

Notes on Mammals Collected on the 1885 Geographical Society of Australasia's Expedition to New Guinea

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ABSTRACT. In 1885 the Geographical Society of Australasia sent the steam launch *Bonito* to chart the Fly and Strickland Rivers (now in Western Province, Papua New Guinea). The Expedition spent five months in New Guinea with the primary objectives of survey and biological exploration. The type locality of the murid rodent *Melomys muscalis froggatti* Troughton, 1937, described from a single specimen obtained during the Expedition, is localized to the region of the base camp at Observation Bend, Strickland River, based on the original Expedition maps and the unpublished diary reminiscence of the collector W. W. Froggatt. A review of the mammal collection obtained during that Expedition has not been reported previously, perhaps due to the poor surviving documentation. Several months after the Expedition returned to Sydney, Australian Museum curator E. P. Ramsay prepared a list of 22 mammal specimens received by the Museum. Twenty specimens attributed to the Expedition were not entered into the collection registers until 1913, half of which are likely to be incorrectly associated with the Expedition. Most specimens were registered with very limited data about collection date and locality. Of the 22 specimens originally received by Ramsay, eight rodents and two flying foxes (*Pteropus* spp.) have not been located in the Collection, but might remain unrecognized as specimens with no data. It is possible that additional mammal specimens were sent by the Geographical Society of Australasia to other institutions at the conclusion of the Expedition.

Introduction

The Geographical Society of Australasia Expedition to New Guinea (hereafter, the Expedition), explored the lower and middle reaches of the Strickland River, in what is now Western Province, Papua New Guinea, during 18th July to 18th November, 1885 and returned to Sydney on 3rd December, 1885 (Everill, 1888). The Expedition was planned by the Sydney branch of the Geographical Society with financial contributions from the Brisbane and Melbourne Branches. Zoological collecting was a primary

objective (Pulsford, 1885) and significant input from E. P. Ramsay, curator of the Australian Museum (AM) Sydney, resulted in that museum getting first choice of material collected on the Expedition (Pulsford, 1885; Ramsay, 1888). Numerous papers based on material collected on the Expedition were published by AM taxonomists in the decades after the Expedition, dealing with reptiles, fish and invertebrate groups. The Expedition's sponsors were probably embarrassed by the controversy surrounding the Expedition as it was widely viewed as being unsuccessful (Dwyer *et al.*, 2015). The Expedition has remained relatively

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poorly known until recent work by Philp (2011), who focused on cultural material collections, and by Dwyer *et al.* (2015) who examined the veracity of the official account of the Strickland River exploration.

The Expedition's zoological staff were led by Dr Johann Wilhelm Haacke, Chief Scientist and Chief Zoologist, with assistants Kendall Broadbent, ornithologist and taxidermist, and Walter Wilson Froggatt, special zoological collector and entomologist. Broadbent was the most experienced bird and mammal collector but ill health forced his departure before the Expedition reached New Guinea (Pulsford, 1885; see Philp (2011) for an account of Expedition members). Froggatt undertook much of the field taxidermy but did not necessarily collect the majority of mammal specimens. His unpublished diary reveals that most members of the Expedition opportunistically caught or shot specimens, including mammals.

The mammals collected on the Expedition, and their current location in institutional collections, remain mostly unreported. Ramsay (1888) provided a preliminary summary of 22 mammal specimens received by the AM, using general descriptors such as “bandicoot”, “Pteropus”, or “Mus”. Troughton (1937) used one specimen for his description of the mosaic-tailed rat *Melomys muscalis froggatti*. Flannery (1990) cited four specimens, three bats and a rodent (Table 1); he identified the latter as *Pogonomelomys bruijni brassi* Tate and Archbold, 1941 known from few specimens and now considered a full species *P. brassi* by some authors (e.g., Helgen, 2007). He also identified two specimens of the Coastal sheath-tailed bat *Taphozous australis* Gould, 1854, known only from three specimens from New Guinea (Bonaccorso, 1998). Flannery undertook an inventory of 19th century mammal specimens in the AM during the late 1980s and early 1990s, as revealed by numerous annotations to the specimen register. This resulted in significant resolution of species identifications. However, the taxonomy of many groups of New Guinean mammal species remains confused (e.g., Helgen, 2007), including bats and rodents from the region visited by the Expedition.

The taxonomic status of mosaic-tailed rats from southern New Guinea placed within *Melomys lutillus* (Thomas, 1913) remains uncertain. Some authors treat *M. lutillus* as a synonym of the northern Australian *M. burtoni* (Ramsay, 1887a), e.g., Musser & Carleton (2005); others consider that *M. burtoni* and *M. lutillus* are an unresolved species complex (e.g., Leary *et al.*, 2016; Roycroft *et al.*, 2022). The type series of *M. muscalis froggatti*, currently accepted as a synonym of *M. lutillus*, consisted of the holotype only, which was collected by Walter W. Froggatt from the Strickland River, Western Province, Papua New Guinea during the Expedition (Troughton, 1937). We provide further insights into the likely type locality with an outline of other mammals collected on the Expedition that are housed in the AM. Our assessment draws from Dwyer *et al.* (2015) and the diary reminiscence of the collector W.W. Froggatt (1936),¹ along with the AM Mammal Registers (the “M” Register and “S” or Skeleton Register), the electronic register (EMU

database), and tags attached to mammal specimens now in the AM Collection. Species identification of all AM mammal specimens attributed to the Expedition were reviewed in 2022 by one of us (KMH).

The type locality of

Melomys muscalis froggatti Troughton, 1937

The Expedition's steam launch, the SS “Bonito”, was stranded at Observatory Bend, on the Strickland River about 100 miles above the Fly River junction, from 27 August to 25 October 1885. During that period a group including Froggatt travelled north, by whale boat, to ‘Fossil Camp’ which Froggatt (1936) estimated to be about 100 miles along the river, north from Observatory Bend.

In his original account, Troughton (1937) described the type locality of *M. muscalis froggatti* as “the banks of the Strickland River, about 100 miles above the junction with the Fly River”. Parnaby *et al.* (2017: 362), based on a misinterpretation of Dwyer *et al.* (2015), concluded that the type locality was likely to be Fossil Camp, or an adjacent site downstream and that the holotype was collected in September. This error arose when Parnaby *et al.* (2017) confused the distance between the Strickland River–Fly River junction and Observatory Bend, with the distance between Observatory Bend and Fossil Camp, the furthest point reached along the Strickland. Although the Expedition's map had inaccuracies, the position of Observatory Bend was reliable and determined by Dwyer *et al.* (2015) to be latitude 6°39'00”S, longitude 142°06'00”E (see Fig. 1).

We conclude that the type locality of *M. muscalis froggatti* is likely to be in the vicinity of Observatory Bend, and not Fossil Camp as suggested by Parnaby *et al.* (2017). If so, the collection date would be between 27th August to 25th October 1885, excluding Froggatt's absence from Observatory Bend while upstream during 16th to 29th September. However, as discussed below, the data associated with the holotype and all other Australian Museum specimens attributed to the Expedition is scant.

Mammals collected on the Expedition in the Australian Museum

A list of 22 mammal specimens selected from the Expedition's collection for retention by the AM had been compiled by Ramsay by October, 1886 (Ramsay, 1888). The list was reproduced as an appendix to Froggatt's diary reminiscence (Froggatt, 1936), implying that Froggatt concurred with Ramsay's tally. Twenty-three mammal specimens housed in the AM have been attributed to the Expedition at different times during the past century (Table 1). All remained unregistered during the curatorship of E. P. Ramsay (1874–1894) except for a pig skull (*Sus scrofa* Linnaeus, 1758) registered in 1890. We do not know what proportion of the Expedition's mammal collection was retained by the AM. Presumably this included most, if

¹ We also examined two of Froggatt's unpublished field diaries (Mitchell Library MSS 3807, item 1, Diary, 13 July–20 November 1885, of W. W. Froggatt and ML MSS 1090, item 4, Froggatt, W. W., Diary notes on fauna, 25 July–18 August 1885); and an incomplete assemblage of lists of natural history and ethnographic specimens written by Froggatt during the Expedition (Mitchell Library MSS 1090, item 5, Froggatt, W. W. List of natural history collections, 2 August–7 November 1885). These documents do not include a list of mammal specimens but include occasional reference to mammals.

Table 1. Comparison of specimens listed by Ramsay (1888) with Australian Museum specimens attributed in Mammal Registers to Geographical Society of Australasia Expedition 1885. * Six specimens doubtfully associated with the Expedition.

Ramsay (1888) List verbatim	Australian Museum specimens previously thought to be associated with the Expedition					
	register number	registration date	collecting locality	common name	scientific name	remarks
1 head of a small pig half roasted ^a	S.302	Oct 1890	New Guinea	Feral pig	<i>Sus scrofa</i>	Skull of a subadult
1 <i>Perameles</i> , found dead in the bush in very bad state ^b	M.1119	July 1896	New Guinea	Common echymipera (Bandicoot)	<i>Echymipera kalubu</i>	Condition possibly inconsistent with Ramsay's list description
14 "mus sp." [<i>Mus</i> specimens] (3 species, young and adult)	M.2371*	16 Dec 1913	nil	Bush rat	<i>Rattus fuscipes</i>	Endemic Australian species
	M.2372	ditto	nil	Brass's brush mouse	<i>Pogonomelomys brassi</i>	Specimen cited by Flannery (1990)
	M.2373	ditto	nil	Water rat	<i>Hydromys chrysogaster</i>	
	M.2374	ditto	Strickland R 100 miles from Fly River junction	Grassland melomys	<i>Melomys lutillus</i>	Holotype of <i>Melomys muscalis froggatti</i>
	M.2375*	ditto	New Guinea	Swamp rat	<i>Rattus lutreolus</i>	Endemic Australian species
	M.2376	ditto	nil	White-bellied melomys	<i>Melomys leucogaster</i>	
	M.2377	ditto	nil	Black-tailed melomys	<i>Melomys rufescens</i>	
M.26666	29 May 1992	Fly River	Black-tailed melomys	<i>Melomys rufescens</i>	Skull only, found unregistered in the Collection in 1992	
3 <i>Pteropus</i> (same species?) [in alcohol]; 1 <i>Pteropus</i> , same as above, stuffed	M.2391	16 Dec 1913	nil	Flying fox	<i>Pteropus</i> sp.	Specimen not found in 2022 and not sighted for decades
	M.2392*	ditto	nil	Grey-headed flying fox	<i>Pteropus poliocephalus</i>	Pup, probably <i>P. poliocephalus</i> , an Australian endemic
	M.2393*	ditto	nil	Grey-headed flying fox	<i>Pteropus poliocephalus</i>	Pup, probably <i>P. poliocephalus</i> , an Australian endemic
	M.2394	ditto	nil	Flying fox	<i>Pteropus</i> sp.	Specimen not found in 2022 and not sighted for decades
2 small bats (2 species)	M.2395	ditto	nil	Tube-nosed bat	<i>Nyctimene</i> cf. <i>cephalotes</i> / <i>robinsoni</i>	Might be regarded as a small bat species; specimen cited by Flannery (1990). Likely to be <i>N. robinsoni</i> (see Helgen & Oliver, 2004).
	M.2396	ditto	nil	Geoffroy's rousette	<i>Rousettus amplexicaudatus</i>	Might be regarded as a small bat species
	M.2397	ditto	nil	Coastal sheath-tailed bat	<i>Taphozous australis</i>	A small species. Cited by Flannery (1990)
	M.2398	ditto	nil	Coastal sheath-tailed bat	<i>Taphozous australis</i>	A small species. Cited by Flannery (1990)
	M.2399*	ditto	nil	Asiatic house bat	<i>Scotophilus</i> sp.	Genus not known from mainland New Guinea
	M.2400*	ditto	nil	Serotine bat	<i>Eptesicus</i> cf. <i>serotinus</i>	Genus not known from New Guinea
possums not listed by Ramsay (1888)	M.2431	18 Dec 1913	nil	Sugar glider	<i>Petaurus breviceps papuanus</i>	Species not listed by Ramsay (1888)
	M.2432	18 Dec 1913	nil	Sugar glider	<i>Petaurus breviceps papuanus</i>	Species not listed by Ramsay (1888)
	M.2433	18 Dec 1913	nil	Sugar glider	<i>Petaurus breviceps papuanus</i>	Species not listed by Ramsay (1888)

^a The number of pig skulls obtained during the Expedition has not been determined but at least four are mentioned by Froggatt. A list of "Ethnological collection obtained by whale boat party from native house Sept 28th 1885", "Box 3", lists "skulls of pigs" and two pig skulls from Attack Point are cited in the list of "Ethnological collection. Chiefly articles of dress etc. 7/11/85" (ML MSS 1090, item 5).

^b The only mention of bandicoots in Froggatt's diary (his entry for 17 Nov 1885) is one found dead in a pit dug to trap pigs at Observatory Bend, and placed in strong spirits, being too rotten to prepare as a skin. (ML MSS 3807, item 1. Diary, 13 July–20 November 1885).

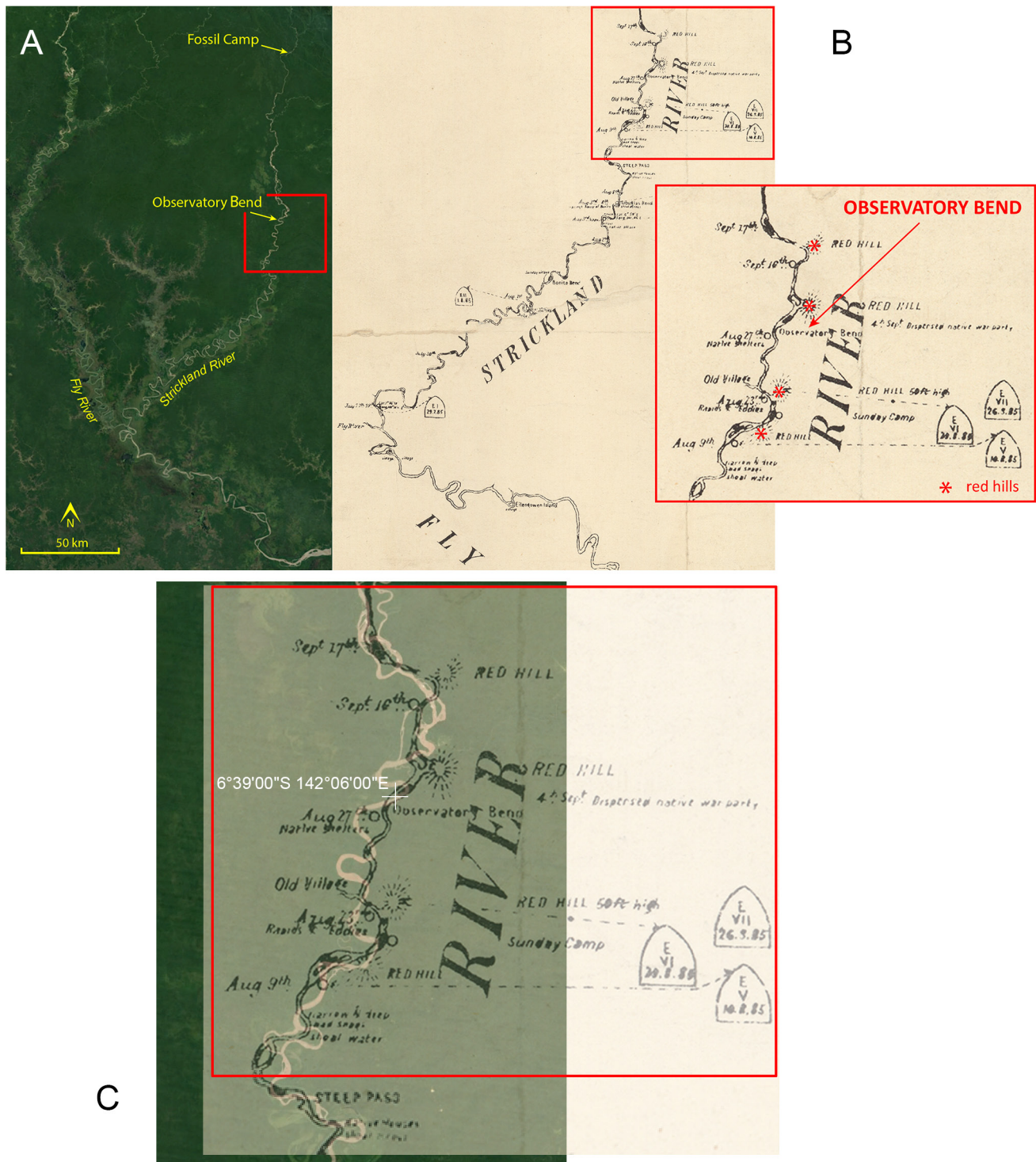


Figure 1. Strickland River, Papua New Guinea: (A) satellite image from Google Earth; (B) extracts from map of the Strickland River, New Guinea, survey by SS Bonito Expedition (available in State Library of NSW: Z/M2 921.46/1885/1) showing location of Fly/Strickland junction, Observatory Bend, and Fossil Camp; and (C) Google Earth image and map superimposed.

not all, of the novelties. The possibility that other mammal specimens could have been dispersed to several institutions on return of the Expedition to Sydney is possible but is not explored further here, other than to note that Ramsay (1888) states that the ethnological collection was also dispersed to Queensland and Victorian institutions.

Ramsay’s list indicates that when received by the AM, all mammal specimens were preserved in alcohol except for a pig’s head and a dry stuffed flying fox given as “*Pteropus*”. There are inconsistencies, however, between

the 22 specimens on Ramsay’s list and the 23 specimens attributed to the Expedition in the AM Register.

Ramsay (1888) believed that the 14 rodent specimens received by the AM belonged to three species, all of which he assigned to “*Mus* spp.”. At the time, rodent taxonomy was very poorly resolved, identification was difficult and *Mus* encompassed a range of medium- and large-bodied rodents now recognized to belong in several different genera. Often, any rodent that could not be assigned to genus was simply referred to “*Mus*”. However, a Water rat (*Hydromys*

chrysoaster É Geoffroy, 1804, M.2373) attributed to the Expedition when registered in 1913, is of a highly distinctive genus known to Sydney-based zoologists of the 19th century. It is doubtful that Ramsay would have failed to recognize this genus when preparing his list, had he seen the specimen. Only eight rodent specimens have been attributed to the Expedition in the AM Mammal Register, two of which are incorrectly attributed as discussed below, leaving eight of Ramsay's rodent specimens unlocated. These might remain unrecognized in the AM Collection as alcohol specimens with no data.

Few insights about rodents collected on the Expedition are provided by Froggatt (1936). He mentions obtaining one rat on October 7th at Red Hill (four Red Hills are marked on the original Expedition map) during a day trip down river from Observatory Bend. We found one other reference (October 24th)², to several rats being captured at Observatory Bend in a search of an electronic copy of Froggatt (1936) using the terms “Mus”, “mouse”, “rat” and “rats”. Unsurprisingly, not all rodents obtained by Froggatt were documented in his diary recollections.

Comparison of Ramsay's list with mammal specimens attributed to the Expedition in the AM M Register suggests that up to 12 of the latter are possibly incorrectly associated with the Expedition. This includes two rodents, four “small” bats, two flying foxes (*Pteropus*), three Sugar gliders (*Petaurus breviceps papuanus* Thomas, 1888) and possibly a bandicoot. Two specimens of *Rattus* were not assigned species names when registered as “*Mus* sp.” in 1913 but were later identified on specimen tags as the introduced rodent *Rattus rattus* (Linnaeus, 1758). Closer inspection of both specimens reveals their identification as Australian endemics, and thus not correctly attributed to the Expedition—the Bush rat *Rattus fuscipes* (Waterhouse, 1839) (M.2371) and the Swamp rat *Rattus lutreolus* (Gray, 1841) (M.2375) (as indicated by specimen tag annotations made by New Guinea rodent specialist Dr Ken Aplin in 2014, confirmed by close examination by KMH). A specimen of the bat *Eptesicus* (M.2400), a genus not known from the New Guinea region, has skull morphology consistent with *Eptesicus serotinus* (Schreber, 1774) and is possibly a specimen received from Europe during the curatorship of Gerard Krefft (1860–1874), although this remains to be confirmed. Another bat specimen, M.2399, apparently a specimen of *Scotophilus*, remains dubiously associated with the Expedition as it represents a genus not known from New Guinea. However, *Scotophilus* has been reported from the adjacent land-bridge Aru Islands (Jentink, 1888; Hill, 1992) and we cannot exclude the possibility that the specimen represents the first record of that genus from mainland New Guinea. The taxonomy of *Scotophilus* is complicated and the species identity of the specimen also requires confirmation. Two specimens of *Pteropus* (M.2392 and M.2393, both immature) do not correspond in coloration to the young of any New Guinea *Pteropus* species but match the coloration of juveniles of the Grey-headed flying fox (*Pteropus poliocephalus* Temminck, 1825), endemic to eastern Australia, and we thus regard these as incorrectly attributed to the Expedition. We note that the

firmly identifiable species in this overall category—*Rattus lutreolus*, *Rattus fuscipes*, and *Pteropus poliocephalus*—are all common mammals across much of eastern Australia, including in the vicinity of Sydney.

There are four more “small” bat specimens attributed to the Expedition in the AM Register than listed by Ramsay (Table 1). Given that Ramsay (1888) listed only two specimens of small bat, of different species, the listing of two specimens of *Taphozous australis* in the AM Register is inconsistent; at least one is wrongly attributed. However, it is not clear which of the four small bat specimens have an incorrect attribution. This ambiguity arises because both (*Nyctimene* cf. *cephalotes* (Pallas, 1767)/*robinsoni* Thomas, 1904 and *Rousettus amplexicaudatus* (É. Geoffroy, 1810)) could be regarded as “small” if the only other bat species collected on the Expedition were the larger-bodied flying foxes (*Pteropus*). Troughton (1925) did not mention the two *Taphozous* specimens in his taxonomic revision. This is surprising given that he had very few specimens from New Guinea and suggests either that he doubted their provenance or perhaps the specimens were not located in the Collection at the time.

A skin (M.1119) of *Echymipera kalubu* (Fischer, 1829) is the only bandicoot specimen attributed to the Expedition. Although plausibly obtained by the Expedition based on the species' broad distribution (Flannery, 1995), the good condition of the skin is inconsistent with the description by Ramsay (1888) of “very bad state found in the bush”. Bandicoots are notorious for shedding fur due to rapid decomposition unless the specimen is preserved soon after death, which is not the case with this specimen. However, there are several bald patches on the specimen that might reflect damage from decomposition. Three specimens of the glider *Petaurus breviceps papuanus*, in the AM M Register are not listed by Ramsay (1888). While it seems unlikely that he would have overlooked these specimens, it is possible that they entered the AM Collection after he prepared the list, perhaps as a donation from Froggatt. This might be resolved by a search of Archival documents. Molluscs donated by Froggatt from the Expedition were registered in 1892 and Froggatt is known to have donated natural history specimens to the AM from his various past expeditions in the decades following the 1880s.

The surviving information associated with each of these specimens is limited to attribution to the Expedition, without collector's name and only four specimens are explicitly indicated as being from New Guinea (Table 1). The holotype of *Melomys muscalis froggatti* is the only specimen with more detailed locality data, and Froggatt given as the collector. Troughton (1937) did not cite the collection date of the holotype, but September-October 1885 is given on the early specimen index card for the specimen (Parnaby *et al.*, 2017).

If more detailed data were originally provided with mammal specimens from the Expedition when they were lodged with the museum, it seems their association with these specimens had been lost when most were registered in 1913. Apart from a pig skull registered in 1890 and the second, the bandicoot M.1119, registered in 1896 during

² In his entry for October 24th, Froggatt (1936) states “As we dismantled the shed we caught some bush rats”. One of the unpublished lists of specimens written by Froggatt during the Expedition lists two rats “caught in dismantling our store house Observatory Bend 20/10/85”. (Mitchell Library MSS 1090, item 5, “Box of jars of specimens of birds, insects, fish etc packed 2/11/85 WWF”). Although Froggatt's hand written “R” can resemble his “B”, this entry is likely to be “Rat” rather than “Bat”, based on several entries of “Returned” that appear near the end of the document. Note that 20th October contrasts with the 24th October given by Froggatt (1936), although rats could have been obtained on both dates, only one of which was cited by Froggatt (1936).



Figure 2. Tags associated with Australian Museum specimens collected on the Expedition. (A) earliest tag associated with M.26666, *Melomys rufescens* (Alston, 1877), found unregistered in the Collection in 1992; (B, C) presumed taxidermist's tag attached in 1912, in handwriting characteristic of similar tags attached to all specimens attributed to the Expedition (M.2375, *Rattus lutreolus*).

the curatorship of E. R. Waite, all but one of the remaining specimens were registered on two days in December, 1913. This appears to have been done as part of an effort to register specimens from the “Old Collection”, a general term for any specimens found in the Collection that had escaped registration in past decades. Although Ramsay’s list indicates all but two specimens were received in alcohol, their state of preservation was not recorded at the time of registration in the M Register. It seems likely that the specimens registered in 1913 were done so as part of a long-term objective of converting alcohol specimens to skins and skulls, an objective repeatedly mentioned in the Annual Reports of the AM Trustees of the time, to address overcrowding of the spirit store. If so, the specimens would have been converted to skins and skulls then registered using only the information associated with each specimen.

We have not determined the basis upon which the 23 registered AM specimens were attributed to the Expedition, because original field tags or labels do not appear to have survived. A loose tag associated with M.26666 (the rodent *Melomys rufescens*) is a possible exception. The tag (Fig. 2A) is written in an unknown hand unlike the original entries to the M Register in 1913 and is inconsistent with Froggatt’s. A comparison of entries in the Mammal Register and the early tags associated with skins and skulls imply the following chronology of conversion of alcohol specimens to skins, their registration at the AM, and their attribution to the Expedition. First, small paper tags (“watch tags”) were attached to each specimen on 27th March 1912, most likely by the AM taxidermist when preparing study skins from alcohol specimens. One side of each tag has “no data 27.3.12”, all in the same handwriting (e.g., Fig. 2B). Similar tags dated 1912 and attached to other study skins now in the AM Mammal Collection are initialed “H. B.”, probably Henry Barnes, AM taxidermist. The specimens were then registered in December 1913. Significantly, genus and species were not entered in the Register at that time other than rodents entered as “*Mus* sp.” and generic and species identifications were added at various times in subsequent decades. Their attribution to the Expedition is written in the Register in the same hand as other specimens registered in December 1913. This indicates that their association with the Expedition was known at the time of registration but the source of this information is not recorded. Perhaps labels had been attached to the outside of alcohol containers and not attached to each specimen. The original study skin taxidermy tags were also amended with “OVER” on one side, and attribution to the Expedition written on the reverse side (Fig. 2B, C).

Discussion

The first papers describing new taxa based on biological material collected on the Australasian Geographical Society Expedition to New Guinea were published soon after the AM received the material in late 1885 or early 1886. A series of papers was published in 1887 in the *Proceedings of the Linnean Society of New South Wales* by museum scientists and Sir William Macleay, dealing with reptiles, fish and insects. New species continued to be described in the ensuing decades. At the time, Ramsay was the only mammal taxonomist in Sydney but his interests lay with other vertebrate groups. In his initial assessment of the vertebrate collection in 1886 (Ramsay, 1888), he considered specimens of a new genus of freshwater turtle (*Cerattochelys insculpta*)

to be a highlight of the collection, which he published a year later (Ramsay, 1887b). Eleven holotypes of new fish species from the Strickland River described from the Expedition's material were another highlight (Ramsay & Ogilby, 1887). Ramsay (1888) considered that the bird collection contained no new taxa, and none have been described subsequently from AM material from the Expedition (Longmore, 1991). Given that he had examined the mammal collection, Ramsay presumably gave priority to other vertebrate groups that he thought were more likely to yield morphologically distinct new species compared with the taxonomically difficult bats and rodents.

Although relatively few mammal specimens were obtained during the Expedition, the 21 specimens (pig skull excluded) represent at least five taxa that were undescribed at the time. This includes the rodent species *Melomys leucogaster* (Jentink, 1908), *Melomys lutillus* and *Pogonomelomys brassi*; the bandicoot *Echymipera kaluboriomo* Tate and Archbold, 1936, and the Sugar glider *Petaurus breviceps papuanus*. The Expedition's mammal collection was a significant contribution to science, the potential of which could not be capitalized on by the small community of colonial scientists in Sydney. This opportunity was largely overtaken by expeditions to the Fly River region in subsequent years and published by taxonomists based in Europe, and later by taxonomists using collections from the first (1933–1934) and second (1936–1937) Archbold Expeditions to New Guinea by the American Museum of Natural History in New York.

Given the inconsistencies we have noted between Ramsay's original list of specimens received and the specimens recorded in the AM Registers by 1914, one puzzle remains: why do the number of specimens in the two sets accord (in both cases 22). Here, only speculation is possible. All but two of the 22 mammal specimens that were attributed to the Expedition prior to our study were registered on two days in December 1913 (excluding the additional unregistered specimen found in 1992), apparently during routine registration of a backlog of unregistered specimens from decades earlier from the "Old Collection". They were not the only specimens handled at this time. On 16th December, 83 specimens were registered and a further 19 on the 18th December, many of which were "no data". The risk of circular reasoning cannot be excluded if the person registering these specimens was aware that Ramsay had recorded 22 specimens from the Expedition, and if this influenced their inclusion of otherwise doubtful attributions in an attempt to accord with that number. This scenario is supported by the inclusion of endemic Australian species (see above), along with the *Eptesicus* specimen that is probably a species limited to the northern hemisphere (Table 1). If Ramsay's list had been consulted at the time, however, the inconsistencies between his list and those registered would have been obvious. Six small bat specimens were registered compared to two given by Ramsay, along with three Sugar gliders not listed by Ramsay. The four extra small bats and three gliders enabled the total to be reached and offset the seven rodents listed by Ramsay that were presumably not found in 1913.

Despite these inconsistencies, however, we do not doubt the validity of the association of the majority of specimens with the Expedition. A perusal of the AM electronic specimen Registers for all biological collections reveals that, as for the mammal specimens, the data associated with most specimens

is restricted to attribution to the Expedition, often with the general locality of "Fly River" and are mostly without specific dates or localities.

Our aim to provide the first published inventory of AM mammals collected on the Expedition is based largely on AM specimen labels and the Mammal Register. Further insights are likely from future taxonomic revisions that clarify the identification of rodent and bat specimens collected, and from Expedition reports. Froggatt's unpublished Expedition diary reveals that a significant proportion of mammals were opportunistically collected by Expedition staff and their archival documents could resolve current uncertainty about the attribution of some specimens to the Expedition.

Further efforts to locate mammal specimens from the Expedition that might reside unrecognized in other institutional collections should be alert to recurring annotations on AM specimens of "Geographical Expedition to New Guinea", and "G.S.E." (= Geographical Society Expedition). Some invertebrate specimens are listed in the AM database as "Geological Soc Expedition", a likely misreading of Geog. Soc Expedition. Perhaps "Bonito River" might be associated with some specimens. Froggatt used the name Bonito River for zoological specimens collected from the Strickland River at least until late October, 1885 (see note 19 of Dwyer *et al.*, 2015). For example, several bird specimens in Museum Victoria, Melbourne are recorded as collected by Froggatt on Bonito River. Two other bird specimens are listed as collected by Haacke, presumably Johann Wilhelm Haacke (chief scientist of the Expedition) and one by "Everett", perhaps a misreading of Everill, a reference to Expedition leader, Captain Henry C. Everill.

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