart Humphreys).

Mus(?) echimyoides Ramsay, 1877g

Proc. Linn. Soc. N.S.W. (ser. 1) 2(1): 15. (July 1877).

Common name. Pacific Rat.

Current name. *Rattus exulans browni* (Alston, 1877), following Taylor *et al.* (1982).

Syntypes. (2). **M.2364**, (skin tag 48), male, skull, study skin. An early tag attached to the skin was most likely written by Ramsay and has inscribed: "No. 48 Type of the species *Mus echymoides* [sic]. Duke of York Islands (G.B.) [= George Brown] Bought of Cockerell E-- [indecipherable initials, apparently E.P.R.]"; **M.2365**, (skin tag 52), male, skull, study skin, tag in Ramsay's hand states: "Type of the species ♂ *Mus echymoides*. Duke of York Is, George Brown". Both specimens were registered on 16 December 1913 and entered with identical data: "Mus echymoides [sic] male TYPE, Duke of York Island, Purch. from Cockerell. Rev. George Brown." There is no indication in the M Register entries of any previous Palmer Register number.

Condition. **M.2364**: incomplete cranium, missing both zygomatic arches, occipital area and both auditory capsules; holes in left and right frontals; left dentary missing coronoid process, right dentary with fracture in condylar process, left mandibular incisor is shorter. Study skin: bald patch on the dorsal surface, fracture in the proximal end of the tail and missing tail tip. **M.2365**: incomplete and damaged cranium, missing right zygomatic arch, posterior braincase wall, left zygomatic arch broken. Study skin has a dorsal bald patch on the left shoulder and a dorsal hole on the right shoulder, right ear damaged, tail missing parts of skin in two sections, and tail detached but tied to the dorsal surface of the body.

Cranial measurements (mm). **M.2364:** GL, —; NasL, 11.74; NasB, 3.55; DIL, 8.73; APV, 5.75; PAL, 16.69; UMR (alv.), 5.08; ZB, —; POC, 5.00; BUL, —; MB, —; DL (condyl.), 16.74; LMR (alv.), 4.99. **M.2365:** GL, —; NasL, 10.76; NasB, 3.22; DIL, 7.54; UMR (alv.), 5.14; ZB, —; POC, 4.92; BUL, —; MB, —; DL (condyl.), 15.38; LMR (alv.), 4.63.

Type locality. "Duke of York Island" (Ramsay), East New Britain Province, Papua New Guinea.

Comments. Ramsay indicated that he examined sub-adults and adults of each sex, but failed to indicate the number of specimens in the type series, or cite field numbers or registration numbers (the new A Register numbering had not yet commenced). He stated that no skulls were available and that his description was based on external criteria.

Syntype skin M.2364 has what is most likely Ramsay's original tags, written in his hand. Both syntype skins have printed paper tags attached with the only information being the numbers 48 and 52, respectively. We suspect that the numbers refer to Palmer Register numbers, and if so, are inconsistent with original data entered by Palmer in the Register and with amendments made when M numbers were assigned in 1913. Both syntypes are likely to have been re-registered from a series of specimens PA.48 to PA.54 originally in alcohol, that also include likely syntypes of *Mus musavora* Ramsay. It seems certain that confusion existed in assigning numbers to specimens when registered by Palmer. An annotation in Troughton's hand to the old specimen index card for PA.50–51 (marked *Mus echmyoides* [sic], mounted group of two) notes "Registration numbers doubtful according to Palmers entry, see specimens registered as M.2364–65 which are definitely labelled "types"".

Mus fieldi Waite, 1896

Report of the Horn Scientific Expedition to Central Australia, Zoology part 2, 403, plate 26, fig. 4. (February 1896).

Common name. Shark Bay Mouse.

Current name. *Pseudomys fieldi* (Waite, 1896), following Jackson & Groves (2015), no subspecies recognized.

Holotype. M.1069 by subsequent determination. Female adult, part skull, both dentaries, and body in alc., registered in the AM on 11 April 1896 as "Mus fieldi Alice Springs, presented by W. Baldwin Spencer", and "TYPE" written and initialed by Waite in the comments column. Waite (1896) states that the type was collected by J. Field in June 1895. Old paper tag tied to left pes states "Z.".

Condition. Incomplete cranium which is in pieces, missing most of braincase, missing both upper tooth rows, missing both zygomatic arches. Left dentary missing angular process; right dentary missing ramus. Body in alc.: fur slip on both sides. The age and the sex were not determined from the specimen.

Type locality. Alice Springs, Northern Territory, Australia.

Comments. Waite stated in the original description that a single specimen was available, and noted that the skull was "so utterly crushed that not a single measurement could be made".

Mus hermannsburgensis Waite, 1896

Report of the Horn Scientific Expedition to Central Australia, Zoology part 2, 405, plate 26, fig. 5. (February 1896).

Common name. Sandy Inland Mouse.

Current name. *Pseudomys hermannsburgensis* (Waite, 1896), following Jackson & Groves (2015).

Lectotype. M.1070A lectotype designated by Troughton (1932c). Skin mount, sex indeterminate from skin mount, cranium and dentaries. Locality written in Waite's hand in register as "George Gill Range H'burg". Presented by W. Baldwin Spencer, collector and collection date not given, registered on 11 April 1896. Possibly specimen "D" of Waite (1896); but see below. Sex not indicated for "D" in Waite's original register entry but cited as female by Waite (1896).

Condition. Incomplete cranium, missing right zygomatic arch, missing occipital area, hole in right frontal, and detached right auditory capsule; both dentaries complete. Incomplete and damaged mount, tape holding head and tail tip in place, missing right ear, bald patch on the ventral surface, toes on the front right manus are almost detached, and missing distal part of the lateral digit on the left manus.

Type locality. George Gill Range, Hermannsburg, Northern Territory, Australia.

Paralectotype. M.1070B, sex indeterminate, skull, skin mounted. Presented by W. Baldwin Spencer, registered on 11 April 1896. Possibly specimen "E" of Waite (1896); but see below. Two specimens were registered under the one number, M.1070 but the original entry did not indicate a duplicate.

Comments. Waite provided measurements for five specimens, one male and four females, which he designated specimens A to E (A being the only male), and gave a collection date as February 1895 for the series. Waite registered two specimens in the AM under the one number, M.1070, with the M Register entry annotated "D". Troughton (1932c), noted that neither specimen was marked as "D"; he selected what he considered to be the larger of the two, as specimen D. In his unpublished type specimen list, Troughton (1956) listed M.1070B as a "co-type" of this taxon. Aitken (1976) stated that specimens labelled B and C (skulls only) are in the SAM. He discussed the identity of the three suspected paralectotypes in the MV listed by Dixon (1970). Aitken (1976) suggested that the AM skin mount (M.1070B) could be the only syntype body seemingly unaccounted for: a female skin, the skull of which he believed was either specimen B or C in the SAM. However, Aitken did not realize that a skull was associated with M.1070B. One possibility is that Waite registered his specimen E as a duplicate under specimen D, but failed to record this in the M Register; this action would have been contrary to Spencer's instruction in correspondence that specimens should be returned except for one "type". Alternatively, the duplicate specimen M.1070B may be a sixth specimen available to Waite at the time of his description, but which was not mentioned in his original account. If so, it could be regarded as a part of the type series because it was not explicitly excluded by Waite. Under this scenario, Waite's specimen E might be amongst unmarked material in the MV listed by Dixon (1970).

Mus longipilis Gould, 1854

The Mammals of Australia, part 6, text to pl. 13. (1 December 1854).

Common name. Long-haired Rat.

Current name. *Rattus villosissimus* (Waite, 1898a), following Jackson & Groves (2015).

Holotype. PA.62 by subsequent determination. Sex indeterminate, skull, skin mount, collected by Thomas Wall, registered in Palmer Register c. 1877. The only entry by Secretary Palmer against PA.62 is "Mus longipilis Victoria R. W.[sic] Aust.".

Condition. Incomplete cranium consisting of rostrum, right maxillary tooth row and anterior section of right zygoma; missing braincase, left upper tooth row, and both zygomatic arches. Both dentaries missing ramus, coronoid, condylar and angular processes. Labelled as adult, based on size, we did not determine sex (possibly female, but there is no obvious scrotum or nipples). Skin mount: faded, missing lower lip, two fractures in tail, two bald patches on the dorsal surface behind the ears.

Type locality. Determined by Calaby & Taylor (1974) as "probably Goorogooheeny Billabong, Cooper Creek, southwestern Queensland", Australia, who also indicate that the collection date was probably 7 September 1847. Gould (1863b) states that the "unique specimen" was obtained during Thomas Wall's expedition to the "Victoria River" (now called Cooper Creek).

Comments. This taxon and the associated specimens were discussed at length by Taylor & Horner (1973), who arranged for the skull to be extracted from the holotype skin in 1965. Calaby & Taylor (1974) reported a previously overlooked, unpublished manuscript which indicated that two specimens were obtained by Wall from the type locality. Krefft (1864a: 63) lists two adult specimens of *Mus longipilis* obtained from Wall from "Victoria River". The original Palmer Register entry lists PA.20, given as *Mus longipilis* from "Victoria River", flat skin, missing head, indicated as "dried skin in bottle, head torn off". This specimen is in the collection and is identified as *villosissimus* by Taylor & Horner (1973) and is a topotype given that Gould based his description on a single specimen loaned to him by the AM. Waite (1898a) recognized that the name *Mus longipilis* Gould was preoccupied by a Chilean rodent described by Waterhouse in 1837 and so proposed the new name *Mus villosissimus*.

Mus musavora Ramsay, 1877g

Proc. Linn. Soc. N.S.W. (ser. 1) 2(1): 16. (July 1877).

Common name. Black-tailed Mosaic-tailed rat.

Current name. *Melomys rufescens rufescens* (Alston, 1877), following Menzies (1996) and Musser & Carleton (2005).

Syntypes. (3, by subsequent determination). **M.2368**, male, (skin tag 49), skull, study skin. A tag attached to the skin and initialed by Ramsay states: "No. 49 Type of the species ♂. Mus musavora Duke of York Islands Bought of Cockerell E.P.R." M Register entry states "*Mus musavora*, male, Duke of York Island, TYPE, collected by Rev. George Brown, purchased from Cockerell", registered on 16 December 1913 from the "old collection 1876". Collection date not given, assumed to be about 1876 by Troughton (1936a). Lectotype and paralectotype possibly designated by Troughton (1936a); see below. **M.2367**, female, (skin tag 54), study skin with skull *in situ*. Early tag attached to skin, likely to be in Ramsay's hand states: "Type of the species ♀ *Mus musavora* Duke of York Islands Rev. G. Brown" same details as M.2368 and also entered as "TYPE". **M.2348**, (skin tag 53), skull, study skin, young, indeterminate sex, M Register entry states "*Mus musavora*, young, Duke of York Island, 1876, Old Coll., Rev. George Brown", registered 16 December 1913.

Condition. **M.2368**: cranium missing occipital area, both auditory capsules; both dentaries missing angular processes. Incomplete study skin: tail is detached, lower lip missing, bald patch in front of right ear on the dorsal surface, faded. **M.2367**: study skin, left front limb almost detached, tail bent at the base, right ear almost detached. **M.2348**: incomplete cranium, missing right side of occipital area, and anterior tips of both nasals, soft palate retained on cranium. Study skin complete.

Cranial measurements (mm). M.2368: GL, —; NasL, 13.51; NasB, 4.54; DIL, 10.16; APV, 4.77; PAL, 18.99; UMR (alv.), 6.82; ZB, 18.79; POC, 6.36; BUL, —; MB, —; DL (condyl.), 21.27; LMR (alv.), 6.35.

Type locality. "Duke of York Island" (Ramsay), East New Britain Province, Papua New Guinea.

Comments. Ramsay does not indicate the number of specimens he examined but his account of external and cranial characters suggests that he examined more than one. Troughton (1936a: 345) made a passing reference to " the lectotype male and allotype female of *Mus musavora* Ramsay

= *Melomys rufescens* Alston, from Duke of York Island, Nos. M.2367–68, collected by the Rev. George Brown about 1876". However, on the same page, he refers to the "holotype skull" of *musavora*. In his unpublished list of AM mammal types he listed M.2367 as a lectotype (Troughton, 1956). We are not aware of any formal lectotype designation, before or since, and leave open the question of whether Troughton's mention constitutes lectotype fixation. Menzies (1996) examined M.2367–68 and listed both under a heading "Holotypes" (= syntypes). A further specimen (M.2348) could be from Ramsay's original series. This specimen was not mentioned by Troughton (1936a; 1956), perhaps because it is immature. However, Ramsay mentions that he examined both adults and young. It was entered in the M Register in December 1913 as "*Mus musavora* 1876, Old Collection, Rev George Brown" "skin and skull", but without subsequent amendment that it is a type, unlike the M Register entries for M.2367–68. Printed paper tags attached to the skins of the three specimens are likely to be Palmer Register numbers (49, 53 and 54), and if so, are inconsistent with the data originally entered apparently in error by Palmer in the register; see previous account for *Mus (?) echimyoides* Ramsay.

Mus salamonis Ramsay, 1882a [not 1883]

Proc. Linn. Soc. N.S.W. (ser. 1) 7(1): 43, plate 2. (23 May 1882).

Common name. Florida Naked-tailed rat.

Current name. *Solomys salamonis* (Ramsay, 1882a), following Musser & Carleton (2005).

?Holotype. A.11257 by subsequent determination (Troughton, 1936c). Male adult, skull (Fig. 41), body originally in alc., body evidently destroyed. The original register entry for locality is unambiguously given as "Florida Isld S." This was subsequently crossed out and replaced with Ugi Island, in handwriting consistent with that of Troughton. Collected by Alexander Morton, registered in December 1881. Collection date not recorded in register but probably between late April 1881 and June 10, 1881 (Lavery, 2014). Troughton (1936c) stated that the holotype skin had been lost long ago, but the AM A Register notes "Skin worthless—destroyed 24.xii.13" [= 1913], in what appears to be Troughton's handwriting.

Condition. Cranium missing anterior part of both nasals, otherwise complete; both dentaries complete.

Type locality. Unresolved, either the Florida Island Group (Nggela Group), Central Province, or Ugi Island, Makira-Ulawa Province, Solomon Islands.

Comments. Known only from the original specimen (Flannery, 1995c). This taxon was redescribed by Troughton (1936c), who claimed to have relocated Ramsay's original skull. He stated that "… careful examination of the "old collection" crania in the Museum resulted in discovery of the holotype skull, the identity of which is definitely established by comparisons with Ramsay's illustrations".

While it is clear that Ramsay's original specimen was registered with the number A.11257 as indicated in the A Register, we do not share Troughton's conviction that the skull he assigned to A.11257, at the time an unlabelled skull, is definitely Ramsay's original specimen. There is no doubt that the registration number is correct and that cranial and dental measurements given by Ramsay broadly fit those

Figure 41. Skull alleged to be AM A.11257, holotype of *Mus salamonis* Ramsay, 1882a. (Photography by Stuart Humphreys).

of the skull assigned by Troughton, not withstanding the uncertainty of how Ramsay took some of his measurements. However, there are substantial differences in cranial morphology between the skull assigned by Troughton,

and the illustrations accompanying Ramsay's account—Ramsay's illustrations show features more consistent with a species of *Uromys* (*Cyromys*), a subgenus restricted to the Solomon Islands (see Groves & Flannery, 1994), while the skull assigned by Troughton to A.11257 displays features of *Solomys* (e.g., Groves & Flannery, 1994). A detailed assessment of this issue will be presented elsewhere.

The incorrect citation of 1883 as year of publication of *Mus salamonis* Ramsay is entrenched in the literature, but Fletcher (1896) indicates that volume 7, part 1 was published in May 1882. Although Ramsay unambiguously gave the type locality as Ugi Island, this was amended anonymously to Florida Island in a separate erratum slip inserted into volume 7, part 2 (published August 1882); most recent authors since Laurie & Hill (1954) have accepted Florida Island as the type locality. Troughton forcefully contended that the holotype had been collected on Ugi Island, citing mention of a new *Mus* from Ugi in a published report on the collecting trip by Morton (1882) and this was accepted by Tate (1951b). We suspect that Troughton (1936c) was unaware of the erratum slip, which is not mentioned in his paper; we failed to find a copy in the AM. In his recent review, Lavery (2014) considered the evidence of the erratum slip and also summarized Morton's itinerary in the Solomon Islands during 1882. Lavery concluded that the holotype was obtained from Ugi, primarily on the basis of Morton's report, although he acknowledged the ambiguity of Morton's account regarding the duration of their stay in the Florida group. In preparing this report, we uncovered another piece of relevant evidence—the original entry for A.11257 in the A Register, made in December 1881, reads "Mus sp nov Florida Isld". The handwriting is most likely Ramsay's (Ian McAllan, pers. comm. 2015). This was subsequently amended to Ugi by Troughton, presumably based on the title of Ramsay's paper. Morton was present when Ramsay read his paper naming the taxon at the January 1882 meeting of the Linnean Society of NSW, so at that time, both men presumably concurred at that time that Ugi was the collecting locality, unless Morton, for whatever reason, was averse to contradicting Ramsay. We conclude that the type locality of this taxon remains unresolved; a detailed discussion will be presented in a separate paper on the putative holotype and its type locality.

Mus subrufus Krefft, 1862 *nomen oblitum*

The Sydney Morning Herald, XLVI (7608): 2, col. 5. (24 October 1862)

Common name. Desert Mouse.

Current name. *Pseudomys desertor* Troughton, 1932c; following Jackson & Groves (2015).

?Syntype: ?PA.58, sex and age not determined, two cranial fragments and damaged right dentary, original entry in Palmer Register is "Mus subrufus, Murray River, skin in bottle head removed", entered in Palmer Register c. 1877. Another specimen registered by Palmer is also a possible syntype: **PA.53**, specimen not sighted in 2015 and no record of it being sighted during the past few decades. The original P Register entry is " Mus subrufus", no locality or other data, "headless skin in bottle". The skull fragments currently labelled ?PA.58 had a note in the skull box stating that the fragments were found in a box with two labels in 1970. Both labels were written in old ink by the same hand, one states "Mus subrufus Murray River" written on cardboard, while the other states "Mus subrufus" written on a label with a blue lined margin. We have not determined who wrote the labels, but the writing is not inconsistent with that of Krefft. It is not clear why the skull fragments were assigned to PA.58. It appears that the fragments could either be PA.53, PA.58 or another specimen not registered by Palmer.

Condition. ?PA.58, incomplete cranium, consisting of two fragments: an incomplete rostrum with both incisors, and a right maxillary fragment with intact molar row. Right dentary only, missing distal section of ascending ramus, missing incisor.

Type locality. Between Gol Gol Creek, Victoria, and Darling River, NSW, Australia (Mahoney & Richardson, 1988).

Comments. Mahoney & Richardson (1988) discuss this name and state that *subrufus* Krefft, 1862 and *murrayensis* Krefft, 1862, (which Krefft proposed as a subspecies of *subrufus*) are both unused senior synonyms of *Pseudomys desertor* Troughton and should not be used, i.e. are *nomina oblita*. Wakefield (1966) cites five specimens in MV that were from several dozen specimens listed as *Mus subrufus* by Krefft, presumably his original series. PA.53 and 58 are possible syntypes of *subrufus* Krefft. Alternatively, the skull fragments could have been from a specimen sent to Krefft after publication of his account. Krefft received mammal specimens from a Mr and Mrs Hay from the "Lower Murray", which are listed in AM annual reports from the second half of the 1860s.

In his newspaper article published 24 October, Krefft (1862) proposed the name *Mus subrufus murrayensis* for what he referred to as an undescribed species. He had read a paper in the previous month (10 September) in which he proposed the name *Mus subrufus* but this was not published until 1865 as a separate (Krefft, 1865d), and the same paper appeared subsequently in *Trans. Phil. Soc. N.S.W.* (Krefft, 1866b).

Rodents originally registered in the Palmer Register as PA.49 to at least PA.54 resulted in inadvertent double registrations, including PA.53, assigned to both *Mus subrufus* but also to *Mus musavora* Ramsay, see previous account for the latter.

Mus villosissimus Waite, 1898a *nomen novum*

Proc. R. Soc. Vic. n.s. 10: 125. (July 1898).

Common name. Long-haired Rat.

Current name. *Rattus villosissimus* (Waite, 1898a), following Jackson & Groves (2015).

Holotype. PA.62, the holotype of *Mus longipilis* Gould, 1854, see previous account of that taxon.

Comments. Waite proposed *villosissimus* as a new replacement name for *Mus longipilis* Gould, 1854, see account for *Mus longipilis*. Waite (1898a) provided an extended description of *Mus longipilis*, using a male and female obtained after the Horn Expedition by Spencer's collectors. Waite provided skull and external measurements for both specimens (which have no type status), which he designated as A (male) and B (female). One of these specimens could be M.1305, an unsexed skin mount that appears to have had the skull removed (but skull not subsequently found); entered in the M Register as "Central Australia", presented by Baldwin Spencer, and registered in

July 1898, originally as *Mus villosissimus*. Although external measurements of M.1305 appear to be closest to Waite's female, specimen B, Taylor & Horner (1973) concluded that it was his specimen A, based on skull measurements of the other specimen which they believed to be SAM M.2410.

Notomys carpentarius Johnson, 1959

Proc. Biol. Soc. Wash. 72: 186. (4 November 1959).

Common name. Northern Hopping-mouse.

Current name. *Notomys aquilo* Thomas, 1921; following Jackson & Groves (2015).

Paratypes. (3, by original designation). All three are study skins with skulls extracted, all collected by D. H. Johnson from the type locality, Umbakumba, Port Langdon (13°51'S 136°45'E), northeastern Groote Eylandt, Northern Territory: **M.27839** by original designation as USNM 284360, female, [Field no. 5586], collected on 22 June 1948; **M.27840** by original designation as USNM 284356, female, [Field no. 5528] and **M.27841** by original designation as USNM 284354, male, [Field no. 5526], both collected on 8 June 1948. All three registered 13 October 1992 and exchanged from Smithsonian Institution, 19 May 1992.

Comments. A total of 12 paratypes, all from the type locality; holotype in USNM.

Pogonomys championi Flannery, 1988

Rec. Aust. Mus. 40(6): 333, figs 1, 2, 5; tables 1, 2. (31 December 1988).

Common name. Champion's Tree Mouse.

Current name. *Pogonomys championi* Flannery, 1988; following Musser & Carleton (2005).

Holotype. M.13502 by original designation. Male, Field no. FN196, skull, study skin, skinned body in alc., collected by S. Van Dyck on 10 February 1984; registered 27 May 1985.

Condition. Cranium complete; right dentary missing coronoid process. Study skin missing left ear tip.

Type locality. Ofektaman, Telefomin Valley, West Sepik Province, Papua New Guinea (5°04'S 141°34'E; alt. 1,400 m).

Paratypes. (27, by original designation). **M.13646**, adult male skull, study skin, Sol River Valley, alt. 2300 m, (5°05'S 141°35'E), collected by T. F. Flannery 14 February 1984. **M.13463**, male, skull, study skin, skinned body in alc.; **M.13464**, **M.13660**, and **M.13664**, male study skins and skulls; **M.13640**, female, skull, study skin, skinned body in alc., **M.13646**, female skull, study skin; **M.13718–19**, **M.13721–24**, males, bodies in alc.; **M.13720**, female, body in alc., all from Ofektaman, alt. 1400 m, (5°04'S 141°34'E), collected by S. Van Dyck, 9–12 February 1984. **M.17727**, **M.17729**, **M.17731**, males, bodies in alc.; **M.17728**, **M.17730**, **M.17732–33**, females, bodies in alc.; **M.17721–22**, **M.17725–26**, male study skins and skulls, all with skinned bodies in alc.; **M.17723–24**, female study skins and skulls, both with skinned bodies in alc.; all from Tifalmin, alt. 1,800 m, (5°07'S 141°25'E), collected by T. F. Flannery and L. Seri, 11 April 1987.

Comments. Type series of 28 specimens.

Pseudohydromys patriciae Helgen & Helgen, 2009

Bull. Amer. Mus. Nat. Hist. 331: 255, figs 10–12, tables 3–4. (15 December 2009).

Common name. Woolley's Moss-mouse.

Current name. *Pseudohydromys patriciae* Helgen & Helgen, 2009.

Holotype. M.26991 by original designation. Male adult, Field no. MFC26, skull, study skin, [skinned body in alc.], collected 19 September 1988 by P. A. Woolley; registered 22 June 1992.

Condition. Cranium with hole in the left parietal; left dentary missing coronoid process; right dentary complete. Study skin: small dorsal bald patch on the right shoulder.

Type locality. Porokma, alt. 2800 m, (c. 4°00'S 138°43'E), near Lake Habbema in the Snow Mountains, Papua Province, Indonesia.

Paratype. M.26882 by original designation. Female adult, skull, body in alc., collected at the type locality on 21 September 1988 by P. A. Woolley.

Comments. Described from the holotype and paratype, which are the only known specimens. Photographs of the holotype as a live animal, along with skull and study skin are given in the original description.

Pseudohydromys sandrae Helgen & Helgen, 2009

Bull. Amer. Mus. Nat. Hist. 331: 267, figs 14, 18; tables 3, 5. (15 December 2009).

Common name. White-bellied Moss-mouse.

Current name. *Pseudohydromys sandrae* Helgen & Helgen, 2009.

Holotype. M.14168 by original designation. Male, Field no. E1205, skull, flat skin, collected [26] September 1979 by P. D. Dwyer; registered 12 June 1986.

Condition. Cranium missing jugal bone from both zygomatic arches, holes in the left and right temporal bones, two holes in the occipital area (which is loosely held together); right dentary has loose 1st molar and missing coronoid process; left dentary complete. Incomplete and damaged flat skin: missing right front limb, missing most of tail (only c. 2cm present), both left limbs almost detached.

Type locality. Namosado, Mt Sisa (= Mt Haliago, 6°12'S 142°46'E), alt. between 800–850 m [in the upper Strickland catchment], Southern Highlands Province, Papua New Guinea.

Comments. Described from the only known specimen, photographs of skull and skin given in the original account. The original account locates the type locality in the Kikori River Basin but Dwyer (1990) indicates that it is in the upper Strickland catchment.

Pseudomys (Gyomys) desertor Troughton, 1932c

Rec. Aust. Mus. 18(6): 293. (20 April 1932).

Common name. Desert Mouse.

Current name. *Pseudomys desertor* Troughton, 1932c; following Jackson & Groves (2015).

Holotype. M.1306 by original designation. Skin mount, incomplete skull, indeterminate sex, originally entered in M Register as "*Mus nanus* Gould, Central Australia". Presented by Professor Baldwin Spencer, registered on 15 July 1896. Sex, collector and collection date not indicated in register.

Condition. Cranium missing both zygomatic arches, missing basioccipital, left upper tooth row is detached; both dentaries missing angular processes. Skin mount: bald patch on the dorsal surface, tail tip fractured.

Type locality. Given as "Central Australia" (= Northern Territory, Australia) by Troughton (1932c) and Mahoney & Richardson (1988).

Paratype. M.1307 by original designation. Sex not recorded, skin mount, skull *in situ*, same Register details as holotype.

Comments. Troughton based his description on two skin mounts that were part of the series originally identified by Waite (1898a) as *Mus nanus* Gould, 1858. Troughton gave the registration numbers of the holotype and paratype but was unable to match either specimen to Waite's original specimens. Although Waite (1898a) stated that he had five specimens, he designated only four, as specimens A to D from Wycliffe Creek, Barrow Creek and Alice Springs, NT. Tate (1951b) compared measurements given by Troughton and Waite and concluded that the holotype was Waite's male specimen "B", from Wycliffe Creek. However, the three external measurements provided by Troughton would seem to be applicable to several of Waite's specimens, casting doubt on Tate's determination of the type locality as Wycliffe Creek.

Pseudomys hermannsburgensis bolami Troughton, 1932c

Rec. Aust. Mus. 18(6): 292. (20 April 1932).

Common name. Bolam's Mouse.

Current name. *Pseudomys bolami* Troughton, 1932c; following Jackson & Groves (2015).

Holotype. M.4938, by original designation. Pregnant female, skull, study skin, skinned body in alc., collected on 16 October 1921 by E. Le G. Troughton and J. H. Wright.

Condition. Cranium missing posterior end of the right zygomatic arch; right dentary missing ascending ramus; left dentary complete. Study skin: missing skin sheath from distal c. 1/3 of tail but tail vertebrae intact.

Type locality. Ooldea, on Trans-Australian Railway line, South Australia.

Paratypes. (11, by subsequent determination): **M.2989**, indeterminate sex, skull, flat skin; **M.2990**, female, body in alc.; **M.2991**, female, skull, study skin, all from Ooldea, presented by Le Souef. **M.4644**, subadult female, skull, study skin, and **M.4645**, subadult female, body in alc.; both from Rawlinna, S.A., presented by A. S. Le Souef. **M.4897**, female, skull, study skin, from Ooldea, collected by E. Troughton and Wright. **M.4898**, indeterminate sex, desiccated body with skull *in situ*; **M.4929**, sex indeterminate, ?subadult, body in alc., both from Ooldea, donated by A. S. Le Souef. **M.4931–32**, both adult females, bodies in alc., Ooldea, ?presented by Le Souef. **M.26820**, skull and skeletal elements of individuals from owl pellets, Fisher, S.A. collected on 28 December 1923 by Troughton and Wright, registered June 1992.

Comments. Troughton does not indicate the number of specimens in the type series. Under the heading "specimens examined", he cites the registration number of the holotype and mentions other specimens collected by Troughton and Wright from Ooldea, both dried and spirit, and an unspecified number from Fisher and Rawlinna donated by Le Souef. No reference is made in the original description to an allotype or paratypes and no registration numbers are given other than the holotype. The specimens listed above match the series indicated by Troughton. Although none are labelled as paratypes either in the register or on specimen tags, we interpret Troughton's "specimens examined" as the type series. Associated with this series are M.4933–37, litter of five in alc., all from Ooldea, collected by Troughton and Wright. The only material located from Fisher is M.26820 from owl pellets "from blow hole" near railway line. Photographs of the holotype skull are given by Kitchener, Adams & Baverstock (1984), who elevated *bolami* to species rank.

Pseudomys (Pseudomys) minnie Troughton, 1932c

Rec. Aust. Mus. 18(6): 287. (20 April 1932).

Common name. Plains Mouse.

Current name. *Pseudomys australis* J. Gray, 1832; following Jackson & Groves (2015).

Holotype. M.5192, by original designation. Young adult male, skull, study skin, collected via L. von Reon Reese, received in exchange from Mr Erhard F. Boehm, registered 6 October 1931. Collection date not indicated.

Condition. Cranium has braincase broken in pieces, missing both zygomatic arches; right dentary is missing ascending ramus; left dentary complete. Study skin: complete and in good condition.

Type locality. "Minnie Downs Station, in the extreme north-east of South Australia" Troughton (1932c). Parker *et al.* (1979: 49) state that the defunct Minnie Downs homestead was located at Appamunna Waterhole (= Appamurna, = Apperamanna), for which they cite co-ordinates of 26°18'S 139°38'E, on the west side of Lake Etamunbanea; they also note that the station was temporarily relocated c. 90 km to the SE. Given that the specimens were "dug out of burrows by aborigines" (Troughton, 1932c), the precise collecting locality is not known.

Paratype. M.5193 by subsequent determination. Male, body in alc., locality and registration details as per holotype.

Comments. Troughton refers to an adult female allotype in the private collection of Mr Boehm (presumably Erhart F. Boehm), but does not indicate the total number of specimens in the type series. M.5193 is marked as a paratype in the M Register in Troughton's hand. The holotype registration number is erroneously given as M.5195 in the original account, as noted by Mahoney & Richardson (1988) and the register entry for the holotype is unambiguous.

Pseudomys minnie flavescens Troughton, 1936b

Mem. Qld. Mus. 11(1): 19. (17 April 1936).

Common name. Plains Mouse.

Current name. *Pseudomys australis* J. Gray, 1832; following Jackson & Groves (2015).

Holotype. M.6004, by original designation. Male, [Field no. 37], skull, study skin, registered September 1935, presented by F. L. Berney.

Condition. Cranium has holes in left temporal bone and left bulla, fractured right zygomatic arch. Right dentary missing angular process; left dentary complete. Study skin: bald patch on right side of abdomen, bald patch on dorsal surface, mid back.

Type locality. "Barcarolle Station, 135 miles south of Longreach", Qld (Troughton, 1936b). Troughton subsequently (1965b: 318) stated that Barcarolle Station is on the Thompson River.

Paratypes. (2, by original designation). Details as per holotype: **M.6005**, female, skull, study skin; **M.6006**, male, body in alc.

Comments. Type series stated to be seven specimens, including four paratypes in the QM. Troughton cited registration numbers of the Australian Museum specimens, and notes that the type series was stored in formalin for several years by the collector.

Pseudomys pilligaensis Fox & Briscoe, 1980

Aust. Mammal. 3(1–2): 112, figs 1a, 2; tables 1, 3. See Errata *Aust. Mammal.* 4(2). (cover date May 1980).

Common name. Pilliga Mouse.

Current name. *Pseudomys pilligaensis* Fox & Briscoe,1980; following Musser & Carleton (2005). Taxonomic status needs clarification: Pilliga populations are thought to be the product of past hybridization between *P. delicatulus* (Gould, 1842) and *P. novaehollandiae* (Waterhouse, 1843) and *P. pilligaensis* Fox & Briscoe is sometimes treated as a junior synonym of *P. delicatulus pumilus* (e.g., Ford, 2008). Jackson & Groves (2015) treated it as a synonym of *P. delicatulus* but flagged the need for further taxonomic work.

Holotype. M.11263, by original designation. Male adult, Field no. BF791102, skull, study skin, collected by D. Briscoe, B. Fox, E. Rolls and M. Rolls. Trapped on 21 November 1979 and registered on 27 February 1980.

Condition. Cranium complete; both dentaries have holes in the angular processes. Study skin: missing both ears, otherwise complete.

Type locality. Cumberdeen Rd., 3 km W of the Pilliga to Baradine Rd., Merriwindi State Forest ([30]°52'S 148°59'E), NSW. Latitude of 31° erroneously given in original description.

Paratypes. (3, by original designation). **M.10438**, female, skull, body in alc., Timmallallie Ck bed, 200 m W of Newell Hwy, Pilliga Nature Reserve, (30°52'S 149°27'E), collected by A. B. Rose, 14 July 1976. **M.10602**, female, body in alc., head damaged, Keelimore Rd., [20 km] S of Cuttabri (30°32'S 149°07'E), Pilliga East State Forest, NSW, collected by F. Shlager during July 1977. **M.11264**, female, skull, collected at the same locality as the holotype, by M. Rolls and E. Rolls, 18 January 1978.

Comments. Type series of five specimens, one paratype in SAM. Some recent authorities treat this taxon as a synonym of *P. delicatulus* (e.g., Burbidge *et. al.*, 2014; Jackson & Groves, 2015), based on the conclusions of Ford (2003, 2008).

Pseudomys (Pseudomys) rawlinnae Troughton, 1932c

Rec. Aust. Mus. 18(6): 289. (20 April 1932).

Common name. Gould's Mouse.

Current name. *Pseudomys gouldii* (Waterhouse, 1839), following Jackson & Groves (2015).

Holotype. M.4642, by original designation. Male adult, skull, study skin. Donated by Mr A. S. Le Souef, registered 12 August 1929.

Condition. Incomplete cranium, missing jugal bone from both zygomatic arches, posterolateral braincase wall detached; auditory capsules detached. Right dentary missing angular process; left dentary complete. Study skin, missing tail tip.

Type locality. Rawlinna, Trans-Australian Railway, Western Australia.

Paratype. M.4643 by subsequent designation, probably young adult female, body in alc., same locality and registration details as holotype.

Comments. Apparently based on two specimens for which registration numbers are cited in the original account. Although Troughton does not refer to M.4643 as a paratype in his published account, it is annotated as such in red ink in Troughton's hand in the M Register. The paratype is given as an "immature male" in Troughton's description, but is listed as a "young adult female" by him in the M Register; the latter appears to be correct.

Pseudomys (Leggadina) waitei Troughton, 1932c

Rec. Aust. Mus. 18(6): 290. (20 April 1932).

Common name. Central Short-tailed Mouse.

Current name. *Leggadina forresti* (Thomas, 1906a), following Jackson & Groves (2015), no subspecies recognized.

Holotype. M.5194, by original designation. Male, skull, study skin, originally in alc., palate in alc. Locality in M

Figure 42. AM M.4642, holotype skin of *Pseudomys (Pseudomys) rawlinnae* Troughton, 1932c. (Photography by Sally Cowan).

Register is "Alice Springs, Central Australia", collector and collection date not given, registered in October 1931 from the "Old Collection".

Condition. Cranium missing zygomatic arches; both dentaries complete. Adult, based on dentition and sutures. Study skin has bald patch on the right flank.

Type locality. Alice Springs area, Northern Territory, Australia.

Paratypes. (5, by subsequent determination). **M.5100**, female, body in alc., **M.5101–03**, three juveniles in alc., all from Hart Range, between Hale and Plenty Rivers, ENE of Alice Springs, presented by R. Barlow, collected January 1931, all registered 23 February 1931. Collector not given in register, but stated to be Mr T. Hodge-Smith in Troughton's account and written in Troughton's hand as Hodge-Smith and Barlow on specimen index card; **M.5195**, young adult male, body in alc., Alice Springs, Central Australia, other details as per holotype.

Comments. There appear to be three adult specimens in the type series, although Troughton did not state the number of specimens, and cited the registration number only for the holotype. However M.5195 is marked paratype, and M.5100 is marked allotype in red ink and in Troughton's hand, in the M Register. Three juveniles in alc. (M.5101–03) in the AM Collection are included as paratypes because they are identified as *waitei* in the M Register and the specimen index card in Troughton's hand. The three specimens are entered on one specimen index card with M.5100 written in Troughton's hand, with annotation "Allotype ♀ (+ 3 juv)" in red ink. Troughton states that the holotype and M.5195 were registered from the "old collection" but this is likely to be of specimens registered in the 1890s or possibly specimens donated by Spencer or Horn that had remained unregistered. In his description, Troughton mentions Horn Expedition specimens discussed by Waite (1896) under "*Mus gouldi?*" and remarked that his holotype M.5194 is topotypical and possibly from Waite's original series. Troughton also makes comparisons with two immature mounted specimens from Waite's original series but does not give their registration numbers.

Figure 43. AM M.4642, holotype skull of *Pseudomys (Pseudomys) rawlinnae* Troughton, 1932c. (Photography by Sally Cowan).

Rattus biakensis Troughton, 1946

Rec. Aust. Mus. 21(7): 409. (24 June 1946).

Common name. Yapen Island Rat.

Current name. *Rattus jobiensis jobiensis* Rümmler, 1935; following Taylor *et al.* (1982) and Musser & Carleton (2005).

Holotype. M.7082, by original designation. Female adult, [Field no. 17], Skull, study skin, collected on 9 March 1945 [not 1935] by E. Le G. Troughton, registered 14 October 1945.

Condition. Cranium missing both auditory bullae, otherwise complete; both dentaries complete. Study skin complete and in good condition.

Type locality. Biak Island, Schouten Group, Cenderawasih (formerly Geelvink) Bay, Papua Province, Indonesia.

Comments. Probably described from the holotype only. Troughton's account makes no mention of other specimens in the type series and there are no other specimens of this taxon with matching dates in the AM database. Holotype skull figured by Flannery (1995c).

Rattus browni aitape Troughton, 1937a

Rec. Aust. Mus. 20(2): 122. (27 August 1937).

Common name. Pacific Rat.

Current name. *Rattus exulans browni* (Alston, 1877), following Taylor *et al.* (1982) and Musser & Carleton (2005).

Holotype. M.3721 by original designation. Adult female, skull, study skin, collected and presented by Mr R. F. Armstrong in 1925, registered November 1925.

Condition. Cranium missing anterior tip of left nasal bone, otherwise complete; both dentaries complete. Study skin: two bald patches on the rump.

Type locality. Aitape, West Sepik Province, Papua New Guinea.

Comments. The description appears to be based on the holotype alone, though the number of specimens in the type series is not stated. Four juveniles with the same data as the holotype are registered under the one number, M.3722. Juvenile characters were not mentioned in the description and these are treated here as referred specimens rather than paratypes.

Rattus browni gawae Troughton, 1945

Rec. Aust. Mus. 21(6): 374. (25 June 1945).

Common name. Pacific Rat.

Current name. *Rattus exulans browni* (Alston, 1877), following Taylor *et al.* (1982) and Musser & Carleton (2005).

Holotype. M.6370, by original designation. Female, subadult, skull, study skin, collected on 27 July 1937 by Lieut.-Commander W. H. Harrington, registered on 18 November 1937.

Condition. Cranium with hole in right auditory bulla; both dentaries complete. Study skin: bald patch on left side of rump.

Type locality. Gawa Island atoll, Marshall Bennett Islands, Milne Bay Province, Papua New Guinea.

Comments. Description apparently based on the holotype only. Troughton gave no indication of other specimens in a type series and we have found no other *Rattus* from Gawa Island in the AM database. Troughton believed the holotype to be an adult female but Taylor *et al.*(1982) considered it to be a juvenile female.

Rattus browni praecelsus Troughton, 1937a

Rec. Aust. Mus. 20(2): 121. (27 August 1937).

Common name. Pacific Rat.

Current name. *Rattus exulans browni* (Alston, 1877), following Taylor *et al.* (1982) and Musser & Carleton (2005).

Holotype. M.6110 by original designation. Adult male, skull, study skin, collected and presented by Dr G. A. M. Heydon, registered 22 May 1936, collection date not given.

Condition. Cranium complete; left dentary missing coronoid process, right dentary missing angular process. Study skin: in good condition but patch of skin missing from lower abdominal area when skin was prepared.

Type locality. "The upper Wahgi River valley, about 15 miles south-east of Mt Hagen, alt. 5–6,000 ft." (Troughton), Western Highlands Province, Papua New Guinea.

Paratypes. (2, by subsequent determination). **M.6111**, subadult male, skull, study skin; and **M.6112**, young female, skull, study skin, both with same locality, collector and registration date as holotype.

Referred specimens. Seven specimens collected by J. L. Taylor in 1933, from Mt Hagen, alt. 5600 feet, all except M.5628 are damaged study skins: **M.5622**, adult female, skin with skull *in situ*; **M.5623**, subadult male, skin with skull *in situ*; **M.5624**, indeterminate sex, damaged skin with skull *in situ*; **M.5625**, adult female, skin with skull *in situ*; **M.5626**, subadult male, skin with skull *in situ*; **M.5627**, indeterminate sex, damaged skin, skull *in situ*; **M.5628**, subadult, sex indeterminate, skull, study skin.

Comments. Troughton gave the registration number only for the holotype and did not refer to the existence of paratypes. Two specimens (M.6111 and M.6112), both collected at the same time as the holotype and from the type locality, are marked as paratypes in Troughton's handwriting on the study skin tags and the type card index (although not in the register) and we recognize both as paratypes. He referred to a series of specimens collected by J. Taylor, but cited neither the total number of specimens in the series nor their registration numbers. Seven specimens listed above were collected by J. Taylor from the vicinity of Mt Hagen and are identified in the register and on specimen index cards as *browni praecelsus* in Troughton's handwriting and some or all of these probably represent Troughton's "series" collected by Taylor. Other than M.5628, all are study skins in poor condition, apparently crudely prepared in the field, and we treat these as referred specimens.

Rattus browni suffectus Troughton, 1937a

Rec. Aust. Mus. 20(2): 122. (27 August 1937).

Common name. Pacific Rat.

Current name. *Rattus exulans browni* (Alston, 1877), following Taylor *et al.* (1982) and Musser & Carleton (2005).

Holotype. M.4156 by original designation. Male adult, skull, study skin, Mount Lamington district, collected in July 1927 by Mr C. Terrance McNamara, registered on 20 September 1927. Original register identification is "*Rattus browni*".

Condition. Cranium complete; right dentary missing coronoid process. Study skin: bald patch on each rear flank, otherwise in good condition.

Type locality. Mount Lamington district (altitude not given), Northern Province, Papua New Guinea.

Paratypes. (10, 9 by subsequent determination). All collected and presented by C. T. McNamara from the Mount Lamington district. Eight specimens collected in June–July 1927 and registered in September 1927: **M.4134**, male, body in alc.; **M.4140**, female, body in alc. (not yet located in collection, possibly juv.); **M.4152**, female, body in alc.; **M.4153** by original designation, female (allotype), skull, study skin, same data as holotype, collected July 1927; **M.4154**, female, study skin and part skull; **M.4155**, male, skull, study skin; **M.4157**, female, body in alc.; **M.4158**, male, body in alc. Two specimens registered in April, 1928, other data as holotype: **M.4298**, male, body in alc.; **M.4299**, male, skull, study skin.

Comments. Troughton cites registration numbers of the holotype and allotype, and refers to the "series of paratypes in the Australian Museum, collected and presented by Mr C. T. McNamara during 1929, when Government Resident in the Mount Lamington district." However, the majority of specimens, including the holotype and allotype were collected and presented by McNamara in 1927, not 1929. The paratype series is assumed to be some or all of the 10 specimens from the type locality that were registered from 1927–1929 as "*Rattus browni"* or "possibly allied to *Rattus browni*" and currently listed as *R. exulans* in the database. Troughton never amended the species or type status of specimens of this taxon after publication of his description, either in the register or type specimen card index, including, uncharacteristically, that of the holotype and allotype. The series collected by McNamara from Mt Lamington includes at least six known or suspected juvenile rats of uncertain taxonomic identity: M.4136, M.4137–38; M.4141, M.4688, M.4170, but not all have yet been located in the collection. A handwritten label by Troughton for M.4141 and M.4170 gives the identification as "*Rattus* sp., too immature for identification". Juveniles have been excluded as paratypes on the grounds of doubts expressed by the author regarding identification (*Code*, Article 72.4.1). It is possible that the paratype series of nine specimens listed above might increase following completion of a detailed inventory of alcohol *Rattus* in the AM Collection.

Rattus browni tibicen Troughton, 1937a

Rec. Aust. Mus. 20(2): 123. (27 August 1937).

Common name. Pacific Rat.

Current name. *Rattus exulans browni* (Alston, 1877), following Taylor *et al.* (1982) and Musser & Carleton (2005).

Holotype. M.2483 by original designation. Male adult, skull, study skin, collected by Rev. H. P. Schlencker, presented by Thomas Steele; registered February 1914. Collecting date not given in register, stated by Troughton to be "some 40 years ago" (= c. 1897).

Condition. Cranium missing left zygomatic arch, both dentaries missing coronoid processes and left dentary missing angular process. Study skin: median incision of missing skin from chest to abdomen when skin was prepared, missing tail tip, otherwise in good condition.

Type locality. "Fyfe Bay, near Isudau" (Troughton), Milne Bay Province, Papua New Guinea. **Paratype**. M.2484 by subsequent determination. Unsexed juvenile, marked as *Rattus browni tibicen*, same locality and collector as holotype: skull only.

Comments. Troughton's account appears to be based on a single specimen, however he does not state how many specimens were examined. Consequently, the juvenile skull M.2484 marked as *browni tibicen* in Troughton's handwriting in the register, is regarded here as a paratype although not marked as such.

Rattus culmorum apex Troughton, 1939

Rec. Aust. Mus. 20(4): 280. (31 March 1939).

Common name. Pale Field Rat.

Current name. *Rattus tunneyi culmorum* (Thomas & Dollman, 1909), following Jackson & Groves (2015).

Holotype. M.3371 by original designation. Female adult, [Field no. 2432], skull, study skin, collected by Robin Kemp on 3 January 1913. Received by exchange from the BMNH in 1923 (apparently not registered in BMNH collection), registered in the AM on 10 December 1923.

Condition. Cranium, dentaries and study skin complete.

Type locality. Specimen tag cites "Skull Creek; Cape York alt. 20 m". Troughton (1939) states that Skull Creek is in the extreme north-west of Cape York Peninsula, Qld.

Comments. Troughton's description appears to be based on a single specimen.

Rattus detentus Timm, Weijola, Aplin, Flannery & Pine, in Timm *et al*., 2016

J. Mamm. 97(3): 863, Figs. 1, 2, 4, 5. (first published online 12 April, 2016).

Common name. Admiralties Rat.

Current name. *Rattus detentus* Timm, Weijola, Aplin, Flannery & Pine, 2016 in Timm *et al*. (2016).

Holotype. Primary registration is PNGM 274363 (but also numbered AM M45608 at time of registration); holotype status is by original designation. Adult female [Field no. R.7], skull, body in alc., obtained by Valter Weijola on 24 August 2012.

Condition. Cranium and dentaries complete and in good condition; body in alc. in good condition.

Type locality. "Vicinity of a small stream near western end of Kawaliap Village, el. 200 m (2°6'40"S 147°3'40"E), Manus Island, Admiralty Islands, Manus Province, Papua New Guinea." (Timm *et al.* 2016).

Comments. The type series includes three specimens, including two paratypes in the University of Kansas Natural History Museum, Lawrence, Kansas, USA. Detailed measurements and high quality images of the holotype are given by Timm *et al.* (2016).

Rattus gestri aramia Troughton, 1937a

Rec. Aust. Mus. 20(2): 119. (27 August 1937).

Common name. Dusky Field Rat.

Current name. *Rattus sordidus aramia* Troughton, 1937a; following Taylor *et al.* (1982) and Musser & Carleton (2005). Aplin & Helgen *et al.* (2016) caution that *R. sordidus* (Gould, 1858) might represent more than one species. Robins *et al.* (2014) provided evidence that *gestri* represents a full species but they did not determine whether *aramia* belonged with *sordidus* or *gestri*.

Holotype. M.4893 by original designation. Adult male, skull (Fig. 44), study skin, collected on [26 December 1922] by Allan R. McCulloch; registered on 7 March 1930. Metal tag stamped "45" tied to skin is possibly collector's number.

Condition. Cranium, with hole in left auditory bulla; left dentary missing coronoid process; right dentary complete. Study skin: tail tip is detached, otherwise skin in good condition but excessive anterior body stuffing does not reflect life-like proportions.

Type locality. [Totani village], "Aramia Lakes district near the mouth of the Aramia River in the Western Division of Papua", Western Province, Papua New Guinea.

Paratype. M.4895 by original designation. Young adult female (allotype), skull, study skin, same details as holotype.

Comments. The type series apparently consists of two specimens, obtained on Frank Hurley's second expedition to Papua New Guinea.

Rattus gestri bunae Troughton, 1946

Rec. Aust. Mus. 21(7): 408. (24 June 1946).

Common name. Dusky Field Rat.

Current name. *Rattus sordidus gestri* (Thomas, 1897), following Taylor *et al.* (1982) and Musser & Carleton (2005), but Aplin & Helgen *et al.* (2016) caution that *R. sordidus* might represent more than one species. Robins *et al.* (2014) found evidence that *gestri* represents a full species but they did not determine whether *bunae* belongs with *sordidus* or *gestri*.

Holotype. M.7072 by original designation. Male adult, [Field no. 82], skull, study skin, collected by E. Le G. Troughton in 1945, registered on 14 October 1945. [Date on skin and skull tags of 18 April 1945 is assumed to be the collection date.]

Condition. Cranium missing interparietal bone, and jugal bone from both zygomatic arches; both dentaries complete. Study skin: three tail fractures, skin otherwise in good condition.

Type locality. Dobodura, inland from Buna, Northern Province, Papua New Guinea.

Paratypes. (6, 5 by subsequent determination), all collected from the Dobodura district. **M.6989** (by original designation) adult female (allotype marked in register), skull, study skin, collected by Major Glen M. Kohls, collection date not given, registered 26 September 1944. **M.6910**, male, skull, study skin, collected 27 March 1944, per G. M. Kohls and **M.6911**,

Figure 44. AM M.4893, holotype skull of *Rattus gestri aramia* Troughton, 1937a. (Photography by Stuart Humphreys).

female, skull, study skin, collection date not given, per G. M. Kohls, both registered 22 May 1944; **M.6912**, male, skull, study skin, collection date not given, per G. M. Kohls, registered 22 May 1944; **M.6975**, male, skull, study skin, collected 15 May 1944, per G. M. Kohls, registered 27 July 1944; **M.7071**, female, body in alc., collected 18 April 1945, E. Troughton, registered October 1945.

Comments. The number of paratypes is not given in the description, nor are registration numbers provided other than for the holotype and allotype. Although none of the remaining five specimens are marked as paratypes, either in the register, card index, or on specimen tags, they clearly belong to the type series because they are the only specimens with appropriate data—all are identified in the register as *gestri bunae* in Troughton's handwriting. Troughton refers to the holotype, allotype and a spirit series from Dobodura, but does not explicitly state that he regards this as the type series. The type series (with registration numbers) was interpreted by Dennis & Menzies (1978) and Taylor *et al*. (1982) as being the six specimens listed above; all six are skins and skulls. One spirit specimen (M.7071) from the type locality, entered in the register as an adult female *Rattus gestri bunae* in Troughton's handwriting, was previously overlooked. Troughton refers to a spirit series from Dobodura obtained by the USA Typhus Commission, most of which were presumably converted to skins and skulls after publication of his account. Skull photographs of paratype M.6975 are given by Flannery (1995b).

Rattus lutreolus cambricus Troughton, 1937b

Aust. Zool. 8(4): 283. (12 March 1937).

Common name. Swamp Rat.

Current name. *Rattus lutreolus lutreolus* (J. Gray, 1841), following Jackson & Groves (2015).

Holotype. M.3192 by original designation. Male, skull, study skin, collected by W. Barnes and H. Burrell on 1 September 1922; registered on 15 September 1922.

Condition. Cranium: both auditory bullae detached, otherwise in good condition; both dentaries complete. Study skin: bald patch on the ventral surface, one tear in the tail tip.

Type locality. Booloombayt [= Booloombayte], Myall Lakes, NSW.

Paratypes. (3, by original designation). All three are study skins with extracted skulls, all collected by W. Barnes and H. Burrell: **M.3190**, male, collected on 31 August 1922 at Bombah Point, Myall Lakes; **M.3191**, male, collected on 31 August 1922 at Booloombayt, Myall Lakes; **M.3193**, female (allotype), collected 4 September 1922.

Comments. Troughton refers to variation in a series of over 20 specimens, but cites registration numbers only for the four specimens from the type locality. Taylor & Horner (1973) discussed the status of this taxon, and note that Troughton (1965b) no longer considered it a valid subspecies.

Rattus lutreolus imbil Troughton, 1937b

Aust. Zool. 8(4): 283. (12 March 1937).

Common name. Swamp Rat.

Current name. *Rattus lutreolus lutreolus* (J. Gray, 1841), following Taylor & Horner (1973).

Holotype. M.6228 by original designation. Male adult, [Field no. 12B1], skull, study skin, collected by W. A. MacDougall, registered 16 November 1936, collection date not given.

Condition. Cranium, fracture in right zygomatic arch; right dentary missing coronoid process; left dentary complete. Study skin: bald patch on right shoulder area, bald patch on left side of abdomen, bald patch on left flank.

Type locality. Imbil, Gympie district, Qld, Australia.

Paratype. M.6444 by subsequent determination. Female, [Field no. 12B2], body in alc., collected at Imbil, presented by W. A. MacDougall, collection date not given, presented in November 1936, registered March 1938.

Comments. In the original description, Troughton (1937b: 282) states that a male and female were received from Imbil, but only the holotype male is mentioned in the description. The female is M.6444 and although not registered until after the paper was published, the register entry for this specimen refers to the same letter of 1936 as for the holotype; the card index for M.6444 has in Troughton's handwriting "To be designated Allotype in later paper", which apparently was never published. In the AM annual report, Troughton (1938) states that the "typical specimens" were lodged in the AM. Not subsequently recognized as a valid subspecies by Troughton (1965b).

Rattus mordax hageni Troughton, 1937a

Rec. Aust. Mus. 20(2): 120. (27 August 1937).

Common name. Stein's New Guinea Rat.

Current name. *Rattus steini hageni* Troughton 1937a; following Taylor *et al.* (1982) and Musser & Carleton (2005) but within Papua New Guinea *R. steini* Rümmler, 1935 includes multiple species requiring resolution, see Robins *et al.* (2014: 14). Helgen (2007) regarded eastern populations of *R. steini* to be a distinct species referable to *R. foersteri* (Rümmler, 1935), and placed *hageni* as a synonym of the latter.

Holotype. M.6102 by original designation. Male adult, skull (Fig. 45), study skin, collected by Dr G. A. M. Heydon, collection date not given, registered 22 May 1936.

Condition. Cranium complete; right dentary missing angular process; left dentary complete. Study skin: only c. 6 cm of proximal end of tail present (probably condition when captured), skin otherwise complete and in good condition.

Type locality. Upper Wahgi River valley, from alt. of 5–6,000 ft., on the southern slopes of Mt Hagen, Western Highlands Province, Papua New Guinea.

Paratypes. (7, 6 by subsequent determination). Details as per holotype, collection dates not given: **M.6103** by original designation, female (allotype), skull, study skin; **M.6104**, female, skull, study skin; **M.6105–07**, all females, bodies in alc.; **M.6108–09**, both young males, bodies in alc.

Figure 45. AM M.6102, holotype skull of *Rattus mordax hageni* Troughton, 1937a. (Photography by Stuart Humphreys).

Comments. Troughton gives registration numbers of the holotype and allotype under his heading "Type specimens" but does not mention any additional material of this taxon, types or otherwise. A further six specimens, all from the type locality and registered at the same time as the holotype, are marked as paratypes in the register in Troughton's hand and we accept these as part of the type series.

Rattus owiensis Troughton, 1945

Rec. Aust. Mus. 21(6): 374. (25 June 1945).

Common name. Yapen Island Rat.

Current name. *Rattus jobiensis* Rümmler, 1935; following Taylor *et al.* (1982) and Musser & Carleton (2005).

Holotype. M.6993 by original designation. Male, subadult, [collector's No. Owi Is. 30], skull, study skin, presented by Lt. Col. C. B. Philip and Major G. M. Kohls in August 1944, registered September 1944.

Condition. Incomplete and damaged cranium; braincase fragmented, missing left auditory capsule, hole in right auditory bulla (which is detached), missing jugal bone of both zygomatic arches; both dentaries complete. Study skin: bald patch on throat, three bald patches on ventral abdominal area; otherwise in good condition.

Type locality. Owi Island, Schouten Island Group, Cenderawasih (formerly Geelvink) Bay, Papua Province, Indonesia.

Paratypes. (3, 2 by subsequent determination; species composite). Same data as holotype: **M.6992** by original designation, female (allotype), subadult, skull, study skin (= *R. jobiensis*); **M.6994**, male, skull, study skin (= *R. exulans browni*); marked by Troughton as paratype in register and given as *owiensis*; **M.6995**, male, body in alc., (= *Rattus exulans browni*), marked in the register as *owiensis* by Troughton though not marked as a paratype, but marked "paratype" by Troughton on the specimen index card.

Comments. The number of specimens in the type series is not indicated by Troughton, who cites registration numbers for the holotype and allotype only. The holotype is a male, although Troughton variously refers to it as male and female in the original account. Taylor *et al.* (1982) note that the type series is a composite of two species. They assigned the male holotype, and paratype female M.6992, both of which they state are subadult, to *R. jobiensis*, and the paratypes M.6994 and M.6996 to *Rattus exulans browni*. However these authors do not mention M.6995, the only spirit specimen, which is also *Rattus exulans browni*. We have not included M.6996 (which is not indicated as a paratype by Troughton) in the type series because of the uncertain identity expressed by Troughton, who marked it in the register as "*R. browni* (*owiensis* juv ?)".

Rattus praetor mediocris Troughton, 1936a

Rec. Aust. Mus. 19(5): 343. (7 April 1936).

Common name. Large New Guinea Spiny Rat.

Current name. *Rattus praetor praetor* (Thomas, 1888b), following Taylor *et al.* (1982) and Musser & Carleton (2005).

Holotype. M.5761 by original designation. Male, [Field no. 214], skull, study skin, collected by Rev. J. B. Poncelet, collection date not given, registered 27 December 1934.

Condition. Cranium missing right side of occipital area, detached right auditory capsule, missing jugal bone of left zygomatic arch; both dentaries complete. Study skin, missing tail tip.

Type locality. Buin, Bougainville Island, North Solomons Province, Papua New Guinea.

Paratypes. (2, by original designation). **M.5759**, skull, study skin; **M.5760**, body in alc., both males, details as per holotype.

Comments. Type series appears to be limited to the three specimens listed above. No other specimens with similar collection details are included in the AM specimen database.

Rattus purdiensis Troughton, 1946

Rec. Aust. Mus. 21(7): 408. (24 June 1946).

Common name. Large New Guinea Spiny Rat.

Current name. *Rattus praetor praetor* (Thomas, 1888b), following Taylor *et al.* (1982) and Musser & Carleton (2005).

Holotype. M.7183 by original designation. Male adult, skull, study skin, presented on 8 August 1945 by Flying Officer D. C. Swan, registered February 1946.

Condition. Cranium and dentaries complete. Study skin with bald patch on the right side, bald patch on the dorsal surface near proximal end of the tail, bald patch on the left side, most of the fur on the ventral surface is missing.

Type locality. Bat Island, Purdy Group, near Admiralty Group, Manus Province, Papua New Guinea.

Paratype. M.7184 by original designation. Female adult (allotype), skull, study skin, details as per holotype.

Comments. The description appears to be based on two specimens which are identified as holotype and allotype and cited by registration number. There is no indication of additional paratypes in the original description and no other specimens in the M Register that are identified as *purdiensis* in Troughton's handwriting.

Rattus rennelli Troughton, 1945

Rec. Aust. Mus. 21(6): 375. (25 June 1945).

Common name. Pacific Rat.

Current name. *Rattus exulans browni* (Alston, 1877), following Taylor *et al.* (1982) and Musser & Carleton (2005).

Holotype. M.4213 by original designation. Male, [skull, study skin], presented by Mr G. A. V. Stanley, collection date not given, registered on 8 November 1927. Stanley collected on Rennell Is. in 1927 (see Troughton, 1929a: 193).

Condition. Cranium complete; right dentary missing angular process; left dentary complete. Study skin: bald patch on left rear flank, otherwise complete and in good condition.

Type locality. Rennell Island, Rennell and Bellona Province, Solomon Islands.

Paratypes. (3, by subsequent determination). Details and registration date as per holotype: **M.4214**, female, (allotype), skull, study skin; **M.4215**, juv. sex indeterminate, body in alc.; **M.4216**, juv. sex indeterminate, body in alc.

Comments. Troughton gave the registration number for the male holotype, and referred to the allotype female though without providing a registration number. He did not indicate whether there are other paratypes. In addition to the holotype, the register has three specimens identified as *rennelli* in Troughton's handwriting, only one of which is marked as a type (M.4214 as allotype). The two remaining specimens M.4215–16 are marked "Paratypes 2 juv spmns" in Troughton's hand on a type specimen index card. There are no other *Rattus* registered from Rennell Island in the AM database.

Rattus ringens dobodurae Troughton, 1946

Rec. Aust. Mus. 21(7): 407. (24 June 1946).

Common name. Cape York Rat.

Current name. *Rattus leucopus dobodurae* Troughton, 1946; following Taylor *et al.* (1982) and Musser & Carleton (2005).

Holotype. M.6960 by original designation. Male adult, [Field no. 253], skull (Fig. 46), study skin, collected on 25 April 1944, presented by Captain G. M. Kohls, USA Typhus Commission, and registered on 23 June 1944.

Condition. Cranium missing jugal bone from both zygomatic arches; both dentaries complete. Study skin complete.

Type locality. Dobodura district, Northern Province, Papua New Guinea.

Paratypes. (5, 4 by subsequent determination). All with same data as holotype, except dates of collection: **M.6987** (by original designation), female (allotype), skull, study skin, collection date not given, presented by USA Typhus Commission, registered September 1944; **M.6917**, male, skull, study skin, collection date not given; **M.6973**, male, skull, study skin, collected on 27 May 1944; **M.6974**, male, body in alc., collected on 21 June 1944; **M.6988**, young female, skull, study skin, collection date not given, registered in September 1944.

Comments. Troughton cites registration numbers for the holotype and allotype but does not indicate the total number in the type series. However, he commented that the holotype and allotype were submitted with a series from Dobodura presented by the US Typhus Commission. Another four specimens of that series are identified as *R. ringens dobodurae* in Troughton's handwriting in the register and these are the only specimens in the register with data matching that of the holotype. Although none of the four are marked as paratypes in the register or on specimen index cards, we treat them as such on the understanding that they would have been examined by Troughton during preparation of the manuscript.

Figure 46. AM M.6960, holotype skull of *Rattus ringens dobodurae* Troughton, 1946. (Photography by Stuart Humphreys).

Rattus sansapor Troughton, 1946

Rec. Aust. Mus. 21(7): 409. (24 June 1946).

Common name. Large New Guinea Spiny Rat.

Current name. *Rattus praetor coenorum* Thomas, 1922b; following subspecific arrangement tentatively proposed by Taylor *et al.* (1982). Taxonomic clarification of *R. praetor coenorum* from western New Guinea is needed (see Robins *et al.* 2014: 14).

Holotype. M.7195 by original designation. Male adult, skull, study skin, presented by Captain James T. Griffiths, registered April 1946, collection date not given.

Condition. Cranium and dentaries complete. Study skin: left pes is enlarged by a pathological deformity; left manus missing digit 2 (probably when live), missing tail tip; skin otherwise complete and in reasonable condition.

Type locality. Sansapor, on the north-west coast of the Vogelkop region, West Papua Province, Indonesia.

Paratype. M.7194 by original designation. Young male, skull, study skin, collection date not given, other data as per holotype.

Comments. Description apparently based on two specimens, with registration numbers cited for both in the original account.

Solomys salebrosus Troughton, 1936a

Rec. Aust. Mus. 19(5): 346. (7 April 1936).

Common name. Bougainville Giant Rat.

Current name. *Solomys salebrosus* Troughton, 1936a; following Musser & Carleton (2005).

Holotype. M.5590 by original designation. Male adult, [Field no. 44], skull, study skin, locality in register given as "Buin, Sth Bougainville I.", collected by J. Poncelet, collection date not given in register, registered July 1934.

Condition. Cranium complete; right dentary missing medial part of the 1st molar; left dentary complete. Study skin, bald patch on ventral surface.

Type locality. [Buin], southern Bougainville Island, North Solomons Province, Papua New Guinea. In the original description, Troughton does not specify the type locality other than "Bougainville Island".

Paratypes. (5, 4 by subsequent determination). All five with locality and collector as for holotype: **M.5589** (by original designation), female (allotype), skull, study skin, registered July 1934; **M.5758**, adult female, body in alc.; **M.5762–63**, both are females, skulls, study skins; **M.5764**, male, skull, body in alc., all four were registered December 1934.

Comments. Troughton indicates a type series of six specimens, but gave registration numbers only for the holotype and allotype. However, he mentions four additional specimens, referred to as one male and three female paratypes; these are marked as paratypes in Troughton's hand in the register. Dates of collection are not given for any of the type series in the register, but all would have been collected in 1934. Troughton (1935c: 259) states that Poncelet was given a collecting kit when he visited the AM early in 1934. Photographs of holotype cranium and dentaries are given by Flannery (1995c). Poncelet later sent five additional specimens (topotypes), M.6491–92 and M.6645–47, all entered in the M Register from "Buin district, 10 miles inland", and registered between 1937 and 1939.

Thetomys gracilicaudatus ultra Troughton, 1939

Rec. Aust. Mus. 20(4): 281. (31 March 1939).

Common name. Eastern Chestnut Mouse.

Current name. *Pseudomys gracilicaudatus ultra* (Troughton, 1939). Subspecific status recognized by some recent authors, but not by others, see Jackson & Groves (2015) who synonymize it with typical *Pseudomys gracilicaudatus* (Gould, 1845).

Holotype. M.6407 by original designation. Female adult, skull, study skin, registered January 1938, presented by Bureau of Sugar Experiment Stations (Queensland Department of Agriculture).

Condition. Cranium complete; both dentaries missing coronoid processes. Study skin, missing tail tip.

Type locality. The "cane field area at Mackay" (Troughton), north coastal Qld, Australia.

Paratypes. (5, by subsequent determination). Details as per holotype: **M.6405**, male, skull, study skin; **M.6406**, male, skull, body in alc.; **M.6408–10**, all three are females, all skulls, bodies in alc.

Comments. Troughton indicates that the holotype was one of six specimens from the Mackay area presented by the then Bureau of Sugar Experiment Stations. He gave the registration number of the holotype but does not make specific reference to an allotype or paratypes. Mahoney & Posamentier (1975: 335) recognize six specimens in the type series, citing registration numbers M6405–10. There are only six specimens of this taxon registered from Mackay, all presented by the Bureau of Sugar Experiment Stations during 1938 and these are assumed to be the type series. The AM mammal type card index has two cards written in Troughton's handwriting: M.6405 marked as holotype then crossed out, and M.6407, originally marked allotype, then crossed out and changed to holotype. The remaining four specimens are not labelled as paratypes in Troughton's hand, either in the register, type card index, or on specimen labels but are recognized as paratypes on the basis that they are the only specimens with matching data in the register and likely to be the remainder of the series available to Troughton in preparation of his account.

Unicomys ponceleti Troughton, 1935c

Rec. Aust. Mus. 19(4): 260, plate xix. (19 September 1935).

Common name. Poncelet's Giant Rat.

Current name. *Solomys ponceleti* (Troughton, 1935c), following Musser & Carleton (2005).

Holotype. M.5756 by original designation. Female adult, [Field no. 347], skull, skin in alc., locality in register is "Buin, S. Bougainville Id.", collected and donated by Father J. B. Poncelet in 1934, registered December 1934. Month of collection not indicated.

Condition. Cranium and dentaries complete. Whole skin in alc.

Type locality. "About 10 miles inland from Buin, south Bougainville Island" (Troughton, 1935c), North Solomons Province, Papua New Guinea.

Paratypes. (2, by original designation). **S.1940**, skull; **S.1941**, cranium only; both specimens are unsexed skulls, both registered December 1934, same data as holotype. S Register entries for both specimens state "skin nil".

Comments. Troughton indicates a type series of three specimens. Two further specimens from Poncelet were registered in September 1937: M.6341, female, skull, study skin from "Koniguari, 18 miles inland from Buin", and M.6342, female, skull, skin in alc., from "Monoukeu". A photograph of the holotype as a whole body (i.e. prior to skinning) was given in the original description; it is not known whether the skinned body in alcohol was retained in the Collection.

Uromys banfieldi De Vis, 1907

Ann. Qld. Mus. 7: 8. (7 June 1907).

Common name. Fawn-footed Melomys.

Current name. *Melomys cervinipes* (Gould, 1852), following Jackson & Groves (2015).

?Syntype. M.3133, male, skull, study skin, Dunk Island, exchange from QM, registered in the AM in July 1922. Former QM number J1889, collector and collection date not indicated in M Register. However, the QM Register gives collector/donor as R. Hamlyn-Harris, collection date not given, registered in QM on 18 June 1914 (Heather Janetzki, QM, pers. comm. 2014).

Condition. Cranium and dentaries complete, jugal missing from left zygomatic arch. Study skin intact except missing right ear, fur somewhat faded.

Cranial measurements (mm). M.3133: GL, 36.08; ConL, 34.52; BasL, 31.54; NasL, 11.44; NasB, 4.0; DIL, 9.93; APV, 6.23; PAL, 18.59; UMR (alv.), 6.74; ZB, 17.62; POC, 5.81; BUL, 4.93; MB, 13.21; DL (condyl.), 20.19; LMR (alv.), 6.64.

Type locality. Dunk Island, Qld, Australia.

Comments. Two female specimens from Dunk Island are mentioned in the original description, but De Vis did not indicate a holotype, cite registration numbers (they might not have been registered) or indicate the number of specimens in the type series. In correspondence from H. Longman (then Director, QM) associated with the exchange specimen M.3133 (AM Archives AMS9 Letters Received, L.20/1922), Longman states that this specimen was "material used by De Vis", implying that it is a type. The sex of this specimen, which was sent to the AM as a body in alcohol, is not indicated in associated documentation from the QM. It was entered in the M Register as a male by Troughton, who probably examined it as a spirit specimen. However, Troughton (1956) does not list type material for this taxon as being in the AM.

Ronald Hamlyn-Harris was Director of the QM in 1914 when the specimen was registered. De Vis had ended his association with the QM in 1912. If Hamlyn-Harris was the collector then it is unlikely to be a syntype. In May 1914 Hamlyn-Harris spent two weeks on Dunk Island with Banfield (Quinnell, 1986: 210). Although we cannot exclude the possibility that he was the collector because we are not aware of his activities prior to 1914, it is possible that he simply registered a specimen found in the collection, and his name was inadvertently cited as collector.

An adult female in the QM (J22169) is cited as a syntype of *Uromys banfieldi* by Mahoney & Richardson (1988). It was registered in 1972, without collector or date and does not appear to have had a prior registration number (Heather Janetzki, QM, pers. comm. 2014). Three specimens from Dunk Island registered in the AM in 1909 and 1910 as *Uromys banfieldi* (M.2063–64, M.2102) are presumably topotypes because they were presented to the AM by E. J. Banfield. A fourth specimen collected by Banfield (M.3110) was presented by Le Souef and registered in 1922.

Uromys emmae Groves & Flannery, 1994

Rec. Aust. Mus. 46(2): 159, figs 10–12, table 2. (28 July 1994).

Common name. Emma's Giant Rat.

Current name. *Uromys emmae* Groves & Flannery, 1994; following Musser & Carleton (2005).

Holotype. M.7200 by original designation. Female adult, skull, study skin, collected by Col. C. B. Phillips, date of collection not recorded, specimen registered on 1 July 1946.

Condition. Damaged but intact cranium: fracture in the posterior end of both zygomatic arches, severe impact on post-orbital area has resulted in transverse fracture across frontals and damage to lateral walls of both orbits including partial disintegration of right orbital wall; all teeth are reinforced with glue; left dentary missing coronoid process; right dentary complete. Study skin missing right ear, tear above right eye has been stitched, left manus missing digit 1; otherwise in good condition.

Type locality. Owi Island (1°16'S 136°13'E), Schouten Island Group, Cenderawasih (formerly Geelvink) Bay, Papua Province, Indonesia.

Comments. The description was based on one specimen and the species has not been reported since (Wright & Leary, 2016).

Uromys lamington Troughton 1937a

Rec. Aust. Mus. 20 (2): 126. (27 August 1937).

Common name. Mottled-tailed Giant Rat.

Current name. *Uromys caudimaculatus papuanus* (Ramsay, 1883), following Jackson & Groves (2015).

Holotype. M.4684 by original designation. Male, [Field no. 65], skull, study skin, collected and presented by Mr C. T. McNamara during 1929, registered September 1929.

Condition. Cranium and left dentary complete; incomplete right dentary missing part of the coronoid process. Study skin: bald patch on the dorsal surface behind the right ear, otherwise complete and in good condition.

Type locality. Mount Lamington district, Northern Province, Papua New Guinea.

Comments. Description apparently based on one specimen.

Uromys macropus exilis Troughton & Le Souef, 1929b

Aust. Zool. 6: 98. (13 August 1929).

Common name. Giant White-tailed Rat.

Current name. *Uromys caudimaculatus caudimaculatus* (Krefft, 1867b), following Jackson & Groves (2015).

Holotype. M.4378 by original designation. Female adult, skull (Fig. 47), study skin, originally as body in alc., collected by A. S. Le Souef in September 1928; registered on 7 September 1928.

Condition. Cranium missing both auditory bullae, left auditory capsule is partially detached; left dentary missing distal part of coronoid process; right dentary complete. Study skin: missing scales on c. 1 cm of the proximal end of tail, otherwise in good condition.

Figure 47. AM M.4378, holotype skull of *Uromys macropus exilis* Troughton & Le Souef, 1929b. (Photography by Sally Cowan).

Type locality. Hinchinbrook Island, North Qld, Australia.

Comments. Described from a single specimen. Troughton subsequently elevated *exilis* to species rank, believing that it was "very distinct" from mainland Australian *Uromys* based on cranial characters (Troughton, 1941 and subsequent editions).

Order Chiroptera

Family Pteropodidae

Dobsonia beauforti Bergmans, 1975

Beaufortia 23(295): 3, figs 2–9. (16 January 1975).

Common name. Beaufort's Naked-backed Fruit Bat.

Current name. *Dobsonia beauforti* Bergmans, 1975; following Simmons (2005).

Paratype. M.9996 by original designation as ZMA 16.475. Female adult, skull, study skin, with embryo in alc. with same AM number (= ZMA 16.549). Collected on 25 December 1909 by L. F. de Beaufort from a cave near Nja-Njef, Waigeo Island, West Papua, Indonesia (previously Irian Jaya), the type locality. Received from ZMA in September 1975.

Comments. Holotype and remaining 12 paratypes, all from the type locality, are in the ZMA Leiden, see Bergmans (2011).

Melonycteris fardoulisi fardoulisi Flannery, 1993b

Rec. Aust. Mus 45(1): 68, figs 7, 10, table 3. (19 March 1993).

Common name. Fardoulis's Blossom Bat.

Current name. *Melonycteris fardoulisi fardoulisi* Flannery, 1993b; following Simmons (2005).

Holotype. M.18833 by original designation. Male adult, [Field no. FD43], study skin, skull, [skinned body in al.], collected by T. F. Flannery, 16 November 1987; registered 26 April 1988.

Condition. Cranium and dentaries complete. Study skin complete.

Type locality. Near Sesena Village ([10]°31'S] 162°05'E, alt. 100–200 m), Makira Island, Makira-Ulawa Province, Solomon Islands. The latitude 8°31'S given for Sesena village in the original account stems from an incorrect entry in the AM database.

Paratypes. (4, by original designation). **M.18834**, subadult male, skull, study skin, skinned body in alc., collected 17 November 1987; **M.18849**, young adult female, skull, study skin, [skinned body in alc.] collected, 17 Nov. 1987; **M.18848**, juvenile female, skull, body in alc.; **M.20112**, juvenile female, body in alc. Other data for all four as for the holotype.

Comments. Five specimens in the type series. The sequencing study of Pulvers & Colgan (2007) support recognition of the four lineages of *M. fardoulisi* treated as subspecies by Flannery.

Melonycteris fardoulisi maccoyi Flannery 1993b

Rec. Aust. Mus 45(1): 71, figs 9–10, table 3. (19 March 1993).

Common name. Fardoulis's Blossom Bat.

Current name. *Melonycteris fardoulisi maccoyi* Flannery, 1993b; following Simmons (2005).

Holotype. M.18836 by original designation. Male adult, [Field no. FD730], skull, study skin, [skinned body in alc.], collected by T. F. Flannery, 27 November 1987; registered 26 April 1988.

Condition. Cranium with fracture in the right temporal bone, soft palate retained on the skull; both dentaries complete. Study skin complete.

Type locality. Naufe'e Village, [Kwaoi district], [8°55'S] (161°03'E, alt. 400 m), Malaita Island, Malaita Province, Solomon Islands. The latitude 10°31'S given for Naufe's village in the original account is a database error, and 8°55'S is based on the latitude of other AM vertebrate specimens collected by Flannery from that locality.

Paratype. M.18831 by original designation. Female adult, skull, study skin, [skinned body in alc.], collected by T. F. Flannery on 27 November 1987 at Sinalaggu Harbour, 4 km north of Naufe'e Village, sea level, Malaita Island, Malaita Province, Solomon Islands.

Comments. Two specimens in the type series.

Melonycteris fardoulisi mengermani Flannery, 1993b

Rec. Aust. Mus 45(1): 73, figs 11–12, tables 4–5. (19 March 1993).

Common name. Fardoulis's Blossom Bat.

Current name. *Melonycteris fardoulisi mengermani* Flannery, 1993b; following Simmons (2005).

Holotype. M.22331 by original designation. Male adult, [Field no. LA545], skull, study skin, frozen tissue; collected 18 July [not September], 1990 by H. Parnaby; registered 14 August 1990. Originally preserved as a body in alc.

Condition. Cranium and dentaries complete. Soft palate retained on the skull. Study skin complete.

Type locality. Vanga Point (7°54'S 156°58'E), Kolombangara Island, Western Province, Solomon Islands.

Paratypes. (5, by original designation). **M.22330**, **M.22332** and **M.22333**, all three are adult females, skulls, study skins, the first two with frozen tissue samples, all collected on 17 July 1990, other data as per holotype; **M.22690**, adult male, skull, body in alc., frozen tissue; **M.22691**, female, skull, body in alc., frozen tissue; both with same data as for holotype.

Comments. Six specimens in the type series, all captured in mist nets.

Melonycteris fardoulisi schouteni Flannery, 1993b

Rec. Aust. Mus. 45(1): 72, figs 9–10, table 4. (19 March 1993).

Common name. Fardoulis's Blossom Bat.

Current name. *Melonycteris fardoulisi schouteni* Flannery, 1993b; following Simmons (2005).

Holotype. M.18841 by original designation. Male adult, [FD752], skull, study skin, [skinned body in alc.]. Collected by T. F. Flannery, 1 December 1987; registered 26 April 1988.

Condition. Cranium and dentaries complete, mandibular post-canine teeth worn to gum. Study skin in good condition.

Type locality. Kokaleku Village (9°28'S 159°53'E), alt. 400–500 m, northern Guadalcanal Island, Guadalcanal Province, Solomon Islands.

Paratypes. (2, by original designation). **M.18830**, adult female, skull, study skin; **M.20113**, adult female, body in alc., (erroneously given as M.20133 in original account). Locality and collecting details of both as for holotype.

Comments. Three specimens in the type series.

Nyctimene bougainville Troughton, 1936a

Rec. Aust. Mus. 19(5): 349. (7 April 1936).

Common name. Solomons Tube-nosed Bat.

Current name. Unresolved. A distinct species, *Nyctimene bougainville* Troughton, 1936a according to Flannery (1995c); but a subspecies of *N. vizcaccia* Thomas, 1914a (i.e. *N. vizcaccia bougainville* Troughton, 1936a) according to Bonaccorso (1998) and Simmons (2005).

Holotype. M.5787 by original designation. Male, list No. 156, skull (Fig. 48), study skin, collected and presented by J. B. Poncelet, registered on 27 December 1934, collection date not provided.

Condition. Cranium complete. Left dentary with hole in the ascending ramus, right dentary complete. Study skin, faded.

Type locality. Buin, southern Bougainville Island, North Solomons Province, Papua New Guinea.

Paratypes. (10, 9 by subsequent determination). All from Buin, Bougainville, collected by J. B. Poncelet in 1934, collection date not recorded: **M.5597**, female, skull, study skin; **M.5784**, male body in alc.; **M.5785** (by original designation), female (allotype), skull, study skin; **M.5786**, male, skull, study skin; **M.5788**, female, skull, study skin; **M.5789**, male, body in alc.; **M.5790**, female, body in alc.; **M.5791**, male, body in alc.; **M.5832–33**, males, study skins and skulls.

Comments. Troughton indicates a type series of 12 specimens but did not cite registration numbers other than for the holotype and allotype. He states "total of twelve 8 males and 4 males" but this should be 8 males and 4 females, judging from candidate specimens. The nine specimens above, in addition to the allotype, are not marked as paratypes but the original specimen labels and original alcohol jar labels have been replaced. They are here identified as paratypes as they are the only specimens with matching locality and collection dates. A further specimen listed as a paratype in AM exchange documents, M.5792 male, is indicated as having been sent to MCZ in 1938.

Nyctimene sanctacrucis Troughton, 1931

Proc. Linn. Soc. N.S.W. 56(3): 206. (15 July 1931).

Common name. Nendo Tube-nosed Fruit Bat.

Current name. *Nyctimene sanctacrucis* Troughton, 1931; following Simmons (2005).

Holotype. M.711 by original designation. Female adult, skull (Fig. 49), study skin, dried palate, registered September 1892. Presented by Rev. Actaeon Forrest in July 1892, registered in September 1892. The specimen is possibly nulliparous as there are no obvious nipples, nor reduced hair in the mammae area.

Figure 48. AM M.5787, holotype skull of *Nyctimene bougainville* Troughton, 1936a. (Photography by Stuart Humphreys).

Condition. Incomplete cranium, missing posterior wall of braincase and posterior half of basicranium including both auditory capsules, left zygomatic arch and left postorbital process. Both dentaries complete. Study skin in reasonable condition: bald patch on either side of abdomen, bald patch on lower throat, both radii are fractured, small tears in both wing membranes.

Type locality. Santa Cruz Islands, Temotu Province, Solomon Islands.

Comments. Known only from the holotype (Leary, Hamilton & Helgen, 2008). Considered to be extinct (e.g., Flannery, 1995c) but listed as Data Deficient on IUCN Red List, in part due to uncertainty about whether this taxon is a full species, or a subspecies of *N. major* (Dobson, 1877), see Leary, Hamilton & Helgen (2008) and Helgen *et al.* (2009: 29). Troughton notes that the specimen was presented with other specimens of bats and fish but the locality was not recorded, other than Santa Cruz Group. Flannery (1995c) suspected that the holotype was from Nendo Island, but without citing reasons.

Nyctimene wrightae Irwin, 2017

Rec. Aust. Mus. 69(2): 73–100, figs 3, 4, 6–12, tables 2–6. (9 August 2017).

Common name. Hamamas Tube-nosed Fruit Bat.

Holotype. M.16423 by original designation. Female adult, [Field no. U35] skull, body in alc., collected on 7 November 1985 by Dr Ken Aplin.

Condition. Cranium, mandible and body complete and in good condition.

Type locality. Namosado (06°15'S 142°47'E), [750–1000 m alt., from field datasheet], Southern Highlands Province, Papua New Guinea. Altitude of 500 m given in original account arose from AM database-error.

Paratypes. (15 by original designation). **M.16230** (Field no. FA332), male, skull, body in alc., and **M.16231** (Field no. FA357), female adult, skull, body in alc., both collected on 8 April 1986, **M.16870** (Field no. FA 394), male adult, body in alc., collected on 9 April 1986, all three collected by T. Flannery and T. Ennis from Munbil, Star Mountains, West Sepik Province, Papua New Guinea; **M.16426** (Field no. X19), male adult, skull, body in alc., collected on 22 November 1985, **M.16428** (Field no. X97), female adult, body in alc., collected on 24 November 1985, **M.16432** (Field no. Y20), male adult, body in alc., collected on 25 November 1985, all three collected by K. Aplin from Waro, Southern Highlands Province, Papua New Guinea; **M.16421** (Field no. H29), female sub-adult, collected on 17 October 1985, **M.16422** (Field no. H49), female adult, collected on 19 October 1985, both bodies in alc. and skulls extracted, **M.16440** (Field no. G97), female adult, body in alc., collected on 15 October 1985, **M.16441** (Field no. L24), female adult, body in alc., collected on 14 October 1985, all four collected by K. Aplin, Magidobo, Southern Highlands Province, Papua New Guinea; **M.16443** (Field no. F04), male adult, skull, body in alc., and **M.16444** (Field no. K10), female adult, body in alc., collected respectively on 7 and 11 October 1985, by K. Aplin from Bobole village, Mt Sisa,

Figure 49. AM M.711, holotype skull of *Nyctimene sanctacrucis* Troughton, 1931. (Photography by Stuart Humphreys).

Southern Highlands Province, Papua New Guinea; **M.17887** (Field no. FB2), male adult, skull, study skin, collected on 30 March 1986 by T. Flannery in regrowth, outskirts of Tabubil, Western Province, Papua New Guinea; **M.21771** (Field no. FJ139), female sub-adult, body in alc., collected on 8 March 1990 by T. Flannery, Mt Somoro Summit, West Sepik Province, Papua New Guinea; **M.32382** (Field no. B32), male adult, skull, study skin, collected on 12 June 1994 by Boeadi, Timika area, roadside forest at new town complex, Papua Province, Indonesia.

Comments. A total of 29 paratypes, other paratypes are in the BBM, BMNH, PNGM and WAM.

Pteralopex flanneryi Helgen, 2005b

Systematics and Biodiversity 3(4): 437, figs 2–3, 5. (24 November 2005).

Common name. Greater Monkey-faced Bat.

Current name. *Pteralopex flanneryi* K. Helgen, 2005b.

Holotype. M.6282 by original designation. Male adult, skull, study skin, collected by J. B. Poncelet, collection date not recorded in register; registered 9 March 1937. Locality given in register is "Buin district".

Condition. Cranium missing both auditory rings, otherwise complete, loose upper left second post-canine tooth, missing lower left second post-canine tooth. Study skin with minor holes in wing membranes.

Type locality. Buin District (6°50'S 155°44'E), southern Bougainville Island, North Solomons Province, Papua New Guinea. The original description gives the locality of the holotype as "Buin District (6°50'S 155°44'E), 10 miles inland from the coast, alt. 50 m" but this might be a misattribution of data from a paratype.

Paratypes. (3, by original designation). **M.6498**, young adult female, skull, study skin, Buin district, 10 miles inland, Bougainville, collected 25 September 1937 by J. B. Poncelet, registered 21 June 1938. **M.6346**, adult male, body in alc., collected 3 March 1937 and **M.6347**, adult female, skull, study skin, collected 30 March 1937; both from Iula (06°50'S 155°45'E), 15 miles inland from the coast, alt. 150 m, Bougainville, both collected by J. B. Poncelet and both registered 29 September 1937.

Referred specimen. M.19822, (?) young adult male, skull, study skin, from Malasang-Kakalis Hamlet (05°21'S 154°41'E), Buka Island, collected September 1987 by S. Wickler, registered 23 January 1989.

Comments. Type series of eight specimens, other paratypes are at the USNM and BBM.

Pteralopex pulchra Flannery, 1991

Rec. Aust. Mus. 43(2): 125, figs 2–3, table 1. (22 November 1991).

Common name. Montane Monkey-faced Bat.

Current name. *Pteralopex pulchra* Flannery, 1991; following Simmons (2005).

Holotype. M.21842 by original designation. Female adult, field number LA255, skull, body in alc., frozen tissue; collected by T. F. Flannery, I. Aujare and T. Leary on 17 May 1990. Registered 5 June 1990.

Condition. Cranium and both dentaries complete, with retained soft palate. Body in alc. has broken left forearm, hole in the dorsal surface of the skin of the right side of the head.

Type locality. Southern slopes of Mount Makarakomburu (9°44'S 160°01'E), Guadalcanal Island, Guadalcanal Province, Solomon Islands. Altitude 1, 230 m.

Comments. Known only from the holotype (Leary, Helgen & Hamilton, 2008).

Pteralopex taki Parnaby, 2002a

Aust. Mammal. 23(2): 146, figs 1, 3, 6, tables 1–2. (30 April 2002).

Common name. New Georgia Monkey-faced Bat.

Current name. *Pteralopex taki* Parnaby, 2002a; following Helgen (2005b).

Holotype. M.22320 by original designation. Female young adult, Field no. LA374, skull, body in alc., frozen tissue; captured by H. E. Parnaby and Ian Aujare on 25 June 1990; registered 14 August 1990.

Condition. Cranium and both dentaries complete. Alc. body complete, except part of left pectoral muscle removed.

Type locality. Abandoned village site [of Indidaka], on a ridge top at Mt Javi, (8°31'S 157°52'E), 5 km [northwest] of Patutiva Village, Marovo Lagoon, New Georgia Island, Western Province, Solomon Islands. Elevation c. 50 m.

Paratypes. (22, by original designation). Mt Javi (8°31'S 157°52'E), New Georgia Island, Solomon Islands, collected by Diana Fisher: **M.26623**, male, study skin, skull, skinned body in alc., 11 February 1992 collected by D. Fisher and I. Aujare; **M.26629**, female, study skin, skull, skinned body in alc., 2 May 1992; **M.27627**, male, body in alc., 1 May 1992; **M.27629**, male, body in alc. 30 April 1992; **M.27630**, male, body in alc., 4 May 1992; **M.27634**, male, skull in alc., body in alc., 4 May 1992; **M.27638**, female, body in alc., 5 May 1992; **M.27639**, female, skull in alc., body in alc., 5 May 1992. Tironusa (8°32'S 157°52'E), New Georgia, Solomon Islands, collected by D. Fisher: **M.27631**, male, 3 April 1991 and **M.27641**, female, 30 March 1992 both bodies in alc. Patutiva village (8°34'S 157°52'E), Vangunu Island, all collected by D. Fisher, from 23–26 April 1992: **M.26624**, male, study skin, skull, skinned body in alc.; **M.26625**, female, study skin, skull, skinned body in alc.; **M.26626**, male, study skin, skull, skinned body in alc.; **M.27628**, male, body in alc.; **M.27632**, male, body in alc.; **M.27633**, male, body in alc.; **M.27636**, female, body in alc.; **M.27640**, female, body in alc.; **M.27642**, female, body in alc. Vivila village (8°41'S 157°52'E), Vangunu Island, Solomon Islands, collected by Diana Fisher 10–11 April 1992: **M.27626**, female, skull in alc., body in alc.; **M.27635**, female, subadult, body in alc.; **M.27637**, female, body in alc.

Comments. Type series of 23 specimens. All paratypes were collected in 1992 during the ecological study of Fisher & Tasker (1997). They provided a description of the vegetation of the type locality, a long abandoned village site which they identify as Indidaka, and correctly indicated as being northwest of Patutiva village, not north as stated subsequently in the original description. Tissue samples of the holotypes of *P. pulchra* and *P. taki* were included in the electrophoretic analysis of Ingleby & Colgan (2003) who concluded that both taxa were closely related, with differences at only 4% of the 25 allozyme loci assessed.

Pteropus (Cheiropteruges) alboscapulatus Ramsay, 1877g

Proc. Linn. Soc. N.S.W (ser. 1) 2(1): 17. (July 1877).

Common name. Bismarck Blossom-bat.

Current name. *Melonycteris melanops melanops* Dobson, 1877; following Flannery (1993b) and Simmons (2005).

Lectotype. PA.1271, male adult, skin mount with skull *in situ*, registered c. 1878. The only data in the original Palmer entry for this specimen is "Pteropus alboscapulatus New Ireland" with no indication of type status. Flannery (1993b) provided a photograph of PA.1271, which he referred to as the holotype and in so doing, designated it as the lectotype (Article 74.6, the *Code*).

Condition. Skin mount faded, otherwise in good condition. Probably male, no penis visible but no nipples visible and darkly pigmented skin appears to be the remains of the scrotal sac.

Type locality. "Duke of York Island" (Ramsay), but not localized beyond "Bismarck Archipelago", Papua New Guinea. The specimen was collected by the Rev. George Brown, who did not record locality data.

Paralectotype. PA.1270, appears to be male (no penis visible but no nipples either and many of the male skins lack a penis), skin mount, skull *in situ*, "Brown" is written on the skin label.

Comments. Ramsay did not indicate the number of specimens examined but referred only to a male specimen. It is likely that the specimen had not received a registration number at the time of publication. The AM annual report for 1877 (Ramsay, 1878) lists "1 *Chieropteruges* [sic] *alboscapulatus*" purchased from Rev. Brown but unfortunately the annual report for 1876 does not list individual bat species obtained from Brown. Three specimens, PA.1270–72 were originally entered as "alboscapulatus" from New Ireland in the Palmer Register and these specimens are likely to be part, if not all, of Ramsay's original series. It is likely that Ramsay had examined all three specimens because a specimen list accompanying correspondence (AM Archives AMS7 Letters Received, C:10.76.03) indicates that the three were received

as skins from Brown in the same shipment in 1876. We have not yet located PA.1272, which could have been sent in exchange to another institution, or reregistered at a later time. Two specimens of this species (M.2249 and M.2417) were registered in 1912 and 1913 respectively from the "old collection", with no data. The incomplete associated data does not include prior registration numbers and it is possible that they had not been registered previously.

Pteropus howensis Troughton, 1931

Proc. Linn. Soc. N.S.W. 56(3): 204. (15 July 1931).

Common name. Ontong Java Flying-fox.

Current name. *Pteropus howensis* Troughton, 1931; following Simmons (2005).

Holotype. M.4408 by original designation. Female adult, skull (Fig. 50), study skin, collected and presented by H. I. Hogbin, registered 29 October 1928. Collection date not given.

Condition. Cranium lacks both ectotympanic rings, otherwise complete; left dentary broken behind 2nd post-canine tooth; right dentary complete. Study skin: bald patch either side of abdomen.

Type locality. Lord Howe Group (Ontong Java), Malaita Province, Solomon Islands.

Paratypes. (3, by original designation). All from Lord Howe Group, presented by Mr T. B. Walton and registered in December 1929: **M.4824**, female adult, skull, study skin, tongue and palate in alc.; **M.4825**, subadult male (allotype), skull, study skin; and **M.4826**, subadult male, body in alc.

Comments. The original account gives the type series as four specimens, citing registration numbers. M.4827, a juvenile of M.4824 (a body in alc.) is not marked as a paratype in the register. The date of collection is not recorded for the holotype or paratypes, either in the register, specimen labels or oldest jar labels.

Pteropus rennelli Troughton, 1929a

Rec. Aust. Mus. 17(4): 193, tables 1–2. (4 September 1929).

Common name. Rennell Flying-fox.

Current name. *Pteropus rennelli* Troughton, 1929a; following Simmons (2005).

Holotype. M.4217 by original designation. Female adult, skull, study skin, collected and presented by Mr G. A. V. Stanley, registered on 8 November 1927. Collected in 1927 (Troughton, 1929a).

Condition. Cranium missing right side of occipital area and auditory capsule; both dentaries complete. Study skin: minor holes in wing membranes, broken left and right humerus, right tibia and right 3rd, 4th and 5th proximal phalanges.

Type locality. Rennell Island, Rennell and Bellona Province, Solomon Islands.

Comments. Description based on one specimen and known from very few subsequent specimens. Photographs of holotype cranium and dentaries are given by Flannery (1995c). Almeida *et al.* (2014) conclude that *P. rennelli* and *P. cognatus* K. Andersen, 1908 are closely related and suspect they might be conspecific subspecies.

Figure 50. AM M.4408, holotype skull of *Pteropus howensis* Troughton, 1931. (Photography by Stuart Humphreys).

Pteropus rufus Ramsay, 1891b junior homonym

Rec. Aust. Mus. 1(6): 105. (31 March 1891).

Common name. Great Flying-fox.

Current name. *Pteropus neohibernicus neohibernicus* Peters, 1876b; following Simmons (2005).

Syntypes. (3) All three specimens were entered in the Palmer Register in c. 1878 as "Pteropus sp.". **PA.1260**, ?female, study skin, skull apparently removed (not found), skin tag states "number 9", October 1876, Rev. George Brown. Possibly adult based on the size of the skin. Label states "skull?", but the skull has not been recorded during inventory and is unlikely to be in the Collection. The sex (female) was based on the appearance of the skin: no obvious penis, but the wings are folded and nipples cannot be assessed; **PA.1261**, ?female, skull (Fig. 51), study skin, Bismarck Archipelago, Rev. George Brown, register indicates "Fruit Bat new number 11". Probably sub-adult, based on size and nulliparous condition of nipples. **PA.1262**, ?male, skin mount with skull *in situ*, skin label indicates from George Brown, Bismarck Archipelago. Possibly sub-adult, based on size.

Condition. **PA.1260**: Study skin, with minor holes in wing membranes, fracture in left femur. **PA.1261**: Cranium missing occipital area and lateral tips of postorbital processes, soft palate retained on skull. Study skin with minor holes in wing membranes. **PA.1262**: Skin mount, with bald patch in the lower dorsal side, membrane tears and broken bones of the left digits 2 and 3.

Cranial measurements (mm). PA.1261: GL, —; NasL, 20.90; NasB, 6.95; UC1–C1 (alv.), 13.36; PAL, 44.68*; UPM (alv.), 4.75; UMR (alv.), 10.51; ZB, 37.63; POC, 11.06; BUL, —; MB, —; DL (condyl.), 61.07; LPM (alv.), 5.27; LMR (alv.), 14.17. [* = estimate, posterior margin obscured by tissue].

Type locality. "New Britain Group of islands" (Ramsay), Papua New Guinea.

Comments. Andersen (1912: 389) noted that *Pteropus rufus* Ramsay is a preoccupied name and is a junior homonym. *Pteropus rufus* É. Geoffroy, 1803a occurs in Madagascar and *Pteropus rufus* Tiedemann, 1808 is a junior synonym of *Pteropus niger* (Kerr, 1792), see Simmons (2005).

The original material used by Ramsay as the basis of his description of *rufus* does not appear to have been reported in the literature, other than Andersen (1912: 389), who noted that several "cotypes" were in the AM. We believe the three specimens listed above are likely to be from Ramsay's original series, based on matching locality, date, and collector, combined with limited information written on old specimen tags. Ramsay based his description of cranial and external morphology on a single adult female specimen, but does not give field or registration numbers, or indicate the number of specimens examined. However he stated that "several specimens" of this new species were amongst a series of specimens obtained from Rev George Brown in 1875 and on that basis were are assuming that he based his description on several specimens. These specimens were received at the AM in October 1876 (AM Archives AMS7 Letters Received, C:10.76.03), but were later incorrectly reported as having been purchased during 1877 (Ramsay, 1878). Collection dates were not given, but would have been sometime in the previous year, given that Brown first visited the Bismarck Archipelago in August 1875 (Brown, 1908).

Figure 51. AM PA.1261, syntype skull of *Pteropus rufus* Ramsay, 1891b. (Photography by Stuart Humphreys).

We suspect that Ramsay's original adult female is amongst the three specimens listed here, and if so, it would be PA.1260, the skull of which has not been located. Cranial measurements of PA.1261 are smaller than those given for the adult female of Ramsay's account. The rear of the braincase of PA.1261 has been cut off and has a greatest length of 73.5 mm, but greatest skull length could not have been as long as 84 mm given by Ramsay; zygomatic breadth is 38.4 vs 45 mm, and "length of lower jaw from condyle" is 61.6 vs 67.5 mm.

Pteropus sanctacrucis Troughton, 1930

Rec. Aust. Mus. 18(1): 3. (10 November 1930).

Common name. Temotu Flying-fox.

Current name. *Pteropus nitendiensis* Sanborn, 1930; following Simmons (2005).

Holotype. M.4763 by original designation. Male, Field no. 65, skull, study skin, collected on 27 July 1926, by E. Le G. Troughton and A. A. Livingstone. Registered October 1929.

Condition. Cranium and dentaries complete. Study skin with bald patch on the ventral surface and a distal membrane tear between digits 3 and 4.

Type locality. [Carlisyle Bay], Santa Cruz Island, Santa Cruz Group, Timotu Province, Solomon Islands.

Paratypes. (6, 5 by subsequent determination). All six specimens were collected by E. Le G. Troughton and A. A. Livingstone: **M.4761** by original designation, female (allotype), skull, study skin, collected 18 July 1926, Trevanian Island, off Santa Cruz Island. **M.4762**, male, body in alc.; **M.4764–65**, both males, bodies in alc.; **M.4766**, female, body in alc., all four have same locality and collecting date as holotype. **M.4767**, female, body in alc., south coast of Santa Cruz Island, collected 29 July 1926.

Comments. Troughton states that he examined seven specimens from Santa Cruz Island, but did not cite registration numbers except for the holotype and allotype. There are only five additional specimens in the M Register with matching collection dates and localities, which are assumed to be the remaining five specimens examined by Troughton; we treat these as paratypes, although none are labelled as such.

Pteropus temmincki ennisae Flannery & White, 1991

National Geographic Research and Exploration 7(1): 100, figs 1, 4, tables 2–3. (1991: May or earlier).

Common name. Bismarck Flying-fox.

Current name. *Pteropus ennisae* Flannery & White, 1991; following Almeida *et al.* (2014).

Holotype. M.20438 by original designation. Female adult, [Field no. FE419], skull, study skin, skinned body in alc., frozen tissue; collected on 20 June 1988 by T. F. Flannery, L. Seri, T. Heinsohn and T. Ennis; registered on 6 June 1989.

Condition. Cranium complete, soft palate *in situ*, hole in the right maxilla, and left temporal bone; broken left dentary, missing entire section posterior to last molar. Study skin has large bald patch on rump, otherwise in good condition.

Cranial measurements (mm). M.20438: GL, 55.5; ConL, 53.25; NasL, 14.70; NasB, 5.83; UC1–C1 (alv.), 10.56; PAL, 31.09; UPM (alv.), 3.69; UMR (alv.), 6.72; ZB, 30.69; POC, 8.64; BUL, 4.19 (length of annula); MB, 18.30; DL (condyl.), 42.41 (right dentary); LPM (alv.), 3.76; LMR (alv.), 8.90.

Type locality. Near Medina (2°55'S 151°23'E), New Ireland, New Ireland Province, Papua New Guinea.

Paratype. M.19904 by original designation. Male, study skin, skull, skinned body in alc., collected 24 June 1988 (paper states 23 June), in the Medina area by same collectors as the holotype. The remaining paratype, M.20804, female adult, skull, body in alc., frozen tissue; collected 26 June 1988, with the same locality and collectors as holotype, was sent to BMNH in December 1989.

Comments. Type series of three specimens. Photographs of the holotype skull are given in the original description, along with individual body measurements and summary statistics of two cranial and three dental measurements of the type series. Flannery (1995c) and subsequent authors considered *P. temminckii* Peters, 1867b and *P. capistratus* Peters, 1876b to be separate species, with *ennisae* as a subspecies of the latter. Almeida *et al*. (2014) suggest that *P. capistratus* and *P. ennisae* are best treated as sister species based on marked morphological differences combined with a level of gene sequence divergence more typical of interspecific differences.

Pteropus tonganus heffernani Troughton, 1930

Rec. Aust. Mus. 18(1): 3. (10 November 1930).

Common name. Pacific Flying-fox.

Current name. *Pteropus tonganus geddiei* MacGillivray, 1860; following Flannery (1995c).

Holotype. M.4646 by original designation. Male, skull, study skin, collected and donated by Dr Raymond Firth. Collection date not given, registered on 19 August 1929.

Condition. Incomplete cranium, missing left zygomatic arch, right post-orbital process; left dentary missing distal part of ascending ramus; right dentary complete. Study skin, complete.

Type locality. Tikopia Island, east of Santa Cruz Island Group, Timotu Province, Solomon Islands.

Paratypes. (25, 24 by subsequent determination). **M.4768**, body in alc. and **M.4769**, skull, study skin, both males; **M.4770**, male, body in alc., all three from near Namumbo Village, Reef Island, Santa Cruz Island Group, collected 21–22 July 1926 by E. Le G. Troughton and A. A. Livingstone. **M.4771**, female, skull, study skin; **M.4776**, male, body in alc., (juvenile of M.4771), both from Vanikoro Island, opposite Naunaha Islet, collected on 4 August 1926 by E. Le G. Troughton and A. A. Livingstone. **M.4772**, male, body in alc.; **M.4773**, male, skull, study skin; **M.4774**, female, body in alc.; **M.4775**, male, body in alc., all four from

Peu, Vanikoro Island, the Santa Cruz Group, collected 12 August 1926 by E. Le G. Troughton and A. A. Livingstone. **M.4754**, male, skull, study skin, **M.4755**, male, body in alc.; **M.4756–57**, both females, bodies in alc., **M.4758**, male, skull and skeleton (juv. of M.4757), **M.4759**, male, body in alc., **M.4760**, female, skull, study skin, all seven from Trevanian Island, off Santa Cruz Island, collected 17–18 August 1926 by E. Le G. Troughton and A. A. Livingstone. **M.4647–51**, five adult males, all bodies in alc.; **M.4652** by original designation (allotype), female, skull, study skin; **M.4653–55**, three adult females, all bodies in alc., all nine specimens from Tikopia Island, collected by Dr Raymond Firth, (collection date not given), all registered 19 August 1929.

Comments. Troughton stated in his original account that a total of 26 specimens were examined. He cited registration numbers of the holotype and allotype, but not for the remaining 24 specimens, for which he gave collectors and localities only. The 24 specimens listed above are the only ones with matching locality and dates, and we regard them to be paratypes although they are not indicated as such by Troughton, either in the original register or on specimen labels (we have not located original specimen index cards for the series). The unpublished type specimen list prepared by Troughton (1956) sheds no light on the type series as it does not list paratypes for any names proposed by him.

Pteropus ualanus Peters, 1883

Sitzungsberichte der Gesellschaft Naturforschender Freunde zu Berlin, 1: 1. (16 January 1883).

Common name. Kosrae Flying-fox.

Current name. *Pteropus ualanus* Peters, 1883; following Simmons (2005), previously a subspecies of *P. mariannus* Desmarest, 1822.

Syntype. B.4456 by subsequent determination. Female, study skin without skull, registered October 1884, received in exchange from Dr O. Finsch. Original label reads "Dr O. Finsch, Pacific Exped. Pteropus ualanus Peters, Trisbraun, Kosrae (Ualan)". Original label states "nos 1" but collection date not given.

Condition. Study skin: hole in the left wing at the proximal end of forearm.

Type locality. Kosrae Island, also called Ualan, Kusaie or Knshai island, Federated States of Micronesia.

Comments. This specimen is a probably a syntype; if not, then it is a topotype identified by Peters but not part of his original series. Andersen (1912) looked at 10 "cotypes", but Peters original description does not appear to indicate the total number of specimens examined. Turni & Kock (2008) list 13 syntypes. The original label of AM B.4456 has a note in German that the skull was extracted from the skin and lost. The original label indicates male, but the skin is clearly that of a female. The B Register entry of October 1884 does not list any accompanying correspondence for this specimen, and it is possible that Finsch delivered it in person, given that he was in Sydney in 1884 and noted as a visitor to the 27 August 1884 meeting of the Linnean Society of NSW (Anonymous, 1884). A number of biological specimens were subsequently registered in the B Register in November 1884 as an exchange from "(Dr Peters) via Dr O. Finsch".

Family Emballonuridae

Taphozous flaviventris Peters, 1867a

Proc. Zool. Soc. Lond. 1866: 430. (April 1867).

Common name. Yellow-bellied Sheath-tailed Bat.

Current name. *Saccolaimus flaviventris* (Peters, 1867a), following Jackson & Groves (2015).

Holotype. PA.137 by subsequent determination. Male adult, skull, skin in alc., received in exchange from F. G. Waterhouse, South Australia [= SAM], collector and collection date not indicated.

Condition. Damaged cranium: fractures in right parietal, right occipital area and right auditory capsule all of which appear to have been glued in position, most of right auditory bulla missing; a hole in the right frontal and in right basiphenoid pit. Soft palate retained on the skull. Dentaries complete. Alc. skin, both wing membranes are torn.

Type locality. Northern Territory, Australia (see Mahoney & Walton, 1988a: 114).

Comments. Peters based his description on a single male specimen for which he provided external but no cranial measurements and gave the locality as "Australia". Troughton (1925) traced the history of PA.137, which was received in exchange by the Australian Museum in 1871 from F. G. Waterhouse, South Australia. According to Troughton, this was the specimen examined by Peters. The specimen was sent by Waterhouse to John Gould, who forwarded it to Peters.

Taphozous hargravei Ramsay, 1876b

Proc. Linn. Soc. N.S.W. (ser. 1) 1(1): 81. (February 1876).

Common name. Yellow-bellied Sheath-tailed Bat.

Current name. *Saccolaimus flaviventris* (Peters, 1867a), following Jackson & Groves (2015).

?Holotype. M.2349 by subsequent determination by Troughton (1925). Female adult, study skin (Fig. 52), skull not found and not sighted for decades. Collection date not stated, assumed to be 1875 based on original account. Registered on 16 December 1913 from the "old collection", with the M Register entry written in pencil "skin, ? skull" but no previous registration numbers indicated. Specimen obtained from Ralph Hargrave (Ramsay, 1876b). The specimen is tied to cardboard with its dorsal side visible. An old label that probably predates Troughton's curatorship is fixed to the rear of the cardboard, and states: "Taphozous hargravei Ramsey [sic], with skull", but the skull does not seem to be in the collection. The M Register entry against M.2349 states "Skin-147, Skull ?", implying either that the skull was not located when registered, or not located during a subsequent early 20th century inventory.

Condition. Study skin in reasonable condition: bald patches on the head, the right humerus is exposed.

Type locality. "Stanwell, near Bulli", New South Wales (Ramsay, 1876b).

Comments. Ramsay described external morphology and provided detailed external measurements for a "dried skin" that he stated to be "much mutilated", which also suggests

Figure 52. Skin of AM M.2349, alleged holotype of *Taphozous hargravei* Ramsay, 1876b. Ventral surface obscured by board mount. (Photography by Sally Cowan).

that Ramsay had a single specimen on which to describe the species. Likewise, Ogilby (1892) stated that the species is based on a dry skin "in very bad condition" and implied that the taxon was based on one specimen, although it is not clear whether Ogilby actually examined the specimen. Ramsay's detailed description of the entire dentition suggests that he had examined an extracted skull but he did not provide cranial measurements. Ramsay did not cite any accompanying registration number as the AM did not assign specimen numbers at that time.

Troughton (1925) gives external and cranial measurements for a specimen (M.2349) he believed to be Ramsay's original, and stated that Ramsay had mistakenly thought that the specimen was male. The condition of the study skin M.2349 (Fig. 52) seems highly at variance with Ramsay's statement concerning the condition of the skin and raises doubts about the correctness of Troughton's attribution. The cranial measurements of the type given by Troughton (1925) imply an intact skull, but the skull has evidently not been sighted for decades.

Saccolaimus mixtus Troughton, 1925

Rec. Aust. Mus. 14(4): 322, pl. xlvii–xlviii, two tables. (9 April 1925).

Common name. Papuan Sheath-tailed Bat.

Current name. *Saccolaimus mixtus* Troughton, 1925; following Jackson & Groves (2015).

Holotype. A.3257 by original designation. Male adult, body in alc., skull *in situ*, purchased from Kendall Broadbent and registered in November 1878. The A Register entry gives the locality as "Port Moresby".

Condition. Body in alc.: fur faded, broken left humerus, tear in left wing membrane between forearm and 5th digit, tear in right wing membrane between 4th and 5th digit.

Type locality. Port Moresby district, Central Province, Papua New Guinea.

Paratypes. (2, by original designation). Details as per holotype: **A.3256**, sex not recorded, skull; **A.3258**, male, skull, study skin.

Comments. Type series of three specimens. These specimens were originally reported as "*Taphozous sp*" by Ramsay (1879b: 243). See Chimimba & Kitchener (1991) for photographs of paratype skull A.3258.

Emballonura dianae fruhstorferi Flannery, 1995a [not 1994]

Mammalia 58(4): 609, figs 3–4, table 2. (23 February 1995). Errata, fig. 4 see *Mammalia* 59(1)

Common name. Large-eared Sheath-tailed Bat.

Current name. *Emballonura dianae fruhstorferi* Flannery, 1995a; following Simmons (2005).

Holotype. M.19671 by original designation. Female adult, [Field no. AX8], skull, body in alc., collected by Ken Aplin, 4 December 1985 and registered 1 December 1988.

Condition. Cranium, dentaries and body in alc. in good condition, soft palate retained on the skull.

Type locality. Cave near Fogamaiyo Village (6°31'S 143°05'E, alt. 100–150 m), Southern Highlands Province, Papua New Guinea.

Paratypes. (13, by original designation). All are skulls, bodies in alc., and adult unless otherwise stated; collection date, and locality details as per holotype; **M.16497**, subadult male; **M.16514**, female; **M.16516**, male; **M.16539**, subadult male; **M.16541–42**, both male; **M.16544**, subadult male; **M.16585**, female; **M.16595**, subadult female; **M.16599**, male; **M.19671**, female; **M.19672**, male; **M.19673**, subadult female.

Comments. Type series of 14 specimens. The following seven specimens listed as referred specimens in the original description, have been re-assigned to *E. raffrayana* Dobson, 1879 (Ken Aplin pers. com., 2013): M.16545, M.16547–48, M.16574–75, and M.16576–77. The incorrect publication date of 1994 is entrenched in the literature.

Emballonura dianae rickwoodi Flannery, 1995a [not 1994]

Mammalia 58(4): 608, fig. 4, table 2. (23 February 1995). Errata, replacement fig. 4 see *Mammalia* 59(1).

Common name. Large-eared Sheath-tailed Bat.

Current name. *Emballonura dianae rickwoodi* Flannery, 1995a; following Simmons (2005).

Holotype. M.19944 by original designation. Male adult, [Field no. FD872], skull, body in alc., [collected on 26 November 1987] by P. German, registered 3 February 1989.

Condition. Cranium and dentaries complete. Soft palate retained on the skull. Body in alc. complete.

Type locality. Plomognake Cave, two hours walk southeast of Ngulahahgi Village (8°15'S 159°40'E), Santa Isabel, Isabel Province, Solomon Islands.

Paratypes. (9, by original designation). All are bodies in alc., skulls *in situ*, collection date and locality as per holotype: **M.19943**, male; **M.20668**, male; **M.20676**, female; **M.20677–78**, both male; **M.20680**, male; **M.20683–84**, both male; **M.20687**, female.

Comments. Type series of 10 specimens all from the type locality.

Emballonura serii Flannery, 1995a [not 1994]

Mammalia 58(4): 606, fig. 2, table 1. (23 February 1995)

Common name. Seri's Sheath-tailed Bat.

Current name. *Emballonura serii* Flannery, 1995a; following Simmons (2005).

Holotype. M.19845 by original designation. Female adult, [Field no. FE453], skull, body in alc., frozen tissue; collected on 21 June 1988 by T. F. Flannery, L. Seri and T. Ennis; registered 23 January 1989.

Condition. Cranium and dentaries complete, soft palate retained on skull. Body in alc. has hole in left wing membrane between forearm and 5th digit.

Type locality. Matapara Cave, near Medina (2°55'S 151°23' E), New Ireland, New Ireland Province, Papua New Guinea (latitude mistakenly given as 2°55'N in original account).

Paratypes. (3, by original designation). All are adult females, collection date and locality as per holotype: **M.19843**, skull, body in alc., frozen tissue; **M.19844**, body in alc., frozen tissue; **M.20895**, cranium without dentaries, body in alc.

Comments. Type series of four specimens. Colgan & Soheili (2008) included samples from the holotype and two paratypes (M.19843–45) in their mDNA sequencing study of lineages of emballonurids from the south-west Pacific.

Family Hipposideridae

Hipposideros bicolor gilberti Johnson, 1959

Proc. Biol. Soc. Wash. 72: 183. (4 November 1959).

Common name. Western Dusky Leaf-nosed Bat.

Current name. *Hipposideros ater gilberti* Johnson, 1959; following Jackson & Groves (2015).

Paratype. M.41791 by original designation as USNM 284167 [Field no. 5900]. Male, skull, study skin, collected by D. H. Johnson on 23 October 1948 from the type locality, Oenpelli (12°21'S 133°04'E), East Alligator River, Northern Territory. Exchanged from Smithsonian Institution, 19 May 1992, registered 18 February 2010.

Comments. Type series of seven specimens; holotype in USNM.

Hipposideros diadema reginae Troughton, 1937c

Aust. Zool. 8(4): 275. (12 March 1937).

Common name. Diadem Leaf-nosed Bat.

Current name. *Hipposideros diadema reginae* Troughton, 1937c; following Jackson & Groves (2015), who note that *reginae* might warrant species rank.

Holotype. M.1243 by original designation. Male, skull (Fig. 53), body in alc., purchased from Geo Hislop [= George Hislop], registered November 1897, collection date not given.

Condition. Cranium and dentaries in good condition. Body in alc. faded, fur slip on abdominal area and lower back, skin missing from hind limbs.

Type locality. Bloomfield River, Cooktown area, northern Qld, Australia.

Paratypes. (2, by original designation). **PA.139**, sex indeterminate, skin mount, skull *in situ*; **PA.140**, female (allotype), body in alc., year of collection not recorded for either specimen. The original entry by Palmer in c. 1878 for both was "Rhinolophus nov sp." from "Cardwell", [north Qld], donated by E. P. Ramsay.

Comments. Type series apparently of three specimens. An entry in the A Register for June 1875 (before numbers were assigned to individual specimens) of "1 Rhinolophus nov sp." from Cardwell donated by E. P. Ramsay was later registered by Palmer as PA.139, and indicates that Ramsay believed that the specimen was an unnamed species.

Hipposideros diadema trobrius Troughton, 1937c

Aust. Zool. 8(4): 276. (12 March 1937).

Common name. Diadem Leaf-nosed Bat.

Current name. *Hipposideros diadema trobrius* Troughton, 1937c; following Simmons (2005).

Holotype. M.5181 by original designation. Male, skull, study skin (Figs 54–55), collected and presented by Mr A. J. Vogan, registered 21 September 1931. Collection date not given, assumed to be 1931.

Condition. Cranium complete; left dentary missing coronoid process, right dentary complete. Study skin: faded and with two bald patches on abdominal area. The specimen is tied to cardboard with its ventral side visible.

Type locality. Kiriwina Island (Trobriand Islands), Milne Bay Province, Papua New Guinea.

Paratype. M.5182 by original designation. Male, body in alc., same data as holotype.

Comments. Type series appears to be two specimens. Kitchener *et al.* (1992) consider that *H. diadema* subspecies from Papua New Guinea and the Solomon Islands require revision, and that smaller forms including *trobrius* are not closely related to *H. d. diadema* (É. Geoffroy, 1813) or *H. d. reginae*.

Figure 53. AM M.1243, holotype skull of *Hipposideros diadema reginae* Troughton, 1937c. (Photography by Sally Cowan).

Hipposideros edwardshilli Flannery & Colgan, 1993

Rec. Aust. Mus. 45(1): 45, figs 2–5, table 3. (19 March 1993)

Common name. Hill's Leaf-nosed Bat.

Current name. *Hipposideros edwardshilli* Flannery & Colgan, 1993; following Simmons (2005).

Holotype. M.21752 by original designation. Female adult, [pregnant], [Field no. FJ300], skull, body in alc., tongue in alc., frozen tissue; captured in a mist net, collected by P. German and L. Seri, 1 March 1990, registered 4 May 1990.

Condition. Cranium, both dentaries and body in alc. in good condition. Soft palate retained on the skull.

Type locality. Imonda Station (3°20'S 141°10'E, alt. 240 m), Bewani Mountains, West Sepik Province, Papua New Guinea.

Paratypes. (5, by original designation). **M.21753**, adult male, skull, study skin, frozen tissue; same data as for holotype. **M.21749**, adult female, skull, body in alc.; **M.21750**, adult male, body in alc.; **M.21751**, adult male, body in alc., frozen tissue; all four are from a cave 150 m south-west of Imonda Airstrip, collected on 28 February 1990 by P. German and L. Seri. **M.22841**, adult female, body in alc., skull extracted and in alc., partly cleaned, collected by local people at Pou Village near Imonda, acquired by V. Kula, 8 June 1990.

Comments. Types series of six specimens.

Hipposideros wollastoni fasensis Flannery & Colgan, 1993

Rec. Aust. Mus. 45(1): 52, figs 6–10, table 4. (19 March 1993).

Common name. Wollaston's Leaf-nosed Bat.

Current name. *Hipposideros wollastoni fasensis* Flannery & Colgan, 1993; following Simmons (2005).

Holotype. M.21876 by original designation. Female young adult, [Field no. FJ58], skull, body in alc., tongue in alc., frozen tissue; collected by T. F. Flannery, 26 February 1990, registered 20 June 1990.

Condition. Cranium with fracture in left parietal; both dentaries complete; soft palate retained on skull. Body in alc.: broken left forearm and humerus, hole in left wing membrane between forearm and 5th digit.

Type locality. At an alt. of 400–450 m on the hill south of the airstrip at 2Fas village (3°13'S 141°30'E), West Sepik Province, Papua New Guinea.

Comments. Described from the holotype only; we are not aware of any subsequent records of the taxon. Provisionally recognized as a full species by Helgen (2007) but retained as a subspecies here, pending formal elevation to species.

Figure 54. AM M.5181, holotype skin of *Hipposideros diadema trobrius* Troughton, 1937c. (Photography by Sally Cowan).

Hipposideros wollastoni parnabyi Flannery & Colgan, 1993

Rec. Aust. Mus. 45(1): 49, figs 6–10, table 4. (19 March 1993).

Common name. Wollaston's Leaf-nosed Bat.

Current name. *Hipposideros wollastoni parnabyi* Flannery & Colgan, 1993; following Simmons (2005).

Holotype. M.15892 by original designation. Female adult, [Field no. FZ80], skull, body in alc., collected from a cave on 9 July 1985 by T. F. Flannery, registered 28 August 1986.

Condition. Cranium and dentaries complete, soft palate retained on skull. Body in alc.: both forearms broken, hole in left wing membrane between 4th and 5th digit, slit on the right side of the head.

Type locality. Cave in the Nong River valley adjacent to Miptigin, Telefomin area (5°11'S 141°35'E), West Sepik Province, Papua New Guinea.

Paratypes. (32, by original designation). All collected by T. F. Flannery in the Telefomin and Tifalmin areas, West Sepik Province, Papua New Guinea. **M.15893**, male; **M.15894**, female; **M.15895**, male; **M.15896**, female; **M.15897**, male; all five are skulls, bodies in alc., details per holotype. **M.15885**, female, frozen tissue; **M.15886**, male, frozen tissue; **M.15887**, female, (skull exchanged to WAM), frozen tissue; **M.15890**, male, frozen tissue; **M.15891**, female, frozen tissue; all five are skulls, bodies in alc., collected 8 July 1985 other details per holotype. **M.15888**, female, skull, body in alc., collected 10 July 1985, Miptigin, Telefomin Area [5°10'S 141°35'E], West Sepik Province, Papua New Guinea. **M.16721**, female, body in alc., collected 11 April 1986, cave 1100 m NW from end of Telefomin Airstrip [5°06'S 141°37'E]. **M.17918**, male, body in alc., collected 14 April 1987, Inumflatem, Tifalmin valley [5°07'S 141°25'E]. **M.17919**, female, skull, body in alc., frozen tissue; **M.17920**, female, body in alc., frozen tissue; **M.17921**, female, body in alc.; **M.17923**, male, body in alc.; **M.17930**, female, body in alc., all collected 10 April 1987, cave on south side of Tifalmin Valley [5°07'S 141°25'E]. **M.17917**, female, body in alc.; **M.17931**, female, skull, body in alc., both collected 12 April 1987, Tifalmin. **M.17922**, female, body in alc., collected 10 April 1987, Mountain side, Tifalmin. **M.17925–26**, both males, skulls, bodies in alc., both collected 21 April 1990; **M.21875**, female body in alc.; **M.23203**, male, body in alc., both collected 14 April 1987, all four from hill on south side of Tifalmin. **M.17929**, female, skull, body in alc., collected 12 April 1987; **M.17924**, male body in alc., collected 14 April 1987, both from mountain south of Tifalmin. **M.21743**, male, skull, body in alc., collected 20 February 1990; **M.21744**, male, skull, body in alc., and **M.21745**, female, skull, study skin, [skinned body in alc.], collected 21 March 1990, all three from south of Tifalmin [5°07'S 141°26'E]. **M.17927**, male, body in alc.; **M.17928**, female, skull, body in alc., both collected 14 April 1987, Waratem cave on N side of Tifalmin valley.

Comments. Original description indicates a total of 32 paratypes. Flannery & Seri (1990b) describe the type locality

Figure 55. AM M.5181, holotype skull of *Hipposideros diadema trobrius* Troughton, 1937c. (Photography by Stuart Humphreys).

and several other collecting localities of the type series. Suspected to be a full species by Helgen (2007) but retained as a subspecies here, pending formal elevation to species.

Family Miniopteridae

Miniopterus australis robustior Revilliod, 1914

Nova Caledonia, A. Zool. 1: 359, plate x, 2 tables. (1914)

Common name. Loyalty Bentwing-bat.

Current name. *Miniopterus robustior* Revilliod, 1914; following Simmons (2005).

?Syntype. M.5172, female, skull, body in alc., Kepenete [= Chépénéhé], Lifou, Loyalty Islands, collected 23 April 1912. Registered in AM on 12 September 1931, received in exchange from "Natural History Museum, Bâle" (= NMB). The specimen is inadvertently listed as a male by Flannery (1995c).

Condition. Cranium missing right zygomatic arch, fracture in right parietal; dentaries complete. Body in alc.: broken right forearm (near elbow), fur slip on both ventral and dorsal surfaces of abdominal area.

Comments. Troughton believed this specimen was a "co-type" and he marked it as such in the M Register but there is no record of an original field number or NMB registration number. Although from the original series collected by Sarasin and Roux, we are not sure if it is a syntype. Hill (1971) had a similar problem with a specimen of this taxon marked "co-type" in the BMNH. Revilliod (1914) did not designate a holotype but his description is based on nine specimens for which he lists registration numbers and individual measurements. The nine syntypes and four skulls listed by Revilliod are listed as being in the NMB by Oakeley (1998). Multiple specimens are registered under some numbers and she lists a total of 16 specimens, all listed as syntypes. The implication from Oakeley (1998) is that all specimens were listed as "typus" without an indication of those used in Revilliod's description.

Family Molossidae

Chaerephon solomonis Troughton, 1931

Proc. Linn. Soc. N.S.W. 56(3): 201, 1 table. (15 July 1931).

Common name. Solomons Mastiff Bat.

Current name. *Chaerephon solomonis* Troughton, 1931; following Simmons (2005), who tentatively recognized species status. Status unresolved (Ingleby & Colgan, 2003); variously treated as a subspecies of *C. jobensis* (Miller, 1902), e.g., Bonaccorso (1998) or a full species (e.g., Flannery, 1995c).

Holotype. M.3606 by original designation. Male, skull (Fig. 56), study skin, collected by H. S. Heffernan on 15 August 1924, registered on 28 May 1925.

Condition. Cranium and dentaries complete. Study skin: bald patch on left side of abdomen, otherwise complete; the specimen is tied to cardboard with its ventral side visible.

Type locality. "Cave at Mufu Point, 6 miles west of Tuarugu Village, SW coast of Ysabel" (Troughton 1931), Isabel Province, Solomon Islands. Co-ordinates for Mufu Point are 8°16'S 159°20'E.

Figure 56. AM M.3606, holotype skull of *Chaerephon solomonis* Troughton, 1931. (Photography by Stuart Humphreys).

Paratypes. (177, 174 by subsequent determination). All from Mufu Point, same collector and collection date as holotype. *Females*. (137). **M.3645,** (by original designation as allotype), skull, study skin. Females, all bodies in alc.: **M.3593–98**, **M.3633–35**, **M.3637–44**, **M.3647**, **M.3649–52**. **M.5149:** 40 specimens were first registered under this number on 29 June 1931, and 39 were assigned individual numbers **M.45998–46029** and **M.46061–67** on 19 November 2013. **M.5150:** 40 specimens were first registered under this number on 29 June 1931 but 37 of the 38 specimens found in the collection were assigned individual numbers **M.46068–98** and **M.46125–30** on 19 November 2013. **M.5151:** 37 specimens were initially registered under this number on 29 June 1931 and 36 specimens were given individual numbers **M.46099–24** and **M.46131–40** on 19 November 2013. *Males*. (40). Skulls, study skins: **M.3627**, **M.3632**, **M.3636**. Males, all bodies in alc.: **M.3585–91**, **M.3600–02**, **M.3604–05**, **M.3607–16**, **M.3618–26**, **M.3628–31**, **M.5147–48**.

A further eight specimens are marked as having been sent to the following institutions, all sent as bodies in alc.: **M.3617**, male, **M.3646**, female, MCZ, sent 1938; **M.3603**, male, **M.3648**, female, Geographical Department, Moscow State University, sent July 1972; **M.5145–46**, both male, Dr A. Starrett, University of Southern California, Los Angeles, sent 15 Dec 1961; **M.3592**, male and **M.3599**, female, Mr Luther Little ("Los Angeles, USA"), sent 1931. Two specimens originally entered under M.5150 are in the QM.

Comments. Troughton mentions "a series of more than 200 paratypes", but gives registration numbers for only three in his account: the allotype and the smallest (M.3632) and largest (M.3627) paratypes. The allotype registration number is mistakenly given as M.3636 (which is a male) in the table accompanying his account. Troughton registered 187 specimens of this species and all are accounted for. If the total number of specimens sent to Troughton exceeded 200, it seems that not all were originally registered in the AM Collection, or records might not have been made of material sent to other Institutions, e.g., those send to the QM. Ingleby & Colgan (2003) demonstrated fixed differences at 15% of loci between *C. jobensis colonicus* (Thomas, 1906b) from Australia and *solomonis* and concluded that they were separate species. They suspected that *solomonis* was a distinct species, but were unable to conclusively resolve its status in relation to *C. bregullae* (Felten, 1964) from Vanuatu and Fiji, and to nominate *C. jobensis* (Miller, 1902) because they did not have samples of the latter taxon.

Mormopterus halli Reardon, McKenzie & Adams, in Reardon *et al.* 2014

Aust. J. Zool. 62(2): 132, figs 8, 13g, 21, supplementary table 7. (e-publication date, 19 June 2014).

Common name. Cape York Free-tailed bat.

Current name. *Ozimops halli* (Reardon, McKenzie & Adams, in Reardon *et al.* 2014), following Jackson & Groves (2015).

Paratype. M.13280 by original designation. Female adult, body in alc., 42 km SE of Normanton, Qld, (17°56'S 141°26'E), [collected by H. Parnaby on 5 October 1983].

Comments. Type series of nine specimens, holotype and four paratypes are in the QM, three paratypes are in WAM. Reardon *et al.* (2014) erected the subgenus *Ozimops*, which was elevated to generic rank by Jackson & Groves (2015: 260).

Family Vespertilionidae

Anamygdon solomonis Troughton, 1929b

Rec. Aust. Mus. 17(2): 89, fig. 1, table 1. (26 June 1929).

Common name. Solomon Large-footed Myotis.

Current name. *Myotis moluccarum solomonis* (Troughton, 1929b), following Simmons (2005).

Holotype. M.4361 by original designation. Female adult, skull, study skin, collected in 1928 by J. H. L. Waterhouse, registered in August 1928. The original register entry lists a body in alc. in addition to the skin, but the skinned body has not yet been located in the collection.

Condition. Cranium with broken left zygomatic arch; dentaries complete. Study skin has tear in the distal end of left wing membrane between 3rd and 4th digits, otherwise in reasonable condition.

Type locality. Roviana Island, New Georgia Group, Western Province, Solomon Islands.

Comments. Described from the holotype only. Few additional specimens of *Myotis* have been reported from the Solomon Islands and the species taxonomy of all Australasian *Myotis* needs further revision. Kitchener *et al.* (1995) who apparently did not examine the holotype of *solomonis*, suspected that *Myotis* from the Solomon Islands were a distinct taxon on the basis of the two specimens they examined but they referred these to *M. m. moluccarum*, pending a more detailed assessment. Phillips & Birney (1968) synonymized *Anamygdon* with *Myotis*.

Eptesicus baverstocki Kitchener, Jones & Caputi, 1987

Rec. West. Aust. Mus. 13(4): 481, figs 4, 5, 7i, 16; table 1. (30 November 1987).

Common name. Inland Forest Bat.

Current name. *Vespadelus baverstocki* (Kitchener, Jones & Caputi, 1987), following Jackson & Groves (2015).

Paratype. M.18103 by original designation as EBU B368. Male, Field nu. B368, skull, body in alc., baculum extracted, Tarawi Station (33°26'S 141°07'E), [150 km S of Broken Hill], NSW, collected by T. Reardon, 1 November 1982. Frozen tissue samples held by SAM.

Comments. The original account gave field numbers but no institutional registration numbers for 22 of the 24 paratypes (the field number of M.18103 is B368). The holotype and 18 paratypes are registered in the WAM, but the whereabouts of the remaining five paratypes is not known to us.

Eptesicus sagittula McKean, Richards & Price, 1978

Aust. J. Zool. 26(3): 535, figs 2, 7, 11. (1 September 1978).

Common name. Large Forest Bat.

Current name. *Vespadelus darlingtoni* (G. Allen, 1933), as junior synonym following Jackson & Groves (2015).

Paratypes. (2, by original designation). **M.8819**, body in alc., skull and baculum extracted; **M.8820**, body in alc., baculum extracted; both males, [Lord Howe Island]. Register entry for both states "Saunders" but whether this refers to the collector or presenter is not indicated. Collection date not given but possibly 1887, see below.

Comments. The type series included 14 paratypes. The holotype and eight paratypes are in the ANWC and other paratypes are in MV and SAM. Both AM specimens were registered in 1966 from the "old collection" but previous registration numbers were not given and they might not have been registered. The collector and collection date are not recorded in the M Register. One possibility is that "Saunders" refers to E. H. Saunders, a professional collector who collected birds for the AM on Lord Howe c. October to December 1887 (Hindwood, 1940: 16), which appears to be the only visit he made to the Island (Ian McAllan, pers. comm. 2014).

Eptesicus troughtoni Kitchener, Jones & Caputi, 1987

Rec. West. Aust. Mus. 13(4): 467, figs 4, 5, 7f, 13; table 1. (30 November 1987).

Common name. Eastern Cave Bat.

Current name. *Vespadelus troughtoni* (Kitchener, Jones & Caputi, 1987), following Jackson & Groves (2015).

Paratypes. (3, by original designation). **M.10291**, **M.10294–95**, all females, all skulls and bodies in alc., [collected by P. Isaacs on 13 January 1966], from Mt Iron Pot, 24 km NE [on Yepoon Rd], from Rockhampton, Qld.

Comments. A total of 24 paratypes. The holotype and six paratypes are in the QM, other paratypes are in ANWC (10) and WAM (3). We do not know the location of the remaining two paratypes for which field numbers B61 and B62 are given in the original account.

Myotis moluccarum richardsi Kitchener, in Kitchener *et al.* 1995

Rec. West. Aust. Mus. 17(2): 208, figs 6–8, 12–14; table 2. (27 June 1995).

Common name. Large-footed Myotis.

Current name. *Myotis moluccarum richardsi* Kitchener, in Kitchener *et al.* 1995; following Simmons (2005).

Paratypes. (4, by original designation). **M.4901**, female, body in alc., Lake Barrine via Yungaburra (17°16'S 145°35'E), Qld, [collected by G. H. Curry, registered 12 March 1930]. **M.13317**, female, body in alc., Macleods Creek, (15°26'S 145°08'E), Cooktown, [collected by H. Parnaby, 14 September 1983]. **M.18824**, male, body in alc., Port Moresby, (9°27'S 147°08'E), Central Province, Papua New Guinea, [collected by L. Jones, collection date not given, registered 18 April 1988]. **M.15110**, male, body in

alc., Yuro village (6°32'S 144°51'E), East side of Mt Karimui, South Simbu Province [Central Province in original account], Papua New Guinea, [collected by K. Aplin, P. Wilson and H. Parnaby on 30 April 1984].

Comments. The holotype is in the QM. A total of 17 paratypes, other paratypes are in the QM, SAM, BMNH and MV. Frozen tissue samples of paratype M.15110 are held at the SAM. Although the distribution is given as the NT and QLD in the original account, two specimens from Papua New Guinea are listed as paratypes.

The species taxonomy of *Myotis* in the Australasian region remains problematic and in need of revision. A single species, *M. macropus* (Gould, 1855), is often recognized in Australia, influenced by Cooper *et al.* (2001). However, we follow Kitchener *et al.* (1995) and agree with Helgen (2007) in recognizing *M. moluccarum* (Thomas, 1915b).

Nyctophilus arnhemensis Johnson, 1959

Proc. Biol. Soc. Wash. 72: 184. (4 November 1959).

Common name. Arnhem Long-eared Bat.

Current name. *Nyctophilus arnhemensis* Johnson, 1959; following Jackson & Groves (2015).

Paratype. M.27837 by original designation as USNM 284242, [Field no. 5768]. Male, skull, study skin, collected by D. H. Johnson on 24 August 1948 from the type locality, Rocky Bay, Cape Arnhem Peninsula, Northern Territory (12°16'S 136°47'E). Exchanged from Smithsonian Institution, 19 May 1992, registered 13 October 1992.

Comments. Type series of five specimens, two paratypes from the type locality, holotype in USNM. The type series was collected during the American-Australian Expedition to Arnhem Land in 1948.

Nyctophilus bifax Thomas, 1915a

Ann. Mag. Nat. Hist. (ser. 8) 15: 496. (1 May 1915).

Common name. Eastern Long-eared Bat.

Current name. *Nyctophilus bifax* Thomas, 1915a; following Jackson & Groves (2015).

Paratypes. (4, by subsequent determination). **M.557–58**, females, bodies in alc.; **M.560,** male, body in alc.; all three from Herberton district, north Qld, collected by Cairn and Grant, registered in December 1889; **M.2547**, male, skull, body in alc., Cloncurry, Qld, registered 5 December 1914 from the "old collection", collector not given.

Comments. Thomas states that his description was based on "about 20 specimens" from five localities: Herberton (type locality), Cape York, Cooktown, Cloncurry and Torres Strait Islands. Of eight specimens on loan from the AM to Thomas during preparation of his revision, four were registered in the BMNH, including the holotype M.559, now BM 1915.3.13.3 (P. Jenkins, BMNH, pers. comm. 18 February 2014). The remaining four specimens listed above were identified as *N. bifax* by Thomas and returned to the AM and are considered to be paratypes. The original M Register entry for the holotype (formerly M.559) entered in December 1889 is "bat Herberton district, Q. collected by Cairn and Grant, spirit".

Nyctophilus corbeni Parnaby, 2009

Aust. Zool. 35(1): 46, figs 3, 5, 7, 18, tables 2–4. (19 October 2009).

Common name. South-eastern Long-eared Bat.

Current name. *Nyctophilus corbeni* Parnaby, 2009; following Jackson & Groves (2015).

Holotype. M.38833 by original designation. Male adult, Field no. 6HP04, skull, body in alc., intact penis separate in alc., frozen tissue. Collected on 7 May 2006 by H. Parnaby, registered 16 December 2009.

Condition. Cranium and dentaries complete. Body in alc.: part of right pectoral muscle removed, otherwise complete.

Type locality. Old Coghill Track (alt. c. 235m, 30°29'58"S 149°20'53"E), 0.7 km east of junction with track to main Gilgai Waterhole; formerly Gilgai Flora Reserve, Pilliga East State Forest, NSW.

Paratypes. (4, by original designation). All with frozen tissues: **M.38834**, adult female, body in alc., from the type locality, same details as holotype; **M.38831**, adult male, skull, body in alc.; **M.38832**, adult male, body in alc.; **M.38835**, adult male, body in alc., all collected 7 May 2006 by H. Parnaby at Old Coghill Track, 0.6 km west of junction with track to main Gilgai Waterhole (30°29'51"S 149°20'01"E, alt. c. 215m), Pilliga East State Forest, NSW.

Comments. Type series of five specimens. Publication date of vol. 35 (1) determined from single mail out day of the issue (D. Lunney, editor and Noel Tait Liaison Officer, pers. comm. August 2012).

Nyctophilus major tor Parnaby, 2009

Aust. Zool. 35(1): 58, figs 5, 7, 13, 17–18, tables 2–4. (19 October 2009).

Common name. Central Long-eared Bat.

Current name. *Nyctophilus major tor* Parnaby, 2009; following Jackson & Groves (2015).

Paratypes. (5, by original designation). **M.39815**, adult male, skull, body in alc., frozen tissue, captured by T. Reardon, A. Reside, A. Scanlon and H. Parnaby, 2 December 2007 at Johnnies Dam, Jaurdi Station, (30°46'S 120°07'E), Western Australia; **M.39801**, adult female, skull, body in alc., frozen tissue, captured by T. Reardon, A. Reside, A. Scanlon and H. Parnaby, 29 November 2007 at Eagle Rock, c. 105 km NW of Southern Cross, Goldfields district, Western Australia (30°26'17"S 118°40'31"E); **M.38843–45**, three adult males, skulls, bodies in alc., captured by M. Pennay, T. Reardon, A. Reside, and A. Scanlon, 13 November 2007, Goongarrie Station, Western Australia, (29°59.528'S 121°03.464'E).

Comments. Type series consists of six specimens; the holotype was sent to WAM, registration number WAM M.63601 (previously AM M.39782). Tissue samples of the holotype are in the AM and SAM Collections and tissues of all five paratypes are held in SAM. Parnaby took a conservative approach in recognizing this taxon as a subspecies and its taxonomic status warrants further investigation.

Nyctophilus nebulosus Parnaby, 2002b

Aust. Mammal. 23(2): 116, figs 1–5; table 1. (30 April 2002).

Common name. New Caledonia Long-eared Bat.

Current name. *Nyctophilus nebulosus* Parnaby, 2002b; following Simmons (2005).

Holotype. M.23730 by original designation. Male adult, Field no. FP1, skull, body in alc., separate intact penis in alc., frozen tissue; collected 10 May 1991 by T. F. Flannery and registered in 16 May 1991.

Condition. Cranium and dentaries complete. Body in alc. in good condition.

Type locality. 150 m north of the Station d'Altitude car park, (22°10'37"S 166°30'12"E, alt. 430m), Southwestern slopes of Mt Koghis, Nouméa, South Province, New Caledonia.

Paratypes. (2, by original designation). Bodies in alc.: **M.23731,** adult female, frozen tissue, collected 10 May 1991 on Mt Koghis by T. F. Flannery; **M.21587**, adult female, captured 13 May 1990 by Walter Boles, Wayne Longmore and Ross Sadlier on Mt Koghis at the same site as the holotype.

Comments. Type series of three specimens. Photograph of a live animal given by Flannery (1995c). No further records appear to have been reported of this species other than Hand & Grant-Mackie (2012), who found subfossil remains in a cave on the southwestern coast of the main island.

Nyctophilus shirleyae Parnaby, 2009

Aust. Zool. 35(1): 70, figs 21, 31–33, table 10. (19 October 2009).

Common names. Mt Missim Long-eared Bat, Shirley's Long-eared Bat.

Current name. *Nyctophilus shirleyae* Parnaby, 2009; following Parnaby (2009).

Holotype. M.37711 by original designation. Female adult, Field no. 8005, skull, body in alc., frozen tissue; collected by H. Parnaby 8 July 1988 and registered 7 November 2006.

Condition. Cranium and dentaries complete. Body in alc. complete, except part of left pectoral muscle which has been removed.

Type locality. Southwestern slopes of Mt Missim, Kuper Range, Morobe Province, Papua New Guinea, (7°16'S 146°46'E, approx alt. 1600–1800 m).

Paratypes. (2, by original designation). **M.37710**, adult female, skull, body in alc., frozen tissue, captured by H. Parnaby on 8 July 1988 at the type locality; **M.37712**, adult female, skull, body in alc., frozen tissue. Captured by H. Parnaby on 11 July 1988 on the southwestern slopes of Mt Missim, Kuper Range, PNG: the site (7°15'S 146°47'E) was of higher alt. than the type locality.

Comments. Hill & Pratt (1981) first reported the existence of this large species from New Guinea, which they tentatively assigned to *N. timoriensis* (É. Geoffroy, 1806). The latitude of 17° is consistently, but incorrectly, stated in the original account.

Philetor rohui Thomas, 1902

Ann. Mag. Nat. Hist. (ser. 7) 9: 220. (1 March 1902).

Common name. Rohu's Bat.

Current name. *Philetor brachypterus* (Temminck, 1840), following Simmons (2005).

Paratype. M.2562 by subsequent determination. Female adult, body in alc., skull *in situ*. The M Register entry states "British New Guinea, collected by Rohu, identified by Oldfield Thomas", received from the BM in 1915, and registered in the AM Collection on 19 May 1915. The specimen was identified as *Philetor rohui* in a letter from Thomas to McCulloch (AM Archives, AMS9 Letters Received, L.104/1915).

Comments. Thomas (1902) states that 10 specimens were examined including the holotype male, all collected by Mr H. S. Rohu from Albert Edward Ranges [PNG] alt. 6,000 ft. Only six specimens (in addition to the holotype) were registered in the BM (1901.11.24.12–17). The unregistered specimen sent to the AM (M.2563) is from the original series and can be regarded as a paratype (P. Jenkins, BMNH, pers. comm. 18 February 2014).

Pipistrellus ponceleti Troughton, 1936a

Rec. Aust. Mus. 19(5): 351. (7 April 1936).

Common name. New Guinea Pipistrelle.

Current name. *Pipistrellus angulatus ponceleti* Troughton, 1936a; following Simmons (2005). Regarded as a valid subspecies by Flannery (1995c) and Bonaccorso (1998) but as a junior synonym of *P. angulatus angulatus* (Peters, 1880) by Kitchener *et al.* (1986).

Holotype. M.5798 by original designation. Male, skull, study skin, original collector's number 365, collected and presented by the Rev. J. B. Poncelet. Collection date not given in register, registered 27 December 1934.

Condition. Cranium missing zygomatic arches and upper left canine, auditory capsules are detached; dentaries complete. Study skin in fair condition: fur missing from much of abdominal area, probably from fur slip; tear in right wing membrane at distal end of digit 4, and tear in left wing membrane between digit 5 and body. The study skin is tied to cardboard with its ventral side visible.

Type locality. "Buin, Sth Bougainville Id", North Solomons Province, Papua New Guinea.

Paratypes. (5, 4 by subsequent determination). Same locality and collector as holotype: **M.5598**, male, body in alc.; **M.5599** (by original designation), female (allotype), skull, study skin, and **M.5600**, female, body in alc., all three registered 2 July 1934; **M.5799**, male, skull, body in alc., and **M.5807**, male, body in alc., both registered 27 December 1934.

Comments. Troughton indicates a type series of six specimens including the holotype, but gives registration numbers only for the holotype and allotype. Four specimens are labelled as paratypes on specimen labels and in the M Register in what appears to be Troughton's handwriting. M.5807 is not labelled as a paratype, either on the specimen label or register, but is assumed to be the sixth specimen of Troughton's series

and regarded as a paratype—it was registered on the same day as the holotype and is the only specimen located with matching dates. In his original account, Troughton refers to a specimen from Isabel and three from Ugi Island (Solomon Islands), which he regarded as conforming well to his type series. These specimens are likely to include M.3583 from Isabel, and A.16992 and A.16995 from Ugi (all amended to *Pipistrellus ponceleti* in Troughton's hand in the registers) and they are treated as referred specimens. Five topotype specimens in alcohol collected in the Buin district in 1938 were presented by Poncelet and identified as *P. ponceleti* by Troughton: M.6533–34 and M.6658–60.

Pipistrellus wattsi Kitchener, Caputi & Jones, 1986

Rec. West. Aust. Mus. 12(4): 472, figs 5f, 6f, 7, 9, 13, 18; tables 1 and 3. (21 May 1986).

Common name. Watts's Pipistrelle.

Current name. *Pipistrellus wattsi* Kitchener, Caputi & Jones, 1986; following Simmons (2005).

Paratype. M.3815 by original designation. Male, skull, body in alc., penis removed, neither penis nor baculum located, [Baro Dobo], Rigo (9°48'S 147°34'E), Central Province, Papua New Guinea, [presented by A. C. English, registered December 1926].

Comments. Types series of seven specimens. Holotype and four paratypes are in ANWC, one paratype in the MV. See fig. 5 of Kitchener *et al.* (1986) for a scanning electron micrograph image of the glans penis of M.3815.

Scoteinus balstoni caprenus Troughton, 1937c

Aust. Zool. 8(4): 279. (12 March 1937).

Common name. Broad-nosed Bat.

Current name. *Scotorepens greyii* (J. Gray, 1843); following Simmons (2005) and Jackson & Groves (2015). Status unresolved, a comprehensive generic revision is required (Parnaby, 2008).

Holotype. M.1322 by original designation. Male adult, skull, body in alc., collected by Dr K. Dahl, received in 1898 from Christiania Museum (now NHMO), registered in July 1898. Collection date not given.

Condition. Cranium with left zygomatic arch missing; cranium and dentaries otherwise complete. Body in alc. with hole in ventral surface and fur slip, broken left humerus and hole in left wing membrane between 4th and 5th digit.

Type locality. Roebuck Bay, Western Australia.

Paratype. M.2688 by original designation. Male, skull, study skin, King Sound, Kimberley district, WA, collected by Dr Herbert Basedow, registered 24 April 1917.

Comments. Kitchener & Caputi (1985) provide detailed measurements of the holotype and photographs of the holotype skull (as *Scotorepens greyii* (J. Gray, 1843)). This entity is usually regarded as a synonym of *S. greyii*, following Kitchener & Caputi (1985). Koopman (1984), who examined the types, placed *caprenus* with *balstoni* (Thomas, 1906c) rather than *greyii*. An extensive examination of skull morphology within the genus by HEP also suggests that *caprenus* more closely resembles *S. balstoni* than *S. greyii* in skull proportions and morphology, as originally proposed by Troughton.

Scoteinus orion Troughton, 1937c

Aust. Zool. 8(4): 277. (12 March 1937).

Common name. Eastern Broad-nosed Bat.

Current name. *Scotorepens orion* (Troughton, 1937c), following Jackson & Groves (2015).

Holotype. M.6115 by original designation. Male, skull, study skin, collection date not given, registered 26 May 1936, donated by J. H. Hinchcliffe senior.

Condition. Cranium missing left zygomatic arch; left dentary missing third molar. Study skin: bald patch on the ventral surface and the skin appears faded.

Type locality. All Saints Church, Hunters Hill, Sydney, NSW.

Paratypes. (14, 13 by subsequent determination). All Saints Church, Hunters Hill, Sydney, all presented by Mr J. H. Hinchliffe, Snr., registered 26 May 1936: **M.6116**, male, skull, body in alc.; **M.6117**, female (allotype), skull, study skin; and **M.6118–25**, eight males, all with skulls extracted and bodies in alc.; **M.3755**, male, skull, body in alc., collected by H. Grant and J. H. Wright, and **M.3759**, male, body in alc., collected by E. Troughton, H. Grant and J. H. Wright, both registered 22 April 1926; [**S.1738**, cranium and dentaries only, All Saints Church, Hunters Hill, presented by H. Grant and J. H. Wright, registered 8 February 1926]. **M.5163**, male, skull, body in alc., Mosman, Sydney, donated by Ronald Kay, registered September 1931.

Comments. Troughton states that he examined 15 specimens, and gave registration numbers for the holotype and allotype only. The remaining 13 specimens are treated here as paratypes, either because they were indicated as such in Troughton's handwriting in the M Register or on specimen labels. See Kitchener & Caputi (1985) for photographs of the holotype skull and detailed skull and external measurements of the holotype.

Scoteinus orion aquilo Troughton, 1937c

Aust. Zool. 8(4): 278. (12 March 1937).

Common name. Broad-nosed Bat.

Current name. *Scotorepens greyii* (J. Gray, 1843); following Simmons (2005) and Jackson & Groves (2015). Status unresolved, but synonymized with *S. greyii* by most recent authors.

Holotype. PA.209 by original designation. Female adult, skull, body in alc., "Port Denison" from Mr Nobbs, registered in c. 1878. The year of collection is not recorded but is likely to be the 1860s. The only donations of bats listed from a Mr Nobbs during 1860–1879 in the specimens received from public donations section of the AM annual Trustees reports are "Two bats (Scotophilus)" from Mr Thomas Nobbs in 1864 (Krefft, 1865e), and "Three species of bats from Rockhampton" from "Mr Th. Nobbs" in 1865 (Krefft, 1866c).

Figure 57. AM PA.209, holotype skull of *Scoteinus orion aquilo* Troughton, 1936c. (Photography by Sally Cowan).

Condition. Cranium missing left zygomatic arch and both auditory bullae; cranium and dentaries otherwise complete. Body in alc.: fur slip on ventral and dorsal surface, broken left forearm and hole in left wing membrane between forearm and 5th digit.

Type locality. Port Denison (= Bowen), north Qld, Australia.

Paratype. A.10630 by original designation. Female adult, skull (Fig. 57), body in alc., Dawson River, near Rockhampton, coastal north Qld. G. Masters and G. Barnard, registered in October 1881. This specimen was possibly obtained from Coomooboolaroo Station, Dawson River, owned by the Barnard family where Masters was based while on a collecting trip. However, the A Register entry is ambiguous which is presumably why Troughton gave the locality simply as Dawson River. The entry of Dawson River against A.10630 in the Register is followed by Coomooboolaroo Station on the next line and it is unclear if this represents two localities or one locality applied to subsequent specimen entries. However, the specimen index card has Dawson River only.

Comments. Description based on two specimens. Recent authors assign this taxon to *S. greyii*, but its status remains confused as reflected by consignment by different authors to either *S. orion*, *S. balstoni* (e.g., Koopman, 1984) or *S. greyii,* underscoring the need for a complete revision of the genus. In the most comprehensive assessment of the genus, Kitchener & Caputi (1985), who provide detailed measurements of the holotype, considered *greyii* to be a complex of taxa. They were unsure whether to assign *aquilo* to *S. sanborni*, or to their concept of *S. greyii*. They noted that *aquilo* shared characters of both taxa (Kitchener & Caputi, 1985: 139), but they settled for synonymizing *aquilo* with *S. greyii*.

Scoteinus sanborni Troughton, 1937c

Aust. Zool. 8(4): 280. (12 March 1937).

Common name. Northern Broad-nosed Bat.

Current name. *Scotorepens sanborni* (Troughton, 1937c), following Jackson & Groves (2015).

Holotype. A.3176 by original designation. Female, skull, body in alc., purchased from Kendall Broadbent, registered November 1878. Collection date not given.

Condition. Cranium missing left zygomatic arch; cranium and dentaries otherwise complete. Body in alc.: broken left elbow area, fur slip on the dorsal surface, hole in left wing membrane between 4th and 5th digit (proximal end).

Type locality. East Cape, Milne Bay Province, Papua New Guinea.

Comments. Described from one specimen. See Kitchener & Caputi (1985) for photographs of the holotype skull, and detailed skull and external measurements. This specimen was originally entered in the A Register as "*?Scotophilus* sp" in 1878. It was thought by Van Deusen & Koopman (1971) to be the first New Guinea record of *Chalinolobus nigrogriseus* (Gould, 1856), based on a pers. comm. from Troughton, who mistakenly thought that the specimen had been destroyed and evidently overlooked that it was one of his type specimens.

Cast material

Lagorchestes asomatus Finlayson, 1943

Trans. Roy. Soc. South. Aust. 67(2): 319, figs xxxiii, xxxiv. (30 November 1943).

Common name. Central Hare-wallaby.

Current name. *Lagorchestes asomatus* Finlayson, 1943; following Jackson & Groves (2015).

Material. AM M.28248, cast of holotype cranium and both dentaries of SAM M.3710, sex unknown, Western Plateau, between Mt Farewell and Lake Mackay, Northern Territory. Cast registered in the AM on 8 December 1992.

Condition of cast. Cast of cranium and both dentaries, missing 3rd right upper (maxillary) incisor and left dentary missing angular process.

Comments. Described only from the holotype cranium and dentaries, holotype in SAM.

Notomys mordax Thomas, 1922a

Ann. Mag. Nat. Hist. (ser. 9) 9: 317. (1 April 1922).

Common name. Darling Downs Hopping-mouse.

Current name. *Notomys mordax* Thomas, 1922a; following Jackson & Groves (2015).

Material. Cast of skull and left dentary of holotype BMNH No.1846.4.4.65

Condition. Incomplete and damaged cast skull and cast left dentary: missing both zygomatic arches, upper left incisor, left auditory bulla, missing tips of nasal bones and the posterior end of the palate in the region of the interpalatal suture is broken. The right auditory bulla is slightly displaced. Missing anterior part of the dentary, including the incisor, missing ascending ramus and third lower molar.

Type locality. Darling Downs, Qld, Australia.

Comments. The cast skull and left dentary fragment matches the description by Mahoney (1977). It is not clear whether the right dentary (photographed in Mahoney, 1977) was present when the casts were made and simply not included, or whether it has been misplaced.

Types not found in the Australian Museum Collection

1. Unlocated types thought to have been lodged with the AM

Type specimens of the following ten taxa were named by staff based at the AM, but none of the type series have been located, either in the AM or elsewhere.

Antechinus brevicaudatus Krefft, 1872b *incertae sedis*

The Sydney Mail and New South Wales Advertiser (new series) vol. XIV, nu. 644, p. 554, col. 1. (2 November 1872).

Common name. The "Short-tailed Antechinus" of Krefft.

Current name. Indeterminate, presumably *Antechinus*, perhaps *Sminthopsis*.

Holotype. Krefft's original specimen is probably PA.661, sex not determined, skin mount. The only data in the Palmer Register are the original entry by Palmer: "Antechinus brevicaudatus, King's Island Bass Strait, Mounted". The collector, donor and date are not given but Krefft (1868c) mentions that he had "recently" received a new *Antechinus* from the Bass Strait Islands. PA.661 was not located in the AM Collection in 2014 nor was it sighted in inventories of the past few decades.

Type locality. Probably King Island, Bass Strait (Krefft, 1872b).

Comments. We have not located this name in the literature but it could be regarded as a valid description. Krefft's verbatim account is:

> "Smallest of the tribe—supposing that my specimen, which is still unique, is adult. The skull is not in a condition to be examined. General colour dark, sepia brown, almost black, tail about an inch in length; fur very coarse. Found on some of the islands of Bass's Straits, I believe King's Island."

The identity of this taxon cannot be determined until material assigned by Krefft is located, but it is doubtful if such material, possibly a single specimen, has survived. However, a specimen index card, written in old writing likely in the first decade of the 20th century, states: "Antechinus brevicaudata [sic] skull, no data". Possible contenders for the identity of this entity, other than it being a valid but unrecognized taxon, include *A. swainsonii* (Waterhouse, 1840) or *A. minimus* (É. Geoffroy, 1803b) and possibly *Sminthopsis leucopus* (J. Gray, 1842). Krefft (1872b) based his concepts of *Antechinus* taxa on Gould (1863b), and recognized *A. swainsonii* and *A. affinus* (Gray, 1841) (= *A. minimus* (É. Geoffroy, 1803b)), both of which Krefft listed as being from Tasmania.

Dendrolagus dorianus profugus Troughton & Le Souef, 1936b

Rec. Aust. Mus. 19(6): 389. (7 October 1936).

Common name. Doria's Tree-kangaroo.

Current name. *Dendrolagus dorianus dorianus* Ramsay, 1883; following Groves (2005d).

Holotype. Whereabouts not known and possibly no longer in existence. The holotype was a live zoo animal: a young adult female housed in Taronga Zoo, Sydney, received at Taronga Zoological Park in 1935 via Mr O. J. Atkinson. The original description states: "animal was from Denewa; alt. 3–4,000 feet, inland towards Mt Simpson from Boianai, which is near Radava, at the eastern end of Goodenough Bay, North-eastern Division of Papua. Specimen eventually to be lodged in the Australian Museum."

Comments. It is possible that the animal did not reach the AM, as noted by Groves (1982), or if it did, perhaps it was never registered or registered and not marked as a type.

Dromicia unicolor Krefft, 1863

Proc. Zool. Soc. Lond. 1863 (1): 49. (May 1863).

Common name. Eastern Pygmy-possum.

Current name. *Cercartetus nanus unicolor* (Krefft, 1863), following Jackson & Groves (2015).

Holotype. Originally in the AM Collection. Krefft (1864a) stated that specimen "b" of his catalogue is the "type of the species", given as an adult female, originally in alc., presented by Mr A. Butt, collected from near St Leonards, Sydney. It is possible that the holotype was the "*Dromicia unicolor*" from Mr A. Butt listed in public donations to the AM during 1862 (Krefft, 1864c).

Type locality. St. Leonards, North Shore, Sydney, NSW.

?Paratype. whereabouts unknown, specimen "a", adult male from Sydney (no other data), listed by Krefft (1864a).

Comments. The fate of Krefft's original material has not been determined and we have not found any clear indication that his specimens were sighted after his curatorship. Although Krefft's original description of dentition could be read as being based on either one or two specimens, it was based on two specimens as subsequently indicated by Krefft (1864a). It is conceivable that neither specimen was ever registered in the collection. We have not located any entries in the Palmer Register that might be Krefft's specimens, nor found any likely candidates in the AM Collection.

Echidna orientalis Krefft, 1872a

The Sydney Mail and New South Wales Advertiser 14 (652): p. 808, col. 1. (28 December 1872).

Common name. Short-beaked Echidna.

Current name. *Tachyglossus aculeatus aculeatus* (Shaw, 1792), following Groves (2005a), and Jackson & Groves (2015), who consider that subspecies of *aculeatus* and associated names require taxonomic clarification.

Type material. Type not designated and no suitable candidate specimen found in AM; whereabouts unknown.

Type locality. New South Wales: Krefft (1872a) specifically refers to a large individual "from this colony", which is inferred to be NSW given that he regarded the Victorian form to be "*hystrix*".

Comments. We have not found any entry in the Palmer or other registers that is registered as "orientalis". We have not found any entry for an echidna in the Palmer Register that could have been Krefft's original specimen, however it is likely that not all specimens were registered by Palmer. Krefft's concept of four echidna species involved what he called the Tasmanian "*setosa*", Southern, i.e. Victorian "*hystrix*"; Eastern "*orientalis*", the common echidna of NSW, and the northern, or Cape York echidna "*corealis*". Krefft provided a brief description of *orientalis* and mentions a large individual from NSW. The only measurements given by Krefft are for a skin "1 foot 9 inches total length, and 9 inches wide", which is a large specimen that equals the size of the largest 20th century skin mount now in the collection.

Hapalotis arboricola Krefft in Gould, 1863a

The Mammals of Australia, part 13, xxxv. (1 May 1863).

Common name. House Rat.

Current name. *Rattus rattus* (Linnaeus, 1758), following Jackson & Groves (2015).

Holotype. The holotype is specimen "a" of Krefft (1864a: 66), as determined by Mahoney & Richardson (1988), presumably a skin mount, and was donated to the AM. An adult female presented by W. S. Macleay was the only known specimen at that time, according to Krefft (1864a). The specimen was apparently on public display in the AM in 1868 (Anonymous, 1868). We have not found an entry in the early registers for this specimen, which might not have been registered.

Type locality. Elizabeth Bay House, Elizabeth Bay, Sydney, NSW.

Comments. It seems that the holotype of *arboricola* had been misplaced by the 1890s. No authority who assigned this taxon to *R. rattus*, the first being Waite (1898b), was able to examine Macleay's original specimen but have relied instead, on Krefft's description in Gould (1863a) and material in the BMNH sent by Waite. Tate (1951b) cited the "type" of *arboricola* as B.M. No. 97.11.23.1., the same specimen examined by Taylor & Horner (1973: 39). There are two specimens listed in the BMNH Register, BM1897.11.23.1–2,

both are female and listed as *Mus*, skins and skulls, collected 22 November 1897 from Sydney, presented by Edgar R. Waite, Australian Museum, Sydney. The associated note in the register reads: "Specimens of '*Mus arboricola*' referred to in P.Z.S. 1897. Sent alive to Zool. Gardens, killed on arrival." (Paula Jenkins, BMNH, pers. comm. 18 February 2014). These specimens were examined by Thomas and discussed in P.Z.S. by Waite (1898b).

Numerous specimens identified as *Hapalotis arboricola* were received by the AM during the 1860s, e.g., six *Hapalotis arboricola* are listed as a donation from W. Macleay in the AM annual report for 1868. Poor specimen documentation in the original entries made by Palmer in the P Register obfuscate attempts to establish which, if any, of these specimens is Krefft's original specimen. Although often attributed to Gould, authorship of *Hapalotis arboricola* rests with Krefft. Gould (1863a) stated that he had not seen specimens of this entity and that he relied on two colour drawings provided by Krefft along with a description of the specimen provided by Krefft, which Gould reproduced verbatim.

Perameles ecaudatus Ogilby, 1838a (Ogilby, 1838a)

Proc. Zool. Soc. Lond. 1838: 25. (July 1838)

Common name. Pig-footed Bandicoot.

Current name. *Chaeropus ecaudatus* (W. Ogilby, 1838a), following Jackson & Groves (2015).

Holotype. Specimen number 35 in the catalogue of Bennett (1837), according to Mahoney & Ride (1988c). The original specimen was collected on 16 June 1836 (Ogilby, 1838a) and cited as female by Bennett (1837).

Comments. Ogilby (1838a) proposed the species on the basis of drawings and notes supplied by Mitchell, which Ogilby states were based on a specimen that had already been lodged in the AM. Only one specimen was obtained on the Murray River, NSW, by Sir Thomas Mitchell (Mahoney & Ride, 1988c). Krefft (1864a: 35) lists specimen "b", as a skull of the original specimen obtained by Mitchell, and states (Krefft, 1870) that he found the skull "10 years ago" but that he had never sighted the skin of Mitchell's specimen, which he assumed had deteriorated through neglect prior to his curatorship. Ogilby (1892) lists the type as being in the AM Collection, but it is not clear if he actually sighted the specimen or drew from Krefft's catalogue, given that much of his work appeared to be a desktop study (see Iredale & Troughton, 1934). Troughton (1932d: 179) believed that the holotype had disappeared from the collection.

Petaurus leucogaster Mitchell, 1838 *nomen nudum*

Three Exped. Central. Australia, vol. 1, p. xvii. (preface date 18 August 1838).

Common name. The "White-bellied flying squirrel" of Mitchell.

Current name. An unallocated name, perhaps *Petaurus norfolcensis* (Kerr, 1792) or possibly *Petauroides volans* (Kerr, 1792).

Type material. Bennett (1837) lists a male, female and young male under species nu. 14 "Petaurus [blank] The White-bellied Flying Squirrel" collected by "T. L. Mitchell" from "Forests near the Murray". The whereabouts of these specimens remains unknown, not found in the AM.

Type locality. "Banks of the Murray River" (Mitchell, 1838), Forests near the Murray (Bennett, 1837) = NSW or Victoria, Australia. Mitchell's material could have been collected from more than one locality, given that there appear to have been syntypes.

Comments. Mitchell (1838) included a line entry for "Petaurus Leucogaster. Mitch. (New Species). From the banks of the Murray" in his "Systematic List of Animals" that were "deposited in the Australian Museum" but without a description. The number of specimens obtained by Mitchell has previously been overlooked. McKay (1988b) states "probably holotype, AM, not found". The three specimens listed by Bennett (1837) under his species nu. 14 are the only possum specimens listed as presented by Mitchell other than nu. 18, a possum from "Glenelg River" (Victoria), and are likely to be the original specimens of Mitchell's "White-bellied flying squirrel". Bennett lists "Habitat, Forests near the Murray", but he used "habitat" to refer to the collecting localities of specimens, as stated at the beginning of his catalogue.

Nineteenth and twentieth century authors (e.g., Iredale & Troughton, 1934) synonymized this taxon, often tentatively (e.g., Gray, 1841; Krefft, 1864a), with *Petaurus taguanoides* Desmarest, 1817b (= *Petauroides volans* (Kerr, 1792), the Greater Glider). This has been rejected on the basis that Mitchell did not pass through the distribution of *Petauroides volans*, with *Petaurus norfolcensis* given preference for the identity of *Petaurus leucogaster* (McKay 1988b, but as *incertae sedis*; Jackson & Groves, 2015). However, we note that Mitchell crossed the Murray River downstream (west) from the current city of Albury on his third (1836) expedition. Albury is close to the current western distributional boundary of the Greater Glider (see distribution map of Burbidge & Woinarski, 2016) and it is conceivable that the species distribution was more extensive along the riparian corridor of the Murray River at the time of Mitchell's visit, before extensive European modification from intensive clearing and grazing by stock.

Phalangista rufescens Krefft, 1872h *nomen dubium*

The Sydney Mail and New South Wales Advertiser (new series) vol. XIII, nu. 626, p. 821, col. 1. (29 June 1872)

Common name. The "Rufous Phalanger" of Krefft.

Current name. *Trichosurus ?vulpecula* (Kerr, 1792).

Syntypes (2). Two specimens were registered as "*Phalangista rufescens*", c. 1878 but neither specimen has been located, nor mentioned in inventories of the past few decades. The original entries by Palmer, are: PA.510, Port Denison [= Bowen, Qld], "type mounted"; PA.511, Port Denison, mounted, to which a "Gallery" stamp imprint has been added. No details were given of collector, donor or accompanying documentation. Both entries were amended to "T. vulpecula", in different handwriting, but when or by whom is not known.

Type locality. Port Denison [= Bowen], north Qld, Australia.

Comments. This taxon appears to have been overlooked, or ignored, and we have not found any mention of it in the taxonomic literature. We report the likely identity of Krefft's original material for the first time. Krefft, who called this taxon the "Rufous Phalanger", cited external and cranial criteria to distinguish it from the three other species of *Phalangista* that he recognized: "*vulpina*" (= *T. vulpecula*), "*canina*" (= *T. caninus* (W. Ogilby, 1836)) and "*fuliginosus*" (= *T. vulpecula*). Krefft's description of cranial criteria demonstrates that he had examined a cleaned skull of his proposed new species. If both of Krefft's original specimens were used for public display, the original tags could have been removed at any time prior to the second half of the 1980s. Alternatively, it is possible that they were exchanged with other institutions.

Phascolomys assimilis Krefft, 1872i

The Sydney Mail and New South Wales Advertiser (new series) XIII (614): 6 April p. 426, col. 2

Common name. The "Allied Wombat" of Krefft.

Current name. *Vombatus ursinus* (Shaw, 1800), following Groves (2005d), who notes that subspecies of *ursinus* are uncertain.

Possible Syntypes. Krefft's original material for this taxon comprised several specimens in the AM in 1872. At least one was a skull and skeleton on public display, and there was also one or more skins. Probable syntypes include **PA.786**, destroyed in 1890 as it was "rotten" (presumably a skin) but whether it was a skin mount or skeleton is not recorded; **PA.796**, "NSW, flat [= unmounted] skeleton"; not yet sighted but a detailed inventory of skeletal collection has not been completed. Both were registered by Palmer in c. 1878 as "*Phascolomys assimilis"* and "N.S.W.", with no additional data; the entries were not marked as types and with no mention of a link to Krefft.

Type locality. New South Wales, Australia.

Comments. The usual citation for this taxon is Krefft (1873d), i.e. his letter to the Zoological Society, dated June 1872, published in May 1873 and sometimes incorrectly cited as 1872. However, this is preceded by his newspaper account (Krefft, 1872i) which contained a detailed species description and provided useful background information not found in his later account. He specified cranial and dental differences between *assimilis* and other eastern NSW wombats that he regarded as "*platyrhinus*" but did not indicate whether photographs of wombat crania that accompanied his communication to London included any examples of *assimilis*. Krefft (1872j) provided drawings of the upper incisors of *assimilis* and "*platyrhinus*".

Krefft (1872i) listed the total wombat holdings of the AM Collection of all species as: eight adult skins, six skeletons, 14 skulls and three young in alcohol, and implied that he had only a limited number of specimens that he assigned to *assimilis*. Less than a decade later, Palmer entered 25 wombat specimens in the Palmer Register that are a close match with Krefft's list.

The two specimens listed above could either be syntypes if they were available to Krefft in or before 1872, or referred specimens assigned to *assimilis* by Krefft if they were obtained during the two years between publication of the name and his removal from the AM, in September 1874. It is likely that Secretary Palmer registered whatever species identification and data accompanied the specimens, and much less likely that Krefft's nemesis and curatorial successor, Ramsay, whose main focus was birds, would have provided the taxonomic identifications for the wombats.

Podabrus mitchelli Krefft, 1867a

Proc. Zool. Soc. Lond. 1866: 433. (25 April 1867).

Common name. White-footed Dunnart.

Current name. *Sminthopsis leucopus ferruginifrons* (Gould, 1854), following Jackson & Groves (2015).

Holotype. PA.657 by subsequent determination. Dried skin, not found, entered in the Palmer Register in c. 1878 and listed as *Antechinus mitchelli*, the only other data entered by Palmer are: "dry skin in bottle Mitchell's expedition".

Comments. Krefft (1867a) states that he had "a single, much mutilated specimen, with a note attached that it came from the great explorer, I found in a heap of rubbish some years ago". Archer (1981) states that Krefft's specimen was not found in the AM Collection. We have not located PA.657, which we believe is Krefft's original specimen, and its fate remains undetermined. Krefft stated that "the skull is perfect" and gave the locality as "interior of New South Wales?". The original entry by Palmer for PA.657 does not list a skull. Iredale & Troughton (1934) stated that the type was in the AM but there is no entry for this taxon in the unpublished type list of Troughton (1956), a list that appears to have been prepared in the 1930s.

2. Unlocated types not necessarily lodged in the AM

The taxon accounts below discuss four taxa for which one or more specimens of the type series were possibly lodged in the AM. Some of the type series of *Perameles macroura* var. *torosus* Ramsay, 1877a and *Pteropus (Epomops?) epularius* Ramsay, 1877a might be in the MMUS but the whereabouts of types of the remaining two taxa are unreported to our knowledge.

Hapalotis papuanus Ramsay, 1883

Proc. Linn. Soc. N.S.W. (ser. 1) 8(1): 18, plate 11, figs 1–5. (19 June 1883).

Common name. Mottled-tailed Giant Rat.

Current name. *Uromys caudimaculatus* (Krefft, 1867b), following Groves & Flannery (1994).

Holotype. Originally a skull and dry skin, based on Ramsay's original account. Current whereabouts, or fate, unknown. We have not found an AM register entry that might be identified as this taxon.

Type locality. Unknown: no locality given by Ramsay, but generally assumed to be Papua New Guinea.

Comments. Most previous assessments of this taxon have overlooked the likelihood that locality data might not have been associated with the specimen(s) when Ramsay described the holotype. It is likely that Ramsay's type material was originally housed either in the AM, his private collection, or in William Macleay's private collection. Another possibility is that it was on loan to Ramsay from the Mason Brothers, a Sydney-based natural history dealership that was handling Goldie's material during purchase negotiations with the AM throughout c. 1880–1884. In this event, Goldie or his agents might have sold the specimen to an unknown collector. In his introductory remarks, Ramsay (1883) states that he was reporting on bird and mammal specimens collected by Hunstein, a large collection obtained via Mason Brothers, and on material "recently" added to the collections of William Macleay, the latter evidently purchased from Andrew Goldie and obtained either by him or those who collected on his expeditions.

Ramsay did not provide collector or locality information for this rodent, nor did he do so for several bird taxa that he described in the same paper. This might simply have been an oversight by Ramsay, who frequently displayed an *ad hoc* approach to inclusion of such data in describing new bird taxa. Alternatively, Ramsay might not have known either the identity of the collector or the collecting locality for this specimen. Boles (2012: 224) notes that some of the 1000 or so bird specimens obtained and registered by the AM in March 1883, the "Mason Brothers collection", had limited accompanying data because the specimen tags had been removed. Mammal specimens were also purchased from Mason Brothers at this time but these appear not to have been registered until some years later. We have not yet located archival lists of mammals purchased by Ramsay during this period.

Thomas (1913) made a passing remark that the type had disappeared. Despite several attempts, Troughton (1937a: 125) failed to locate type material either in the AM or in the Macleay Museum, nor did Groves & Flannery (1994) who also searched both collections. Previous searches presumably were looking for a specimen labelled as being from the Astrolabe Ranges; however, if the type material has no locality data, as we suspect, future searches should focus on specimens without locality data.

Although the type locality has often been cited as "the foot of, and on the slopes of, Mount Astrolabe Range …" (e.g., Troughton, 1937a; Groves & Flannery, 1994), Ramsay's account does not provide a type locality for this taxon. As noted above, the material reported in the original paper came from a wide range of localities throughout the Papua New Guinea mainland or further afield, e.g., some bird specimens described by Ramsay in the same paper came from the "Island of D'Entrecasteaux". Ramsay evidently believed that the type specimen came from Papua New Guinea, given the specific name he applied. Further discussion of this issue will be presented elsewhere.

Oligotomus australis MacGillivray in Iredale, 1937

Aust. Zool. 9(1): 45. (12 November 1937).

Common name. Greater Broadnosed bat.

Current name. *Scoteanax rueppellii* (Peters, 1866), following Kitchener & Caputi (1985).

Type material. A syntype series might include a female specimen obtained in February 1866, as described by MacGillivray from the Clarence River region, north eastern NSW. It might also include an unspecified number of specimens sent to the MV, and possibly any *Scoteanax* that were misidentified as *Vespertilio macropus* by Krefft (1864a). We have not attempted to locate possible syntypes in the AM Collection.

Type locality. Clarence River region, north eastern NSW, Australia.

Comments. Iredale (1937) published extracts of notebooks written by John MacGillivray and his letters to E. P. Ramsay in 1865–66 that included a notebook description of a new species and genus—*Oligotomus australis*—along with drawings of the species (not reproduced by Iredale, 1937). The description was pasted into MacGillivray's notebook, apparently after a letter dated July 1865. Iredale did not comment on the likely identity of this name, later placed in the synonymy of *Scoteanax rueppellii* by Kitchener & Caputi (1985). MacGillivray stated that his proposed new genus *Oligotomus* was tentative, suspecting that it might belong in the genus *Nycticejus*. MacGillivray stated that "Previously had sent some [bats] to Melbourne [McCoy Museum of Victoria], including numerous specimens of a largish one not belonging to any recorded Australian genus … They had it previously in the Sydney Museum [= AM] marked and published in the catalogue [Krefft 1864a] as *Vespertilio macropus* [= *Myotis macropus*], a bat to which it bears neither generic nor specific resemblance" (Iredale, 1937: 46). Krefft (1871d) evidently recognized this taxon

as *Nycticejus australis*, commenting that he did not believe there were any endemic Australian bat genera. Krefft's publication of the name is a *nomen nudum* because he did not provide a description. MacGillivray's description of a forearm length of 2.1 inches (= 53 mm) and "upper incisors … only two in number and not four" equates to *Scoteanax*.

Perameles macroura var. *torosus* Ramsay, 1877a

Proc. Linn. Soc. N.S.W. (ser. 1) 2(1): 12. (July 1877).

Common name. Northern Brown Bandicoot.

Current name. *Isoodon macrourus torosus* (Ramsay, 1877a), following Jackson & Groves (2015).

Syntypes. Type material for this taxon has not been reported. As detailed below, it is likely that Ramsay used more than one specimen for his description and that a syntype series once existed. Syntypes are likely to have originally been in the collections of W. Macleay, so possibly now in the Macleay Museum, in the AM, or in Ramsay's private collection. It is possible that syntypes were sent to other institutions by Ramsay.

Type localities. Include Rockingham Bay [Cardwell] and Endeavour River [Cooktown], Qld, Australia.

Comments. Past interpretations of Ramsay's description have assumed a holotype (e.g., Lyne & Mort, 1981; Mahoney & Ride, 1988c) but it is likely that his description involved syntypes. Ramsay's description focused on a female specimen obtained near Cooktown but the fact that he gave the distribution as Rockingham Bay [Cardwell] to Endeavour River [Cooktown] suggests that he was aware of other specimens. More ambiguous is his statement that "For the present I prefer to place the specimens, showing these peculiarities, as a *variety* [Ramsay's emphasis] of *P. macroura* …"—this could refer to either existing or future material. Troughton (as Anonymous, 1927) states that "the specimen" of *torosus* described by Ramsay was collected during the *Chevert* Expedition and was in the Macleay Museum, although whether this is based on first hand knowledge or surmise is unclear. We are not aware that the *Chevert* party collected at Endeavour River and it seems more likely that the type or syntypes were obtained on collecting trips to the region around that time by several different collectors. Edward Spalding collected material for Macleay at Endeavour River from June to October 1874 (Whittell, 1954), and in July of that year sent specimens that Macleay termed "skins of a new bandicoot" (Fletcher, 1929: 230). Ramsay also obtained mammals from the Rockingham Bay district and visited the area himself on a number of occasions, e.g., in 1874 (Ramsay, 1876c). It appears that all taxonomic assessments of this taxon have relied on Ramsay's original description and that the types have remained unlocated.

Pteropus (Epomops?) epularius Ramsay, 1877a

Proc. Linn. Soc. N.S.W. (ser. 1) 2(1): 8. (July 1877).

Common name. Big-eared Flying-fox.

Current name. *Pteropus macrotis epularius* Ramsay, 1877a; following Simmons (2005).

Syntypes. According to the original description the syntype series should include at least four adults, with skulls extracted, collected by George Masters, during the 1875 *Chevert* Expedition. Stanbury (1969) lists Macleay Museum number M235, male, as "?paratype" mounted or stuffed, from Katow, PNG collected during the *Chevert* expedition, which is surely a syntype.

Type locality. Katow = Katau [old name for Mawatta], on Binaturi River, southern Trans-Fly, Western Province, Papua New Guinea.

Comments. Ramsay did not indicate the total number of specimens in the type series but in a footnote he indicated that four skulls were examined, all apparently adult animals, and that his description is based on both male and female specimens. He does not cite field numbers, and registration numbers were not used at that time either at the AM or Macleay's collection. Andersen (1912: 395) indicated that "cotypes" were in the Australian Museum (a mistake for Macleay Museum?).

Specimens that are not types

The following seven accounts discuss specimens in the AM Collection that have no type status, although some specimens are labelled as "type". Specimens of possible historical interest associated with names that are *nomina nuda* are also included. Additional specimens are discussed earlier under the account for *Antechinus stuartii* Macleay. We present these accounts to spare subsequent workers from the task of tracking the status of these specimens.

Antechinus subtropicus Van Dyck & Crowther, 2000

Mem. Qld. Mus. 45(2): 613, figs 2–3, table 1. (30 June 2000).

Common name. Subtropical Antechinus.

Current name. *Antechinus subtropicus* Van Dyck & Crowther, 2000; following Jackson & Groves (2015).

Material. (8). All are skulls with bodies in alc.: **M.22782–83**, both males; **M.22784–85**, both females; **M.22789**, male: all five from Sheepstation Ck, Border Ranges National Park, 40 km W of Murwillumbah (28°24'S 153°01'E), NSW, Australia, collected by P. Baverstock 11 August 1990. **M.24904**, male; **M.24905**, female, both from Mt Nullum (28°50'S 153°26'E), NSW, Australia, collected by staff of National Parks and Wildlife Service (Alstonville), on 15 June 1990. **M.29961**, male, from Rummey Park, Whian Whian State Forest (28°38'S 153°19'E), NSW, Australia, collected by P. Baverstock on 16 August 1992.

Comments. Paratypes were deliberately not designated in the original description (S. Van Dyck, M. Crowther, pers. comm. 2013), but the eight specimens listed here were part of the series of specimens used in documenting the morphological variation within the species and are therefore of equivalent value as paratypes for future taxonomic research.

Dipus mitchellii Ogilby, 1838b

Lond. Edinb. Phil. Mag. & J. of Sci. 12, supplement to no. 71, 95–96 [Abstract of Ogilby, 1838c]. (31 January 1838).

Common name. Mitchell's Hopping-mouse.

Current name. *Notomys mitchellii* (W. Ogilby, 1838b), following Jackson & Groves (2015), who consider that the entire genus needs a complete taxonomic revision.

Holotype. Whereabouts unknown. Specimen No. 22 in catalogue of AM specimens of Bennett (1837), from "Reedy Plains, near the junction of the Murray and Murrumbidgee" (Ogilby, 1838c). Alleged syntypes: PA.73, ?sex, skin mount, skull *in situ*; PA.74, ?sex, skull, skin mount; both entered by Palmer as "Hapalotis mitchellii Lower Murray River". Collection date and collector not recorded by Palmer. Both specimens registered in c.1878.

Comments. Troughton (1941 and subsequent editions) believed that Mitchell's original material of this taxon was still in the AM Collection. However, in a detailed discussion of the type of this taxon, Mahoney (1982) concluded that: a) only a single specimen (i.e. the holotype) was available for the drawing upon which Ogilby's description is based, and that the type locality is 12 km SE of Lake Boga, NW Victoria; b) the holotype is likely to be specimen No. 22 in a catalogue of Bennett (1837), but to date it has not been possible to locate this specimen; c), neither of the two Australian Museum specimens PA.73 and PA.74, cited as types of *mitchellii* (e.g., Tate, 1951b: 259), are likely to be the holotype; d) PA.73 and 74 could be specimens listed by Krefft (1864a), either those presented to the AM by Mitchell, or part of the series listed as being obtained on the Lower Murray River. Ogilby (1892) states that the type (as *Conilurus mitchellii*) was in the AM but it is not clear if he sighted it, or simply presumed that it was.

Mus fuscipes Waterhouse, 1839

Zoology of the Voyage of HMS Beagle p. 66, pl. 25. (September 1839).

Common name. Australian Bush Rat.

Current name. *Rattus fuscipes* (Waterhouse, 1839), following Taylor & Horner (1973).

Material. PA.23, indeterminate sex, skull, study skin, registered in c. 1879 in the Palmer Register with original entry of *Mus fuscipes* "dry skin in bottle Gould's type" but without locality, collector or any other entries by Palmer. Taylor & Horner (1973) identified PA.23 as an example of *R. lutreolus lutreolus* (J. Gray, 1841).

Condition. Incomplete cranium, missing most of braincase, zygomatic arches, both molar tooth rows and most of palate. Left dentary missing coronoid, condylar and angular processes; right dentary complete. Study skin: missing right proximal limb, missing tail tip, fracture in distal third of tail.

Comments. The entry made by E. Palmer in the Palmer Register that PA.23 was "Gould's type" probably reflects the loose use of the term "type" by early AM staff because in plate and text Gould (1863b) attributes authorship of *Mus fuscipes* to Waterhouse. The skull of PA.23 was extracted from the skin in 1965 for the study by Taylor & Horner (1967), who designated a neotype for *Rattus fuscipes* and provide a detailed assessment of the issue. They believed that the specimen could have been the basis of Gould's account and sketch of *Mus fuscipes* in his monograph. Taylor & Horner (1973) refer PA.23 (as AM 23) to *R. lutreolus lutreolus* and discuss the confusion surrounding the application and differing concepts of the names *Mus fuscipes* Waterhouse (now *Rattus fuscipes fuscipes*), *Mus assimilis* Gould, 1858 (now *Rattus fuscipes assimilis*) and *Mus lutreolus* J. Gray, 1841 (now *Rattus lutreolus lutreolus*). They note that prior to Thomas (1906d), all authors followed the mistaken views of Gray and Gould in applying the name *fuscipes* to specimens of what are now recognized as *Rattus lutreolus*.

Mus tasmaniensis Krefft, 1868c *nomen nudum*

Trans. Roy. Soc. N.S.W. 1, 32. (1868)

Common name. Swamp Rat.

Current name. *Rattus lutreolus velutinus* (Thomas, 1882), following Taylor & Horner (1973).

Material. PA.22, young adult female, skull, body in alc. Entered in the Palmer Register in c. 1878 as "Mus fuscipes, Ouse R. Tasmania, spirits" with no other data.

Condition. Cranium complete, right dentary missing coronoid process. Body in alc. complete, fur faded.

Type locality. Banks of the Ouse River, Tasmania, collected by George Masters (Krefft, 1868c).

Comments. This taxon is a *nomen nudum* as recognized by Iredale & Troughton (1934) and Taylor & Horner (1973). The latter authors identified PA.22 as *Rattus lutreolus velutinus*, and suggest that it is Krefft's "type", on the basis that it is the only such specimen collected by Masters, that is labelled as being from Ouse River. A list of specimens lodged in the AM from Masters during the period December 1866 to March 1867 includes "3 *Mus tasmaniensis*" (Krefft, 1868b). We have not located other specimens. Krefft appears never to have published a description of this taxon and it is not mentioned in his book (Krefft, 1871a). The first mention by Krefft that he had a new rodent species *Mus tasmaniensis* appears to be his paper in the *Trans. Roy. Soc. of NSW* (Krefft, 1868c) and the manuscript, with slight modifications, manifested on another occasion in 1868, as a privately published pamphlet *Notes on the Fauna of Tasmania*, which was reproduced in 1869 as an appendix in the *Papers Proc. Roy. Soc. Tas*., see Whitley (1961).

Globiocephalus australis Gray, 1871b *nomen nudum*

Suppl. Cat. Seals and Whales Brit. Mus., p. 85. (1871).

Common name. Long-finned Pilot Whale.

Current name. *Globicephala melas* (Traill, 1809), following Perrin (2009j).

Material. Type specimens not designated. Gray states "Coast of Australia. In Museum of Sydney".

Comments. Gray (1871b: 85) listed a name "Globiocephalus australis" only in relation to material in the "Museum of Sydney" (= AM). He did not provide a description and the name is a *nomen nudum*, and listed by Hershkovitz (1966) as a synonym of *Globicephala melaena melaena* (Traill) [variant spelling of *melas*, see Jackson & Groves, 2015]; not cited by Scott (1873) or Iredale & Troughton (1934). Four skulls registered in the Palmer Register possibly represent the material referred to by Gray as being in the AM Collection. Although of no nomenclatural significance, they are of possible historical value and are mentioned here. Three of these are entered with no generic or species entry, locality, date or collector: PA.316, PA.317 and PA.321. A fourth, PA.324, a lower jaw, from Tasmania, was donated by "Dr Cox" in April 1871. All have been located in the collection except PA.317, which may be represented by an old *Globicephala* skull with no number, writing or labels. (*Globiocephalus* Gray, 1846 is an emendation of *Globicephala* Lesson, 1828, see Hershkovitz (1966: 90)).

Nyctophilus daedalus Thomas, 1915a

Ann. Mag. Nat. Hist. (ser. 8) 15: 498. (1 May 1915).

Common name. Pallid Long-eared Bat.

Current name. *Nyctophilus daedalus* Thomas, 1915a; following Jackson & Groves (2015).

Material. M.1323 (= *N. arnhemensis* Johnson, 1959), adult female, body in alc. (skull *in situ*), Daly River, N. Territory, collected by Dr K. Dahl, exchanged with the Christiania Museum (now NHMO) and registered 26 July 1898.

Comments. The specimen was on loan from the AM to Thomas during the preparation of his taxonomic revision of the genus. In a letter dated 18 March 1915 to the AM (AM Archives AMS9 Letters Received, L.104/1915), Thomas indicated that he used the AM material in his generic revision; he listed M.1323 as *N. daedalus* and on that basis we regard it as potentially part of the original series. Thomas (1915a) stated that he examined specimens of *N. daedalus* from Port Essington, NT and Melville Island in addition to the type locality of Daly River, but does not indicate the number of specimens examined. Parnaby (2009) demonstrated that several taxa are likely to be included within what is currently recognized as "*daedalus*". However, M.1323 is regarded here as *N. arnhemensis* and is smaller than specimens assigned to the *daedalus* complex, e.g., forearm length = 37.7 mm, compared to 40.0–46.0 mm for adult female *daedalus*. This indicates that the type series of *N. daedalus* is a species composite and although likely to be part of the original series, M.1323 is no longer considered here to be a paratype.

Pharotis imogene Thomas, 1914b

Ann. Mag. Nat. Hist. (ser. 8) 14: 382. (1 November, 1914).

Common name. New Guinea Big-eared Bat.

Current name. *Pharotis imogene* Thomas, 1914b; following Simmons (2005).

Material. M.2561, adult female, body in alc., skull, Kamali, lower Kemp Welch River, Central Province, Papua New Guinea, collected by Dr L. Loria, November 1890. Exchanged from BMNH and registered at the AM on 26 May 1915.

Comments. We suspect that Thomas based his account of *P. imogene* on one specimen, and if so, M.2561 would have no type status. This specimen was examined and identified by Thomas, who arranged for it to be sent to the AM in March 1915 (AM Archives AMS9 Letters Received, L.104/1915). Thomas does not explicitly state the number of specimens used in his description, although the opening sentence of his original account might imply that he had one specimen. The adult female holotype 1891.9.10.2 and one other (1891.9.10.1) are the only specimens registered in the BMNH; the specimen now at the AM had not been registered (Paula Jenkins, BMNH, pers. comm. 18 February 2014). The latter two specimens might be regarded as paratypes on the grounds that they could have been examined by Thomas. However, it seems odd that Thomas did not mention additional specimens in his account, given that he was proposing a distinct new genus and species. Further, he had a clear understanding of type specimen nomenclature and the concept of a type series, and had earlier proposed the term "para-type" (Thomas, 1893). Thomas either became aware of additional specimens after preparing his species account, had decided to restrict the type series to the holotype, or simply neglected to mention additional specimens used in his account. Hughes *et al*. (2014) report the first specimen of this species to be collected since the original series in 1890.

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