

BEAUFORTIA

A SERIES OF MISCELLANEOUS PUBLICATIONS

INSTITUTE OF TAXONOMIC ZOOLOGY (ZOOLOGICAL MUSEUM)

UNIVERSITY OF AMSTERDAM

No. 355

Volume 29

October 12, 1979

Taxonomy and zoogeography of *Dobsonia* Palmer, 1898, from the Louisiade Archipelago, the D'Entrecasteaux Group, Trobriand Island and Woodlark Island (Mammalia, Megachiroptera)

WIM BERGMANS

ABSTRACT

A lectotype is selected — and its skull figured, for the first time — for *Dobsonia pannietensis* (De Vis, 1905), which is considered to be a good species. Specimens have been examined from the Louisiades, the D'Entrecasteaux Group, Trobriand Island and Woodlark Island. The species varies per island or island group in dimensions and/or proportions. The skull of the holotype of *Dobsonia remota* Cabrera, 1920, is figured — also for the first time. The possible synonymy of this species with *D. pannietensis* is discussed. The holotype, from Trobriand, is still the only known specimen. Specimens from Bougainville, Solomon Islands, referred to *remota* by McKean (1972), are in fact juvenile *Dobsonia inermis* Andersen, 1909.

INTRODUCTION

In 1905 De Vis hesitatingly proposed a new species of spinal-winged fruit bat, *Cephalotes pannietensis*, for four specimens from Panniet Island, Louisiade Archipelago (fig. 1), in the collection of the Queensland Museum at Fortitude Valley (QMF). The species would be very much like *Cephalotes peronii* Geoffroy Saint-Hilaire, 1810, he wrote, but his further description contains neither a differential diagnosis, nor an illustration of one of his syntypes. Andersen (1909), who divided the genus *Dobsonia* Palmer, 1898 — to which these *Cephalotes* belong — into species groups on the basis of teeth characters, grouped *D. pannietensis* (De Vis) with *D. moluccensis* (Quoy & Gaimard, 1830) from the New Guinea mainland and islands west of this and *D. exoleta* Andersen, 1909, from Celebes. In 1912 Andersen wrote that, within this *moluccensis* group, *pannietensis* stands nearest to *exoleta*. Andersen (1909, 1912) never saw any of the syntypes of *pannietensis*. His conclusions

were based on two adult specimens and one juvenile from Trobriand Island (= Kiriwina) and two juveniles from Fergusson Island, D'Entrecasteaux Group, in the collection of the British Museum (Natural History) (BMNH), which he had identified as *pannietensis*. In his diagnosis of this species he did not include the original measurements published by De Vis in 1905 (Andersen, 1909, 1912). There are no later references to *Dobsonia pannietensis* than the mere listing of it, as a subspecies of *D. moluccensis*, by both Laurie & Hill (1954) and Lidicker & Ziegler (1968), and the rejection of this placement on the basis of size differences by Bergmans (1975; 1978). Over the last few years I could gather enough new information on *pannietensis*, of which there are many specimens in the American Museum of Natural History (AMNH), for a more detailed though certainly not yet sufficient account of its taxonomy and distribution, which is presented in this paper.



Fig. 1. The position of islands mentioned in this paper, from where *Dobsonia pannietensis* (De Vis) (Louisiades, d'Entrecasteaux Group, Trobriand and Woodlark) and *Dobsonia remota* Cabrera (Trobriand) are known.

The only described species known to be at least partly sympatric with *pannietensis* is *Dobsonia remota* Cabrera, 1920, based on one specimen from Trobriand Island in the collection of the Museo Nacional de Ciencias Naturales in Madrid (MNCN). This species would be a member of Andersen's *peronii* group, until 1920 thought to be restricted to the Lesser Sunda Islands. The differences would be mainly in size, *remota* being much smaller than the other members of this group. Cabrera (1920) published no illustrations of the skull of the holotype, which is very unfortunate because later the mandible, including the lower teeth — crucial for the determination of the species group involved — disappeared (Prof. Dr. E. Ortiz, *in lit.*, 20-XII-1975). Later references to *remota* are by Laurie & Hill (1954) who just listed it, Lidicker & Ziegler (1968) who quoted Cabrera's original description and measurements (but *added* the colour of the claws without mentioning the source of this information), McKean (1972) who preliminarily identified two specimens from Bougainville, Solomon Islands, as *D. remota*, and Bergmans (1978) who reflected on the problem of determining its relationships since the disappearance of the lower jaw of the holotype.

Recently, I received a series of skull photographs of the holotype, and I could examine one of McKean's Bougainville specimens. In addition to the account of *D. pannietensis*, this paper also contains some conclusions drawn from this material.

***Dobsonia pannietensis* (De Vis, 1905)**

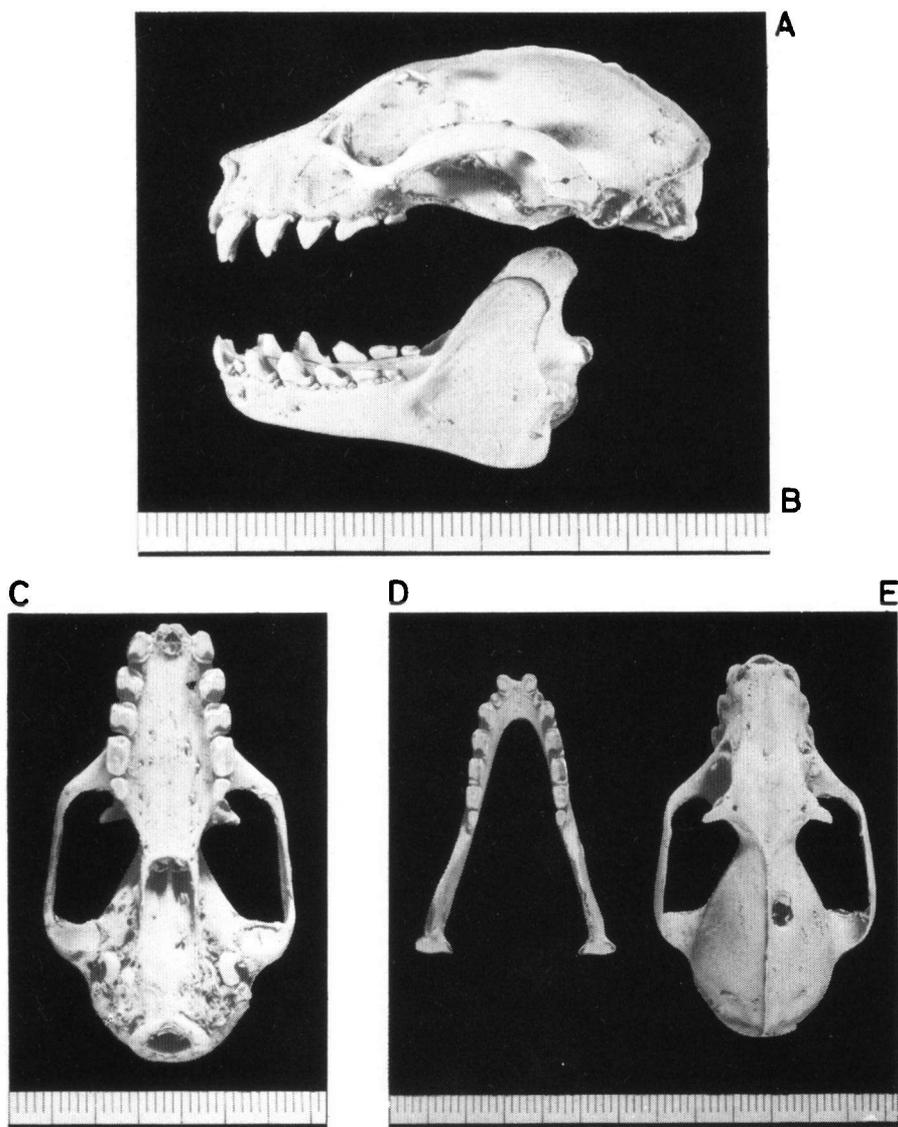
Cephalotes peronii. — Thomas, 1895: 163; Thomas, 1896: 526; Heller, 1897:4.

Cephalotes pannietensis De Vis, 1905: 36.

Dobsonia pannietensis. — Andersen, 1909: 530; Andersen, 1912: 455; Tate, 1940: 7; Bergmans, 1975:6; Bergmans, 1978: 11.

Dobsonia moluccensis pannietensis. — Laurie & Hill, 1954: 42; Krutzsch, 1959: 390; Lidicker & Ziegler, 1968: 29.

Type material. — For his description, De Vis (1905) had four specimens from Panniet Island at his disposal: one male and three females (one with extracted skull) in alcohol. He did not indicate a particular specimen as holotype, nor did he state to which one his series of body measurements applies. He did not give skull measurements. Tate (1940) wrote that all four "co-types" were females, numbered 1964—1967, and that the skull of 1966 had been cleaned. Dr. S. Van Dyck of the Queensland Museum informed me (*in lit.*, 8-XI-1978) that the correct data are: no J1964, ♀, alcohol, skull recently cleaned; J1965, ♀, alcohol; J1966, ♀, alcohol, skull cleaned; and J1967, ♂, alcohol. The syntype series had been registered on 21-VII-1914. Dr. Van Dyck also provided me with the here published skull photographs of specimen J1964 (figs 2 A-E). It is desirable, in the present stage of *Dobsonia* studies, to fix one of the syntypes as lectotype, and specimen J1964 of the QMF collection is here proposed as such. QMF J1965-1967 may then be considered as paralectotypes.



Figs. 2A—E. Skull and mandible of the lectotype of *Dobsonia pannietensis* (De Vis, 1905) from Panniet Island (QMF J1964); A: left aspect of skull; B: left view of mandible; C: ventral side of skull; D: dorsal side of mandible; E: dorsal side of skull. Scales: mm. Photos by Dr. S. Van Dyck.

Other specimens (skins and skulls, and AMNH specimens collected by R. F. Peterson, unless otherwise stated). — (All but the Panniet Island specimens and those from Trobriand Island and Fergusson Island in the collection of the British Museum (Natural History) (BMNH) have been examined by the present author.)

Panniet Island (= Panaete): 1 ♀, alcohol, "Panneate", registered 14-X-1920 (QMF J3437).

St Aignan Island (= Misima): 1 subadult ♀ and one juvenile ♀, 24-VIII-1930, "St. Aignan", Whitney South Sea Expedition (AMNH 99965-6); 1 adult ♀, 26-VII-1956, northern slopes of Mount Sisa, 350 m (AMNH 159115); 1 subadult ♀ and 1 juvenile ♀, 6- and 8-VIII-1956 (AMNH 159116-7).

Sudest Island (= Tagula): 2 adult ♂♂, 13-IX-1956, Rambuso (AMNH 159134-5); 1 subadult ♂, 16-IX-1956, Rambuso (AMNH 159136); 1 ♂, skull fragments, 21-IX-1956, Rambuso (AMNH 159243); 1 adult ♂ and 1 adult ♀, 17-VIII-1956, and 1 adult ♂ and 1 adult ♀, 18-VIII-1956, and 1 adult ♂, 20-VIII-1956, Joe Landing, sea level (AMNH 159129-33).

Rossel Island (= Arova): 1 adult ♂, 8-X-1956, Abaleti, 50 m (AMNH 159118); 6 adult ♂♂ and 1 juvenile ♀, 10-X-1956, Abaleti, 50 m (AMNH 159119-25; 159123: skull only); 1 adult ♂, 22-X-1956, and 2 adult ♀♀, 25- and 27-X-1956, Jinju, sea level (AMNH 159126-8).

Goodenough Island (= Dauila), all specimens collected by H. M. Van Deusen: 1 adult ♂ and 1 subadult ♀, 30-IX-1953, Bolu Bolu, sea level (AMNH 157362-3); 2 adult ♀♀, 9-X-1953, near Top Camp, east slopes, ca. 1400 m (AMNH 157364-5); 4 mandibles, sex unknown, 18-X-1953, bought, mountains near Garuwata (AMNH 158289-92); 1 adult ♀ and 1 subadult ♀, 19-X-1953, and 1 adult ♂ and 2 juvenile ♂♂ and 2 adult ♀♀, 21-X-1953, near Top Camp, east slopes, ca. 1400-1500 m (AMNH 157366-72); 1 adult ♂, 26-X-1953, near 2 camp, 900 m (AMNH 157373); 3 mandibles, sex unknown, 1-XI-1953, bought, east slopes (AMNH 158293-5).

Fergusson Island: 1 immature ♂, alcohol, skull extracted, and 1 immature, skin and skull, coll. A.S. Meek, "Fergusson Island" (BMNH 95.5.8.4. and 96.11.5.19); 1 adult ♂, 24-V-1956, 2 juvenile ♀♀, 29- and 30-V-1956, Iamelele, 15 m (AMNH 159099-101); 2 subadult ♂♂ and 1 juvenile ♀, 15-VI-1956, Ukaiokaio (AMNH 159102-4); 2 adult ♂♂, 24-VI-1956, and 1 adult ♀ and 2 subadult ♀♀, 20-, 22-, and 23-VI-1956, Agamoia, 200 m (AMNH 159105-9).

Normanby Island (= Duau): 1 juvenile ♀, 15-IV-1956, 3 adult ♂♂, 20- and 28-IV- and 16-V-1956, Waikaiuna, 20 m (AMNH 159110-3); 1 adult ♂, 4-V-1956, Mount Pabinama, 820 m (AMNH 159114).

Trobriand Island (= Kiriwina): 1 juvenile, 15-II-1895, 1 adult, 15-V-1895, 1 adult ♀, alcohol, skull extracted, "Kiriwina", coll. A.S. Meek (BMNH 96.11.5.6-8); 4 adult ♀♀, 11-, 12-, and 14-XII-1956, Liluta, 10 m (AMNH 159151-4).

Woodlark Island (= Murua): 1 adult ♂ and 1 juvenile ♀, 6-XI-1956, 2

adult ♂♂ and 2 subadult ♂♂, and 1 adult ♀ and 1 juvenile ♀, 7-XI-1956, 1 subadult ♀, 12-XI-1956, 1 adult ♀, 13-XI-1956, 1 juvenile ♂, 1 adult ♀ and 2 juvenile ♀♀ (1 in alcohol), 15-XI-1956, 1 juvenile ♀, 20-XI-1956, Kulumadau, 200 m (AMNH 159137-50, 190640).

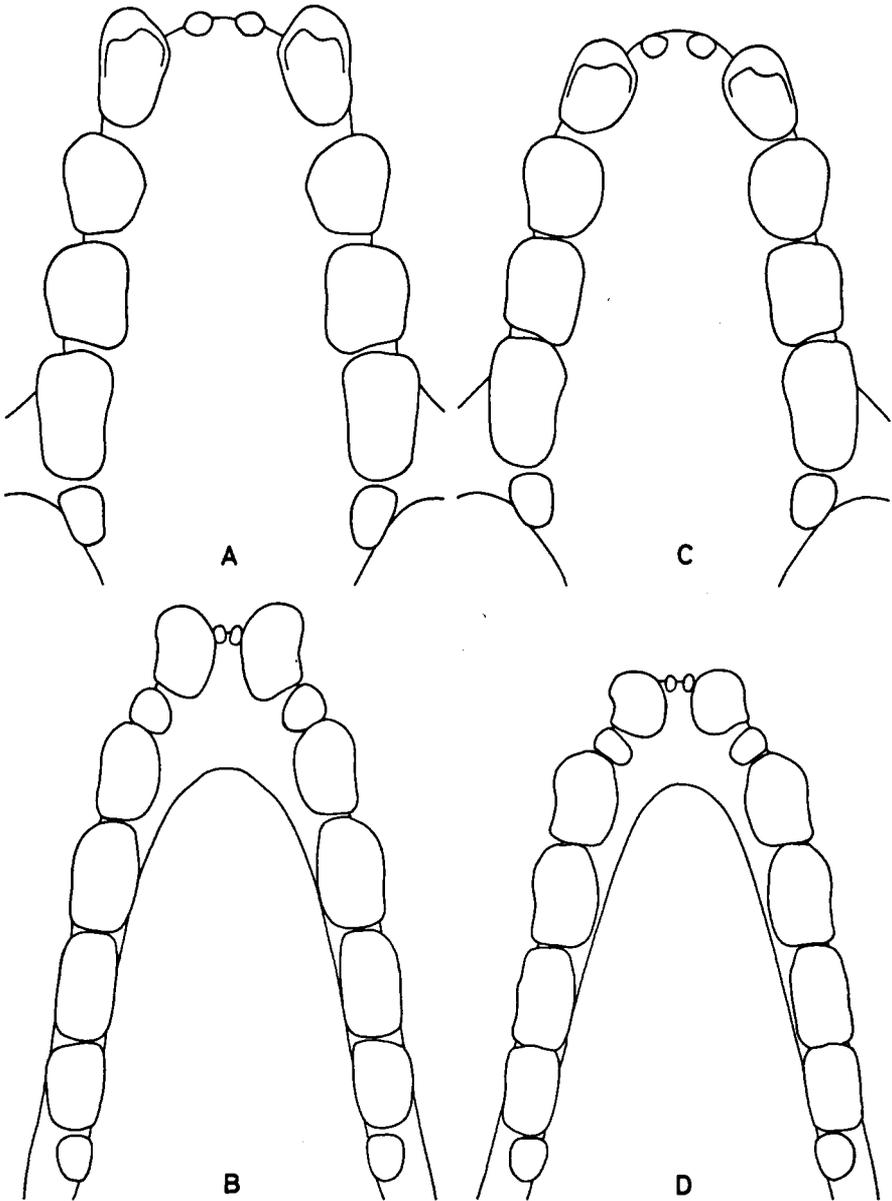
Remarks. — De Vis (1905) gave ample information on a number of external features of *Dobsonia pannietensis*, but next to nothing on its skull or dentition. A few years later Andersen (1909; 1912) made it clear that, apart from size, external characters do not serve well to distinguish the various species of *Dobsonia*, and that teeth characters are far more reliable. Bergmans (1975), dealing with *Dobsonia* from Waigeo and from the Solomon Islands, noticed differences in skull form between the two species involved.

Andersen's description and measurements of *pannietensis* (1912) are based on one adult specimen of unknown sex, one adult female and one juvenile from Trobriand, and on two immature specimens from Fergusson Island. The body and skull measurements he gave are thus those of the two adults from Trobriand. This island, however, is not inhabited by typical *pannietensis*, but by a considerably smaller form, as will be shown in these pages. Andersen's diagnosis and description of *pannietensis* centre around its similarity to *Dobsonia exoleta* Andersen, 1909, from Celebes. If compared to that species, he found *pannietensis* to be smaller in every respect (forearm lengths about 109—112 mm against 112.5—116 in *exoleta*, total skull lengths 47—48 mm against about 52 in *exoleta*), and to possess weaker median surface ridges in its molars (weak ridges in M^1 and M_2 and no ridge in M_1 , against "distinct but low" ridges in these molars in *exoleta*); and, of course, the distribution areas of both species are widely separated (Andersen, 1912).

With regard to size the distinction does not hold. Forearm lengths in the four syntypes of *pannietensis* are 117.5 (♀, QMF J1964), 115.8 (♀, QMF J1965), 118.2 (♀, QMF J1966) and 114.0 mm (♂, QMF J1967), respectively, and in another specimen from Panniet Island 115.0 mm (♀, QMF J3437); greatest skull lengths are 50.3 (QMF J1964) and 49.3 mm (QMF J1966) (Dr. S Van Dyck, *in lit.*, 22-IV-1976 and 8-XI-1978). In my opinion, specimens from other Louisiades do not differ from those from Panniet, and in sum the forearm length in 19 typical *pannietensis* (both sexes) runs from 112.4 to 120.3 mm and the greatest skull length in 16 specimens from 49.3 to 53.4 mm (table 1).

In general, the median surface ridges of the molars are as Andersen described them: weakly developed, if at all. In M^1 it is usually present, often only posteriorly and quite often weak. In M_1 there is no ridge or only a trace of it in the majority of cases, and when it is developed it remains weak. In M_2 it is usually relatively well developed, though in some cases also weak or barely traceable.

The condition of these molars is certainly different from that in *exoleta*, but as sole differential character between species it is not very substantial. Due to lack of time during my visit to the American Museum of Natural



Figs. 3A—D. Outlines of teeth rows in *Dobsonia pannietensis* (De Vis) (AMNH 157362) (A: ventral view of upper teeth; B: dorsal view of lower teeth), and in *Dobsonia exoleta* Andersen (Museum Zoologicum Bogoriense, Bogor; MZB 3) (C: ventral view of upper teeth; D: dorsal view of lower teeth).

History in September, 1977, my biometrical data on *pannietensis* are insufficient for an extended analysis of other differences that might exist

between this species and *exoleta*. If compared to a number of *exoleta* skulls from North Celebes three *pannietensis* skulls from Goodenough Island which I have before me at the time of writing (AMNH 157362, -65 and -68) suggest a number of possible, relative differences. In *pannietensis*, inter- and postorbital widths tend to be larger; the dorsal side of the rostrum tapers somewhat more strongly towards the front; the front of the rostrum is lower and more slanting forward; the zygomatic arches are generally narrower; the upper teeth rows converge less strongly towards the front; the distances between upper cheek teeth are larger, especially that between C^1 and P^3 (so that when P^3-M^2 is the same in two skulls, C^1-M^2 is longer in *pannietensis*); the coronoid of the mandibulum is lower; the distance C_1-P_3 is larger. The differences in dental configuration are illustrated in fig. 3.

All these differences are of a slight nature, and their taxonomic significance may be questioned. But those in rostrum form and dentition are possibly connected with evolutionary adaptations to different food plants and should figure in discussions on the taxonomic relationship between *pannietensis* and *exoleta*.

A closely related form which separates these two geographically and therefore should also be considered is *Dobsonia anderseni* Thomas, 1914, from various islands of the Bismarck Archipelago. Thomas (1914) described this species as intermediate in size between the large *moluccensis* and the smaller *exoleta*. My collected data on *anderseni* are few but tend to confirm Thomas' statement, which implies that *anderseni* is also larger than *pannietensis*. Forearm lengths in 13 specimens of *anderseni* (from Manus Island, Ponam Islet, Emira Island, Tabar Island, Lihir Island, Boang Island, Duke of York Island and New Britain; these islands are not mapped here) range from 113.7 to 131.8 mm. But there is also a suggestion that in *anderseni* too size varies with island or island group, so that in size certain populations may about equal certain *pannietensis* and/or *exoleta* populations.

Greatest skull lengths in 8 *anderseni* specimens run from 50.5 to 54.7 mm. I do not possess an extended list of measurements of the skull of the lectotype of *pannietensis*, or of other adult specimens from the Louisiades. Measurements of specimens from Goodenough Island and from Trobriand Island are given in table 2.

From table 1 and fig. 4 it is clear that the four geographical units, i.e. the D'Entrecasteaux Islands, the Louisiades, Woodlark Island and Trobriand Island, are each inhabited by a different form of *pannietensis*. The specimens from D'Entrecasteaux Island are somewhat larger, especially in skull dimensions, than the typical form from the Louisiades. Those on Trobriand Island are relatively very small (also evident from the measurements in table 2) and the animals populating Woodlark Island appear to be intermediate between the ones from Trobriand and those from the Louisiades. Although the differences in size are distinct, I prefer not to propose taxonomic distinctions (which would be on the level of subspecies), not only because my data are not as complete as would be desirable or because the number of

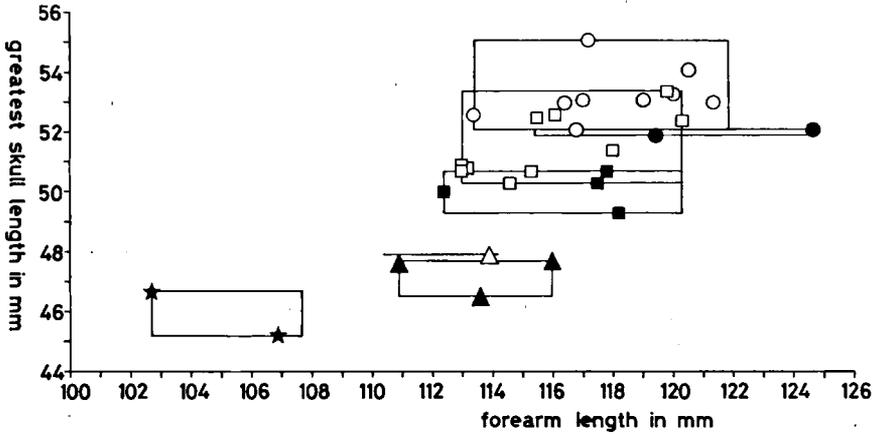


Fig. 4. The relation forearm length/greatest skull length in *Dobsonia pannietensis* (De Vis), to indicate size differences between specimens of different populations. Stars: females from Trobriand Island. Black triangles: females, and open triangles: males, from Woodlark Island. Black squares: females, and open squares: males, from the Louisiades. Black circles: females, and open circles: males, from the D'Entrecasteaux Group. The lines and squares also contain data from specimens of which only one of the two measurements could be obtained.

specimens from Woodlark Island and Trobriand Island are not really sufficient, but also because of our too fragmentary knowledge of the infraspecific variation of the closely allied *Dobsonia anderseni* from the Bismarck Archipelago referred to above.

Our knowledge of size ranges within *D. pannietensis* and *D. anderseni* is considerably augmented by the data in this paper. The distinct discontinuities with the known size range of *D. moluccensis moluccensis* (Quoy & Gaimard, 1830), emphasized earlier as an argument to maintain specific status for *pannietensis* and *anderseni*, instead of ranking them as subspecies of *moluccensis*, remain (Bergmans, 1975).

Dobsonia remota Cabrera, 1920

Dobsonia remota Cabrera, 1920: 107; Laurie & Hill, 1954: 42; Lidicker & Ziegler, 1968: 29; Bergmans, 1978: 11.

Holotype: A subadult ♀, skin and skull, collected by A. S. Meek on Trobriand Island (MNCN 19-XII-30-I).

Measurements: Table 2.

Remarks. — After Cabrera's description, in 1920, no one seems to have studied the actual type specimen. As already stated in the introduction, I was informed that the mandible of this specimen, which had been prepared as a dry skin and skull, has since disappeared. (Dr. J. M. Rey, associated with the

Table 1. *Dobsonia pannietensis* (De Vis): forearm lengths and greatest skull lengths per island.

| | ♂♂ | | | | | | ♀♀ | | | | | |
|----------------------------|----------------|-------|-----------------------|-----|----------------|-----------|-----------------------|-------------|-------------|-----------|-----------|-----------|
| | forearm length | | greatest skull length | | forearm length | | greatest skull length | | n | | | |
| | n | mean | min.-max. | n | mean | min.-max. | n | mean | | min.-max. | | |
| 1. D'Entrecasteaux Islands | 4 | 119.2 | 113.4-121.8 | 3 | 53.6 | 52.6-55.1 | | | | | | |
| | 3 | 117.9 | 116.4-120.5 | 3 | 53.1 | 52.1-54.1 | 1 | 124.6 | 1 | 52.1 | | |
| | 3 | 118.8 | 117.0-120 | 2 | 53.1 | 53.3 | 5 | 117.8 | 115.4-119.5 | 1 | 51.9 | |
| 2. Louisiade Archipelago | 6 | 115.8 | 113.0-120.3 | 7 | 51.8 | 50.7-53.4 | 2 | 117.8-120.3 | 1 | 50.7 | | |
| | 4 | 116.0 | 114.6-118.0 | 5 | 51.2 | 50.3-52.6 | 1 | 115.1 | (2) | (≥49.5) | | |
| | 1 | | 114.0 | | | | 4 | 116.6 | 115.0-118.2 | 2 | 49.3-50.3 | |
| | | | | | | | 1 | 112.4 | | 1 | 50.0 | |
| 3. Woodlark I. | 3 | 112.8 | 110.4-114.2 | (1) | | (≥47.9) | 3 | 113.5 | 110.9-116.0 | 3 | 47.3 | 46.5-47.7 |
| | | | | | | | 3 | 105.8 | 102.7-107.7 | 3 | 46.0 | 45.2-46.7 |
| 4. Trobriand I. | | | | | | | (2**) | 109 | -112 | (2**) | 47 | -48 |

* Measurements by Dr. S. Van Dyck.

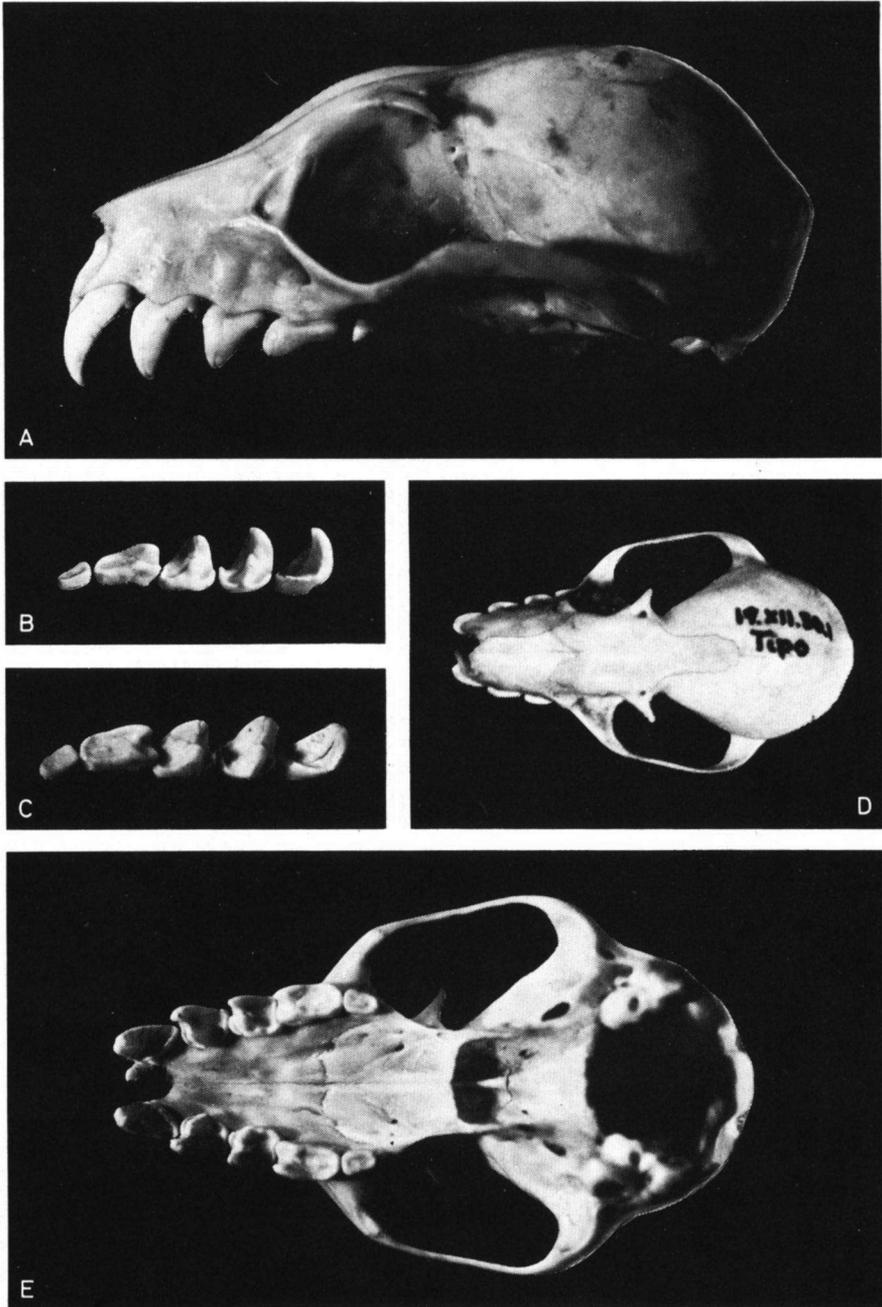
** Specimens in the British Museum (Natural History) as measured by Andersen (1912); one specimen of these two is a female.

Table 2. Measurements in mm and weights in g of *Dobsonia pannietensis* De Vis from Goodenough Island and from Trobriand Island, and of the holotype of *Dobsonia remota* Cabrera. Weights and body measurements of *D. pannietensis*, except forearm length, are copied from the field labels. The *D. remota* measurements are copied from the original description, except the greatest skull length which is an estimation by the present author.

| Species | <i>Dobsonia pannietensis</i> | | | | | | | <i>Dobsonia remota</i> |
|--|------------------------------|---------------|---------------|------------------|--------|--------|--------|------------------------|
| | Goodenough Island | | | Trobriand Island | | | | Trobriand Island |
| Provenience | Goodenough Island | | | Trobriand Island | | | | Trobriand Island |
| Collection | AMNH | AMNH | AMNH | AMNH | AMNH | AMNH | AMNH | HNCH |
| Reg.no. | 157362 | 157368 | 157365 | 159151 | 159152 | 159153 | 159154 | 19-XII-30-I |
| Sex | ♂ | ♂ | ♀ | ♀ | ♀ | ♀ | ♀ | ♀ |
| Locality | Bolu Bolu | near Top Camp | near Top Camp | Liluta | Liluta | Liluta | Liluta | |
| Weight | 284 | 304 | - | - | - | - | - | - |
| Total length | 225 | 229 | 226 | 170 | 173 | 179 | 170 | 125 |
| Tail length | 23 | 26 | 25 | 24 | 23 | 22 | 21 | 10 |
| Hindfoot length | 37 | 38 | 40 | 32 | 32 | 32 | 29 | 25 |
| Ear length | 23 | 21 | 23 | | | | | 22.5 |
| Forearm length | 117.0 | 120 | 119.4 | 107.7 | - | 102.7 | 106.9 | 97 |
| Greatest skull length | 53.1 | 53.3 | 51.9 | - | 46.1 | 46.7 | 45.2 | ± 41.6 |
| Condylobasal length | 50.4 | 51.0 | 50.4 | - | 44.0 | 43.9 | 43.1 | - |
| Rostrum length | 17.5 | 17.6 | 16.3 | 14.2 | 14.9 | 15.2 | 14.7 | |
| Palatal length | 27.6 | 26.7 | 27.4 | 23.1 | 24.0 | 24.2 | 24.1 | |
| Mandibulum length | 41.6 | 42.9 | 40.5 | 35.7 | 36.2 | 36.6 | 35.2 | 33.5 |
| Cranium width | 19.9 | 19.4 | 19.3 | - | 17.5 | 18.0 | 18.2 | |
| Interorbital width | 9.6 | 9.6 | 8.6 | 8.4 | 8.9 | 8.9 | 8.7 | |
| Postorbital width | 8.5 | 8.3 | 8.3 | 7.2 | 7.9 | 7.8 | 7.6 | |
| Zygomatic width | 32.4 | 33.3 | 30.1 | 26.2 | 27.0 | 26.9 | 26.9 | 25.5 |
| C ¹ -C ¹ (cingula) | 10.7 | 11.0 | - | | | | | |
| C ¹ -M ² (cingula) | 22.2 | 22.3 | 21.2 | 17.8 | 17.6 | | | 17.5 |
| M ² -M ² (cingula) | 14.0 | 15.3 | - | 12.7 | 12.9 | | | |
| C ₁ -M ₃ (cingula) | 23.6 | 23.7 | 21.9 | 19.0 | 18.8 | | | 18.8 |
| Length x width of | | | | | | | | |
| P ³ | 4.3 x 3.4 | 4.2 x 3.4 | 4.5 x 3.4 | | | | | |
| P ⁴ | 4.6 x 3.4 | 4.6 x 3.3 | 4.6 x 3.4 | | | | | |
| M ¹ | 5.5 x 3.1 | 5.3 x 3.0 | 5.2 x 3.0 | | | | | |
| M ² | 2.6 x 1.8 | 2.7 x 1.9 | 2.6 x 2.0 | | | | | |
| P ₃ | 4.0 x 2.7 | 4.0 x 2.6 | 4.2 x 2.5 | | | | | |
| P ₄ | 4.6 x 2.9 | 4.4 x 2.7 | 4.6 x 2.8 | | | | | |
| M ₁ | 4.5 x 2.5 | 4.1 x 2.5 | 4.2 x 2.5 | | | | | |
| M ₂ | 3.6 x 2.6 | 3.5 x 2.5 | 3.3 x 2.4 | | | | | |
| M ₃ | 1.9 x 1.4 | 2.0 x 1.6 | 2.0 x 1.6 | | | | | |

Museo Nacional de Ciencias Naturales in Madrid and in charge of the mammal collection there, informed me, *in lit.*, 16-II-1976, that there is a chance that the mandible will turn up when the collection will be tidied up.) This is a most unfortunate loss, because the character which determines the affinities of the specimen lies in the shape of the first lower molar. For our knowledge of this we now have to rely on Cabrera's description. From this description it is obvious that Cabrera could compare his single specimen only with the species descriptions in Andersen's revision of the genus (1909). He first identified it as belonging in Andersen's *peronii* species group, which differs from others species groups by the combined presence of a well-marked antero-internal cusp in M_1 and the absence of such a cusp in M^1 . The form of its M_1 excluded the possibility that it was a juvenile of the sympatric *D. pannietensis* of the *moluccensis* group. His reasons to propose a new species, *D. remota*, for it were that it would be much smaller than the other species in that group, *D. peronii* (Geoffroy Saint-Hilaire, 1810) and *D. sumbana* Andersen, 1909 (now considered at most a subspecies of *peronii*; see Bergmans, 1978), while moreover its distribution was much more oriental (Cabrera, 1920).

Skull photographs of the holotype of *remota* (figs. 5 A-E) show that it is not fully adult as Cabrera claimed, with the principal bone sutures still not completely fused. Thus, its forearm length of 97 (Cabrera, 1920) and its greatest skull length, which I estimate to be about 41.6, are not maximal. (Cabrera did not give a greatest skull length because part of the occipital region is missing. In my opinion this damage is of no influence on the greatest length, as only a part below the initial occipital ridge is missing.) The forearm length of an adult *remota* female could possibly approach the range of adult females of *D. peronii peronii* (107.3-116.0, mean 112.0, in 5 females), but this is less apparent for the greatest skull length (47.2-49.4, mean 48.6, in 5 adult females of *D. p. peronii*) (for measurements of *D. peronii* see Bergmans, 1978). As Cabrera's remarks on the upper cheek teeth features of the *remota* holotype are confirmed by the photographs, e.g. well-marked antero-internal cusps in P^4 and M^1 , it is not unlikely that his description of the lower cheek teeth is correct, and that indeed M_1 had such a cusp also. If this is true, the shape of M_1 will possibly be the key character to distinguish *D. remota* from Trobriand, from *D. pannietensis* from the same island (with, in 3 females measured by the present author, forearm lengths of 102.7-107.7 and greatest skull lengths of 45.2-46.7; see table 1). As said before, my notes on the AMNH series of *pannietensis* are too incomplete to allow a decisive analysis. I have here, however, three skulls from Goodenough Island from that collection (see table 2 for their measurements) of which two have their M_1 with no antero-internal differentiation whatsoever (AMNH 157365 and 157368) and one has its antero-internal M_1 corners weakly differentiated so that, without access to comparison material, one might possibly take them for the well-marked cusps meant by Andersen (AMNH 157362; fig. 6). In fact they do probably represent the remnants of similar structures — if it can



Figs. 5A—E. Skull of the holotype of *Dobsonia remota* Cabrera, 1920 (MNCN 19-XII-30-1). A: left aspect. B and C: aspects, under different angles, of the left upper cheek teeth row. D: dorsal aspect. E: ventral aspect. Photos by Mr. W. Doeleman.

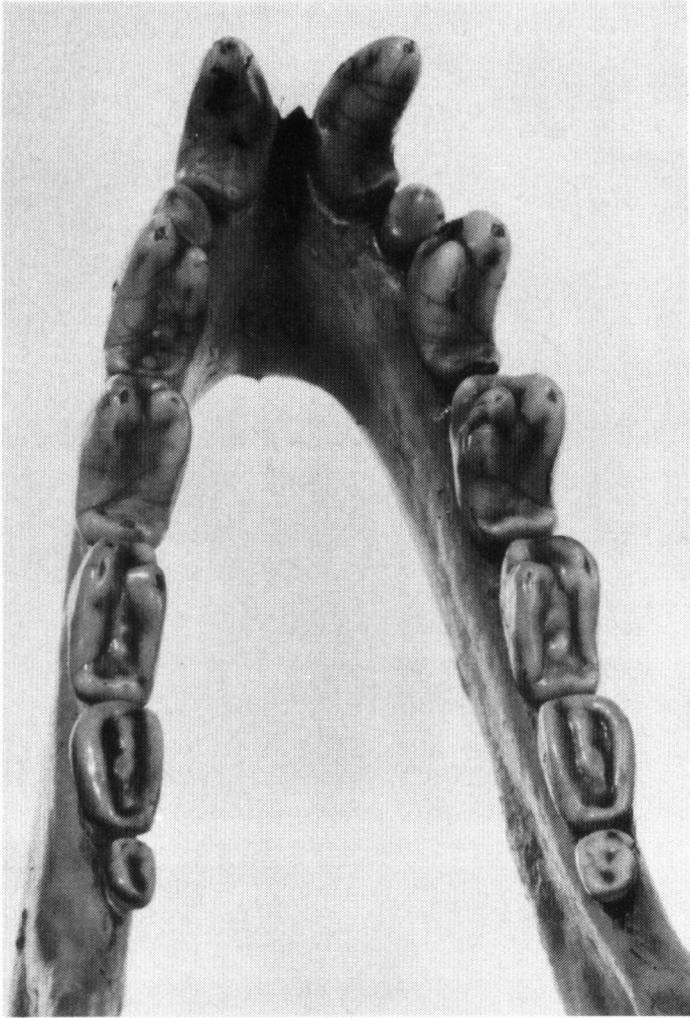


Fig. 6. Lower teeth of *Dobsonia pannietensis* De Vis from Bolu Bolu, Goodenough Island (AMNH 157362). Note the differentiated antero-internal corner of M_1 . Photo by Mr. L. A. van der Laan.

be agreed upon that within the genus a tendency exists towards simplification of molariform teeth surface structure. Besides these three skulls, I have also before me a juvenile *pannietensis* female from Woodlark Island, in alcohol (AMNH 190640; forearm length 87.2, estimated greatest skull length about 38.5). In this, the inner ridges of both M_1 show a slight notch in the anterior part. But as there is no ridge-like connection, neither in the middle at the level of the inner and outer cusps nor anteriorly, between inner and outer

ridge, the slightly separated anterior inner ridge part clearly is just a part of this ridge, and nothing else.

It is well possible of course, that a condition similar to that in one of these *pannietensis* exists also in the holotype of *remota*, in which case the latter species should be put down as a synonym of the former. This possible synonymy is also suggested by the fact that sympatric *pannietensis* and *remota* seem not to differ very much in size, if at all. Only the mandible of the holotype of *remota*, or the find on Trobriand Island (or one of the nearby islands) of *Dobsonia* populations differing from *pannietensis* and agreeing with Cabrera's description of *remota*, can prove the existence of the latter taxon.

Only once after the description of *Dobsonia remota* in 1920, have other specimens been assigned to that species. Two small *Dobsonia* from Bougainville Island, Solomon Group, were so named (McKean, 1972). By courtesy of Dr. J. L. McKean I had an opportunity to examine the larger specimen of these two, collected at Aku on 13 September 1965 by L. A. Craven and R. Schodde (no. MH630 of the collection of the Division of Wildlife Research, CSIRO, Canberra) and found it to belong to Andersen's *viridis* group, and to be conspecific with *Dobsonia inermis* Andersen, 1909. Dr. McKean must have been confused by the youth of the specimen, which is apparent from its strong braincase deflection, its not completely fused skull bone sutures, its crowded teeth, and its disproportionally large arms and legs (compare its hindfoot length with the range given for *D. inermis nesea* Andersen, 1909, also from Bougainville, by McKean in the same paper). I have no reason to assume another identity for the second, still younger specimen, from Barilo (same collection, MH629).

ACKNOWLEDGEMENTS

My visit to the American Museum of Natural History in New York in September 1977 has been made possible by a grant of the Netherlands Organization for the Advancement of Pure Research (Z.W.O.). I thank Dr. Karl F. Koopman and Dr. Guy G. Musser of that museum for their hospitality and cooperation. I am indebted to Dr. Stephen Van Dyck of the Queensland Museum, Fortitude Valley, for the skull photographs of the lectotype specimen of *Dobsonia pannietensis* and for information concerning the whole syntype series of that species. My friends Mrs. Josine Dekker, Mr. Wiljo Doeleman and Mr. Hans Brans went far out of their way to photograph the skull of the holotype of *Dobsonia remota* in the Museo Nacional de Ciencias Naturales in Madrid, and were kindly received and assisted there by Prof. Dr. Eugenio Ortiz, director of this museum. Dr. John L. McKean, then of the Division of Wildlife Research, C.S.I.R.O., at Lyneham, made it possible for me to study the *Dobsonia* specimen from Bougainville mentioned in the present paper. The photograph of the mandible of specimen AMNH 157362 was made by Mr. Louis A. van der Laan of the Instituut voor Taxonomische Zoölogie, Amsterdam.

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Drs. W. BERGMANS
Institute of Taxonomic Zoology (Zoölogisch Museum)
University of Amsterdam
P.O. Box 20125
1000 HC Amsterdam - The Netherlands

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