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**A New Species of *Pteralopex***  
**(Chiroptera: Pteropodidae)**  
**from Montane Guadalcanal, Solomon Islands**

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ABSTRACT. *Pteralopex pulchra* n.sp. is described. It is known from a single specimen collected at 1,230 m on the south slopes of Mount Makarakomburu, Guadalcanal, Solomon Islands. It is probably restricted to altitudes in excess of 1,200 m, where it possibly replaces *Pteralopex atrata* which is restricted to lower elevations. This species pair possibly forms the only example among Solomon Islands mammals of altitudinal replacement. The morphology of *P. pulchra* n.sp. is intermediate in some respects between that of the two previously known Solomon Islands species (*P. anceps* and *P. atrata*), and the Fijian *P. acrodonta*. *Pteralopex pulchra* n.sp. is unique however in the possession of extensively black and white mottled wings, bright red eyes and a yellowish venter which contrasts strongly with the blackish back.

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The first species of the genus *Pteralopex* to become known was *P. atrata*, described by Thomas (1888) who based his description upon material collected by C.W. Woodford at Aola, Guadalcanal Island, Solomons. These specimens were almost certainly collected near sea level as Woodford (1890) states that he was unable to penetrate far inland during his stay at Aola. In 1909 Anderson described a second and closely related species, *P. anceps* from Bougainville. Sanborn (1931) subsequently reported *P. atrata* from Santa Isabel (also known as Ysabel), while Phillips (1968) recorded *P. anceps* from Choiseul. Figure 1 shows the distribution of these species. The two species were considered to be distinct

until Laurie & Hill (1954), then Phillips (1968) treated *P. anceps* as a subspecies of *P. atrata*. In 1978 Hill & Beckon described a third species, *P. acrodonta*, from montane forests on Taveuni, Fiji. They also reconsidered the taxonomic status of the Solomon Island forms, and considered that there were good grounds for the recognition of two distinct species in these islands, *P. atrata* from Guadalcanal and Ysabel, and *P. anceps* from Bougainville and Choiseul.

The new species of *Pteralopex* described here was discovered during a survey of the mammals of the south-west Pacific region organised by the Australian Museum. It is based upon a single individual whose morphology

is so different that I have no doubt as to its distinctness from all previously described forms. I have compared it with a large and previously unreported series of *Pteralopex atrata* and *P. anceps* held in the Australian Museum. All of the seven *P. atrata* in the latter collection are from Guadalcanal, while the *P. anceps* are from Bougainville (6) and Buka Island, north of Bougainville (1).

Hill & Beckon (1978) diagnose the genus *Pteralopex* by its possession of the following features: the wings are inserted at or near the midline of the back along the spine, the sagittal crest is well developed, the postorbital processes usually reach the zygomata, the orbits are upwardly directed, the rostrum is short and

parallel sided, the upper canines massive, the I/2 enlarged, and the molariform teeth are cuspidate. They also list a series of more minor dental features. All of these features are characteristic of the new species.

### Materials and Methods

The comparative material used during this study is listed in Appendix 2. Some of the measurements in Table 1 (Appendix 1) were taken from Hill & Beckon (1978). Dental terminology follows Hill & Beckon (1978), except that 'premolar' is abbreviated as 'P' rather

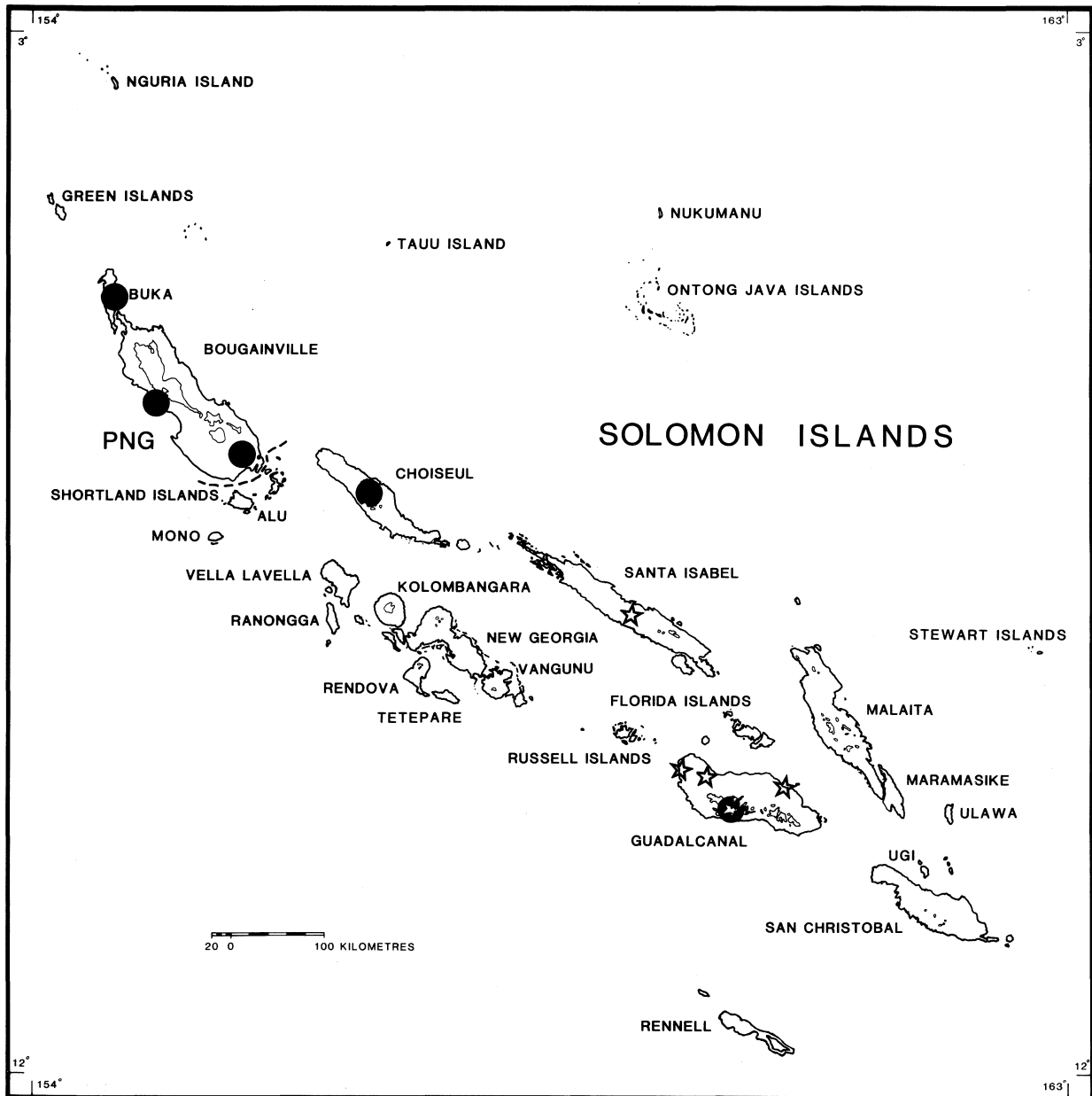


Fig.1. Map of the Solomon Islands showing locality records for the species of *Pteralopex*. Dots = *P. anceps*, stars = *P. atrata*, star in circle = *P. pulchra*. The occurrences on Choiseul and Ysabel are not localised beyond the island upon which the specimen was collected.

than 'pm'. The holotypes of the three previously described species of *Pteralopex* were examined and photographed during a visit to the British Museum (Natural History) during November 1989. Colour terminology where capitalised follows Smithe (1974). All measurements are in mm and weights in grams. The holotype of *P. pulchra* was measured and weighed when freshly dead in the field. Summary statistics were generated using the STATISTIX package.

### Systematics

*Pteralopex* Thomas, 1888

*Pteralopex pulchra* n.sp.

Figs 2,3, Table 1

**Type material.** HOLOTYPE, AM M21842 (field number LA255), adult female body in spirit, with the tongue, eyes and parts of the masseters retained and the skull cleaned and extracted. Collected on 17 May 1990 in a mistnet set at 1,230 m altitude, southern slopes of Mount Makarakomburu (9°44'S 160°01'E), by T. Flannery, I. Kaujare and T. Leary. Breast muscle was extracted and placed in 90% alcohol in the field, and samples of liver, kidney and heart were frozen in liquid nitrogen.

**Etymology.** Beautiful (L.), the generic name being feminine. For the striking red eyes, black and white

wing membranes and yellowish venter which together make this the most attractive of the *Pteralopex* species.

**Diagnosis.** Smallest species of *Pteralopex*, differing in possession of extensive black and white mottling on wings, white ear bases and contrasting dorsum and venter. Further differs from *Pteralopex atrata* and *P. anceps* in narrower ears, yellowish rather than blackish venter, and, except some *P. atrata*, P/3 lacking anterolingual cusp. Further differs from *P. acrodonta* by less cuspidate molars, smaller M2/, M/3, and black dorsum.

**Description.** Holotype weight = 280 gms. Head-body length = 161.8 mm, ear length = 16.8 mm, tibia length = 56.1 mm, hindfoot length = 43.1 mm. Nipples and mammary glands very prominent in life and milk could be extruded. Ears short and narrow, rising to a blunt tip, entirely hidden by fur in life (thus differing markedly from broad, more rounded ears of *P. atrata* and *P. anceps*). Ears with sparse covering of long black hairs both internally and externally. Distalmost three quarters of ear black, but base, both internally and externally, is white. Wings inserted along midline of spine, and posteriorly at base of second toe. Dorsal surface of wing black, ventral surface strikingly patterned black and white. Mottling irregular; white predominating anterior to forearm, in middle portion of wing proportion of black and white approximately equal, while along posterior margin black predominates (Fig.2). Three specimens of *P. atrata* have much more limited white



Fig.2. The holotype of *Pteralopex pulchra* in ventral view in life.

mottling. Small claw present on digit 2. Calcar length = 13 mm, interfemoral membrane black and approximately 13 mm wide on each side, joining at posterior end of body to form a narrow flange. Fur of head, face and back is long, woolly and blackish. Venter largely yellowish, close to Buff. Midline of venter has pale Cream line approximately 1 cm wide extending entire length of the body. Fur of venter darkens at posterior of body. Band of long Buff hairs extends along ventral surface of ulna and onto wing membrane for about 20 mm posteriorly. Tibia well furred with black hairs to ankle. Back densely furred in long black hairs, extending onto proximal third of forearm. Iris in life bright red, from memory close to Poppy Red.

Cranium and dentaries (Fig.3) are largely similar to *P. atrata*, but smaller, more gracile. Rostrum relatively narrower; sagittal crest less well developed.

Only single soft palate of *P. atrata* available for comparison; both species with 8 well-defined ridges

posterior to P4/. Differs markedly from *P. atrata* in that *P. pulchra* ridges form much tighter arcs and posterior 6 are ornamented with anteriorly-projecting serrations (Fig.3). Similar serrations evident only on posteriormost 2 ridges in *P. atrata*. Anterior part of palate similar in both, but again all 4 ridges form more acute arcs in *P. pulchra*.

Dentition largely similar to *Pteralopex atrata*, but differs in following ways; all teeth smaller, but largely similar proportions. Upper canine differs only in that posterolingual cusp less well developed. P2/ even more rudimentary than *P. atrata*. P3/ differs in having distinct posterobuccal cusp, while P4/ lacks posterobuccal cusp (present in 2 out of 3 *P. atrata* available). I/2 relatively more reduced. P/3 strikingly different; in *P. pulchra* no anterolingual cusp, anterior of tooth dominated by single sharp cusp from which sharp ridge descends anteriorly. A single specimen of *P. atrata* has similar morphology. P/4 differs in that anterior cingulum not as well developed as *P. atrata*. M/1 differs in that

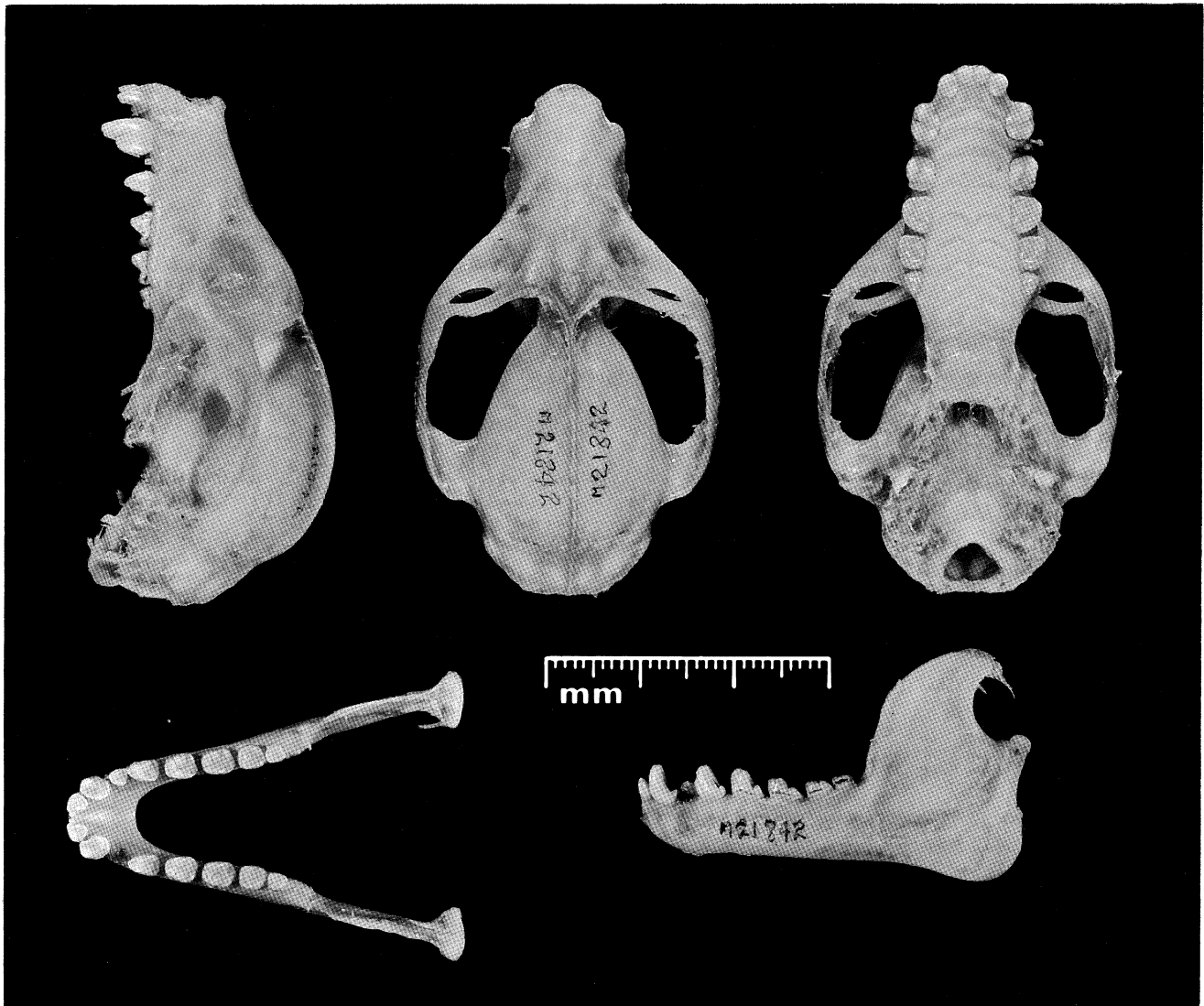


Fig.3. The skull and dentaries of AM M21842, the holotype of *Pteralopex pulchra*.

principal anterior cusp not as large, but anterolingual cusp larger, comprising lingual third of anterior part of tooth.

### Discussion

*Pteralopex pulchra* shares similarities with *P. acrodonta* on the one hand, and the two Solomon Island species *P. anceps* and *P. atrata* on the other. It is similar in size to *P. acrodonta*, and both share the distinctive P/3 morphology where the anterior part of the tooth consists of a single cusp and anterior ridge. Similarities shared with the other two Solomon Islands species include reduction of the posterior molars and less cuspidate molars and P4/ (although an additional labial cusp is present on P4/ in *P. pulchra*).

Analysis of the phylogenetic relationships of the species of *Pteralopex* must await a full biochemical and morphological study, which I hope to undertake when sufficient material has been accumulated. However, the P/3 morphology of *P. acrodonta* and *P. pulchra* probably represents something near the plesiomorphic condition, as a similar morphology is seen in the four species of the *Pteropus pselaphon* group, considered by most workers (e.g. Hill & Beckon, 1978) as being closely related to (and thus a good outgroup for) the species of *Pteralopex*.

Little is known of the biology of *Pteralopex pulchra*. The only known specimen, a female, was lactating when caught on 17 May 1990. It was caught in a mistnet set on a cleared ridgetop at 1,230 m elevation on the southern slopes of Mount Makarakomburu. The forest where the net was set was low (canopy height on the ridge around 4 m), although emergent *Metrosideros collina* trees reached 10 to 15 metres. The *Metrosideros* was flowering at the time of the visit. The forest itself was very mossy, with tree-ferns being abundant. Climbing bamboo was a common element, as was a species of *Acmena*. Palms (represented by several species) were also abundant, and in parts the forest floor was littered with fallen palm fruits which were around 1 cm in diameter. A large palm which seemed to be restricted to elevations above 900 m was carrying large bunches of conspicuous red fruit.

The night before capturing the holotype in a mistnet I spotlighted an individual almost certainly representing this species at around 1,200 m. It was seen at around 10.15 pm hanging in a *Metrosideros collina* beside the track. Extensive mistnetting and spotlighting below 1,200 m failed to reveal the species. The highest elevation reached by our survey was 1,230 m. *Pteropus woodfordi*, *Melonycteris* sp., *Nyctimene albiventer* and *Macroglossus minimus* were taken in the same mistnet on the night of the capture.

Upon the basis of mistnetting and spotlighting results I suspect that *Pteralopex pulchra* may not occur below

around 1,200 metres. *Pteralopex atrata* occurs at least up to 400 m elevation (AM M19219-20 were taken at this elevation in the Poha River area of northern Guadalcanal), and may well extend higher. However, I saw none during our 1990 survey, which extended from 380 m to 1,230 m on Mount Makarakomburu, southern Guadalcanal, nor, despite intensive effort, was *P. pulchra* seen below 1,200 m. It appears that *P. pulchra* replaces *P. atrata* altitudinally above around 1,200 m on the island.

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### References

- Anderson, K., 1909. Two new fruit bats from the Solomon Islands. *Annals and Magazine of Natural History* (8)3: 266–270.
- Hill, J.E. & W.N. Beckon, 1978. A new species of *Pteralopex* Thomas, 1888 (Chiroptera: Pteropodidae) from the Fiji Islands. *Bulletin of the British Museum of Natural History Zoology Series* 34: 65–82.
- Laurie, E.M.O. & J.E. Hill, 1954. List of Land Mammals of New Guinea, Celebes and Adjacent Islands 1758–1952. British Museum (Natural History), London.
- Phillips, C.J., 1968. Systematics of the megachiropteran bats of the Solomon Islands. University of Kansas Publications. Museum of Natural History 16: 777–837.
- Sanborn, C.C., 1931. Bats from Polynesia, Melanesia and Malaysia. *Publications of the Field Museum of Natural History. Zoological Series* 18: 7–29.
- Smithe, F.B., 1974. Naturalist's Colour Guide Supplement. American Museum of Natural History, New York.
- Thomas, O., 1888. Diagnoses of six new species of mammals from the Solomon Islands. *Annals and Magazine of Natural History* (6)1: 155–158.
- Woodford, C.W., 1890. A Naturalist Among the Head Hunters, Being an Account of 3 Visits to the Solomon Islands in the years 1886, 1887 and 1888. George Phillip and Sons 32 Fleet St London.

## APPENDIX 1

Table 1. A series of measurements for the species of *Pteralopex*, taken from Australian Museum specimens and Hill & Beckon (1978). FA = forearm length, GL = greatest length of skull, CBL = condylobasal length, PL = palate length, ON = orbit-nasal opening length, LW = lachrymal width, IW = interorbital width, PW = postorbital width, OD = orbital diameter, ZB = bizygomatic breadth, BB = braincase breadth, MB = bimastoid breadth, CEW = greatest external width across upper canines, CAW = greatest width across upper canine alveoli, CIW = least internal width across upper canines, PIW = least width across upper fourth premolars, MEW = greatest external width across upper first molars, MAW = greatest width across first upper molar alveoli, UTL = length from upper canine to last upper molar, ML = greatest length of mandibles, LTL = length from lower canine to last lower molar. X = mean, R = range, N = sample size, STD = standard deviation.

	<i>atrata</i>	<i>anceps</i>	<i>acrodonta</i>	<i>pulchra</i>		<i>atrata</i>	<i>anceps</i>	<i>acrodonta</i>	<i>pulchra</i>
FA X	141.2	161.0	118.0	117.9	MB X	22.4	25.2	20.8	18.8
R	137.6-146.6	144.8-169.0	116.5-119.5	—	R	21.5-23.7	24.5-26.0	20.6-20.9	—
N	7	6	2	1	N	7	6	2	1
STD	3.23	8.50	2.12	—	STD	0.76	0.52	0.21	—
GL X	67.8	74.3	58.1	55.4	CEW X	16.9	18.3	14.4	12.8
R	65.8-69.9	70.2-79.6	57.5-58.6	—	R	15.9-17.4	17.1-18.8	14.2-14.6	—
N	7	6	2	1	N	7	6	2	1
STD	1.58	3.70	0.42	—	STD	0.51	0.68	0.28	—
CBL X	64.5	70.8	56.7	53.3	CAW X	15.4	16.5	13.3	12.4
R	63.0-66.7	67.3-75.7	56.4-57.0	—	R	14.4-16.0	15.9-17.2	13.3	—
N	7	6	2	1	N	7	6	2	1
STD	1.54	3.50	0.42	—	STD	0.55	0.46	—	—
PL X	36.4	40.0	32.0	31.5	CIW X	8.9	9.1	8.1	7.2
R	34.7-38.5	37.3-43.1	31.8-32.2	—	R	8.1-9.5	8.1-10.4	8.0-8.3	—
N	7	6	2	1	N	7	6	2	1
STD	1.22	2.32	0.28	—	STD	0.44	0.81	0.21	—
ON X	17.7	19.2	15.4	15.7	PIW X	10.7	11.2	9.6	7.6
R	16.8-19.0	17.6-21.7	15.0-15.7	—	R	10.1-11.3	10.3-12.1	9.4-9.5	—
N	7	6	2	1	N	7	5	2	1
STD	0.94	1.81	0.50	—	STD	0.44	0.62	0.07	—
LW X	12.8	14.3	13.5	11.0	MEW X	20.7	22.6	16.7	15.6
R	11.7-13.3	13.4-15.0	13.4-13.5	—	R	20.0-21.6	20.4-24.6	16.0-16.3	—
N	7	6	2	1	N	7	6	2	1
STD	0.57	0.55	0.07	—	STD	0.57	1.47	0.21	—
IW X	8.9	10.1	9.4	8.1	MAW X	19.2	21.0	15.5	14.7
R	8.4-9.6	9.5-10.7	9.1-9.7	—	R	18.5-20.0	19.3-22.0	15.1-15.9	—
N	7	6	2	1	N	7	6	2	1
STD	0.38	0.46	0.42	—	STD	0.63	1.17	0.57	—
PW X	6.6	7.3	7.6	6.6	UTL X	26.0	28.2	22.0	19.8
R	5.4-7.2	6.4-8.0	7.2-8.1	—	R	25.2-27.7	26.0-29.7	21.9-22.0	—
N	7	6	2	1	N	7	6	2	1
STD	0.64	0.56	0.63	—	STD	0.89	1.48	0.07	—
OD X	12.8	13.8	12.5	11.4	ML X	52.7	58.5	43.9	43.2
R	11.8-13.4	13.6-14.3	12.4-12.5	—	R	50.2-54.5	53.9-61.6	43.3-44.5	—
N	7	6	2	1	N	7	6	2	1
STD	0.57	0.25	0.07	—	STD	1.57	3.15	0.85	—
ZB X	38.7	42.0	33.8	32.2	LTL X	27.8	31.0	24.2	22.2
R	36.9-39.9	39.3-44.3	32.5-35.1	—	R	27.3-28.5	29.0-32.5	24.2	—
N	7	5	2	1	N	7	6	2	1
STD	1.20	1.82	1.84	—	STD	0.47	1.57	—	—
BB X	22.9	25.1	21.8	21.2					
R	21.7-23.9	24.0-26.3	21.5-22.0	—					
N	7	6	2	1					
STD	0.71	0.83	0.35	—					

## APPENDIX 2

Specimens of *Pteralopex* held in the Australian Museum that were used in this study for comparison with *P. pulchra*.

*Pteralopex atrata*: AM M3374-5, adult males, and AM M4218-9, adult females entire in spirit, collected at Lavors (almost certainly Lavoro Plantation), western Guadalcanal; AM M3373, adult male, body in spirit, skull extracted, same locality; AM M19219-20, adult female skin and skulls, collected at 400 m altitude, Poha River Valley, western Guadalcanal.

*Pteralopex anceps*: AM M6346, entire female in spirits, collected near Buin, south Bougainville; AM M6282-3, AM M6497 adult male, and AM M6347 and AM M6498 skin and skulls collected at Buin, south Bougainville. AM M19822, adult male skin and skull, collected near Malasang Hamlet, Buka Island.