

## THE PULO CONDORE GROUP AND ITS MAMMALS.

By C. BODEN KLOSS, F.Z.S.

The Pulo Condore<sup>1</sup> group lies about 45 miles from the coast of Cochin-China on the edge of a 15-fathom bank stretching out from the mainland.

It consists of one comparatively large island, two of moderate size and eight or ten small ones, and is fairly compact.

Pulo Condore, the largest, is about nine miles long and two to four in breadth: most of its surface is hilly and its summit is 1,954 ft. high. The eastern side is divided into two bays by a rocky peninsula and in the southern and larger of the two is situated the settlement and convict establishment. This bay is protected to some extent on the east by the island of Hon Bai Kan, the second largest of the group, nearly three miles long and rising 1,076 feet.

Rather smaller than Hon Bai Kan is Ban Vioung, or Little Condore, 708 feet high, lying close to the south-west shore of the main island where it creates a channel that offers fairly protected anchorage.

I have not yet landed on the group, but the following short notes were made during a passage through the islands in March 1917, when my steamer anchored one evening for half an hour in the principal harbour: they are, therefore, merely impressions of the east side and perhaps a visit would cause them to be considerably amended.

"We stopped in a semicircular bay open to the south-east, with three or four islets in the mouth and larger ones to seaward.

"The settlement is on a plain along the head of the bay fronted by a sandy beach and backed by hills: few buildings were visible from the ship. The Governor's hot-weather quarters are

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<sup>1</sup> The Island of Gouds. (Pulo, poulo, pulau (Malay) = Island. Condor, Condore, Kundur (Malay) = Gourd.

I follow the spelling of the Admiralty charts.

built on a knoll at the southern end of the flat land: the house, formerly known as 'Fort Anglais,' is now called 'Villa des Alliés'.

"Behind the plain rises a semicircle of hills, irregular in height, sometimes steep, sometimes with a gradual slope: there appears to be one low pass to the western side of the island.

"Except for the plain and the neck of the peninsula which forms the northern part of the island, the land seen was hilly everywhere and apparently not fertile: it seems to consist of many rocky slopes and some precipices and, where wooded, there were apparently growing only small trees, much wind-contorted and without much undergrowth.

"At the south of the island opposite Little Condore – which has a high steep peak and some cliffs – there is a stretch of forest on the lower slopes, but much of the island above this was practically naked.

"The northern part of Pulo Condore has a lesser elevation than the rest of that island except for the neighbourhood of the settlement, and some of the hills behind, which seem to be forested.

"The islets to seaward seemed to be very rocky and sterile, the only woody growth being wind-twisted trees and scrub."

There are no modern descriptions in English of the islands other than that in the "China Sea Directory," but good accounts have been given of visits in 1687 by Dampier (*The Voyage round the World*); in 1780 by Captain James King, LL. D., F. R. S. (*A Voyage of Discovery into the Pacific Ocean, Vol III = Captain Cook's Third Voyage*); and in 1822 by Dr. George Finlayson (*The Mission to Siam and Hue*) and by John Crawford, F. R. S. (*Journal of an Embassy to Siam and Cochin China*).\*

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\*In Staunton's "Embassy to China," under Lord Macartney, occurs a short account of a visit paid in May 1793. Turtles are the only animals mentioned.



These travellers record the following animals:—

- Monkeys. Fisher, Finlayson, Crawford.
- Flying Squirrel (striped brown and white). Fisher.
- Black squirrel. Fisher, Finlayson, Crawford.
- Wild pig. Dampier, Fisher, Finlayson.
- Wild cocks and hens. Dampier, Fisher.
- Doves and Pigeons. Dampier, Crawford (*M. bicolor* and *M. aenea*).
- Parrots and parakeets. Dampier.
- Turtles. Dampier, Staunton.
- Lizards. Dampier.
- Iguanas (*Varanus* sp.). Dampier.
- Limpets and Mussels. Dampier.

The group does not look like one with a rich mammalian fauna. Dr. Malcolm Smith's investigations (in September 1919 he sent two of his collectors to the islands, where they spent about a fortnight, with instructions to obtain mammals as well as reptiles and batrachians) have, however, considerably increased our knowledge of it by adding, to the five determined species on record, four more of which one, at least, is new—the Giant Squirrel: and perhaps the Macaque and the Palm-Civet also; but of this last the only example obtained is too young to speak about.

We have still to receive specimens of the Wild Hog and Flying Squirrel of the earlier visitors: and it is probable that there will eventually be discovered a lesser Fruit-bat (*Cynopterus* sp.) and one or more insectivorous bats, a race of Forest-rat (*R. rajah* subsp.) and a Mouse-deer (*Tragulus* sp.)

### 1 *Macaca irus* Cuv., subsp.

1 ♂ aged, 1 ♂ adult, 1 ♀ aged. Pulo Condore, 19–23 Sept. 1919. [ Nos 2691, 2, 3/CBK. ] Dr. Malcolm Smith's collector.

These Macaques are either *M. i. validus* (Elliot, Ann. & Mag. Nat. Hist. (8) VI, 1909, p. 252: stated to have come from Cochin-China) or are closely related to it.

I have a male Macaque from Trangbom, 30 miles east of Saigon, to which they bear a general resemblance: but until I have compared the specimens from both places with the type of Elliot's race they had better remain undetermined subspecifically.

All these do not differ in colour from *M. i. atriceps* mihi (Journ. Nat. Hist. Soc. Siam, III, 1919, p 347. Koh Kram Id., Inner Gulf of Siam) as much as I thought from Elliot's description of it that *validus* did. *M. i. atriceps*, however, is easily separated from the Cochin-China and Pulo Condore animals in having the black area on the crown smaller and much more sharply margined, while its skull can easily be distinguished by the unusually small size of the orbits: it is further separated from the Pulo Condore examples by the larger molars and more arched, horse-shoe shaped palate, the breadth of which between the last molars is much reduced.

This is the first time the Pulo Condore "monkey" has been identified as a form of Macaque.

I give, with the measurements of the present specimens, the dimensions of two more examples of *M. i. atriceps*, sent me by Mr. W. J. F. Williamson, which confirm the description of the original series.



Measurements of *Macaca irus* subsp. from Pulo Condore  
and *M. i. atriceps* from Koh Kram.

				PULO CONDORE.			KOH KRAM.	
No.	...	...	...	2691	2692	2693	2567	2568
Sex	...	...	...	♂	♂	♀	♂	♀
				Aged: slight sagittal crest, teeth excessively worn.	Adult: no crest, teeth unworn.	Adult: no crest, teeth much worn.	Adult: sagittal crest, teeth worn.	Just adult: teeth unworn.
Head and body*	...	...	...	435	480	380	465	415
Tail*	...	...	...	498	540	470	510	465
Hind foot, s.u.*	...	...	...	126	128	110	133	118
Ear*	...	...	...	44	45	32	43	42
Skull and Teeth:—								
Greatest length...	...	...	...	124	113.5	106.5	119	100
Basal length	...	...	...	90	80	72	86.5	68
Palatal length	...	...	...	53	49	43.5	57.5	43
Zygomatic breadth	...	...	...	84.2	81	69	...	67
Upper toothrow excluding incisors (alveoli)	...	...	...	36	38	44	39	36
Upper molar series only (alveoli)	...	...	...	29.7	30.5	30	32.2	31.8
m <sup>2</sup> —m <sup>2</sup> externally (alveoli)	...	...	...	37	34.6	31	37.5	33.6
Lower toothrow excluding incisors (alveoli)	...	...	...	45	44	39	44.5	39.5
Lower molar series only (alveoli)	...	...	...	37.7	37.8	34.2	37.5	34.6
Length of mandible	...	...	...	91	85	77	89.5	74

\* Native collector's measurements, taken in the flesh.

## 2. *Paradoxurus hermaphroditus* Pall., subsp.

1 ♀ imm., 12 Sept. 1919 [No. 2694/CBK]. Dr. Malcolm Smith's collector.

New for the islands; but only represented by a quite young female. On geographical grounds it might be *P. h. cochinensis* Schwarz (Ann. & Mag. Nat. Hist. (8) VII, 1911, p. 635, Saigon)<sup>1</sup>; but, like another young female from Koh Chang Id., S. E. Siam (vide P. Z. S. 1916, p. 33), the pale frontal band is broad.

## 3. *Tupaia glis dissimilis* (Ellis).

*Sciurus dissimilis* Ellis in Gray, Ann. & Mag. Nat. Hist. (3) 1860, V, p. 71 (Pulo Condore).

*Tupaia dissimilis* Lyon, Proc. U. S. Nat. Mus., 45, 1913, pp. 3, 67, pl. 1 (Pulo Condore).

1 ♂ ad., 1 ♂ subad., 1 ♀ ad., Pulo Condore, 12 - 15 Sept. 1919. [Nos. 2695 - 7/CBK.] Dr. Malcolm Smith's collector.

Number of mammae unknown: but almost certainly 3 - 3 = 6. Upper parts a grizzle of blackish and ochraceous (more buffy on the sides); tail similar but grizzle coarser. Sides of head and neck with less black than the back; upper and lower eyelids clear buffy. Outer sides of limbs like the body, but grizzling less distinct.

Underparts buffy to ochraceous buff: under side of thighs darker, ochraceous tawny. Under side of tail buffy and black, more buffy down the median line. Neck stripes scarcely traceable, buff.

On the whole the general colour of the upper parts is more like *T. g. belangeri* (as represented by specimens from Siam: vide Kloss, J. N. H. S. S. III, 1919, p. 355) than the more adjacent *T. g. cambodiana* mihi (l. c., p. 357) in that the tail is less black and more like the rump than the shoulders. It is more like the former also in the possession of a more pronounced eye-ring. The neck stripes are, however, less pronounced than in either, far less so than in the former; and the underparts are more richly coloured

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<sup>1</sup> An unsatisfactory name, as Cochin is in Madras.



than in the others, which are buffy or whitish below, while the tail is also rather more ochraceous throughout.

Here we seem to have a case of the Pulo Condore race being more allied to Siamese and Cambodian forms than to more adjacent ones from Cochin China and Annam.

Measurements of *Tupaia glis dissimilis*.

No.	...	...	...	...	2695	2696	2697
Sex	...	...	...	...	♂ ad.	♂ subad.	♀ ad.
Head and body*	...	...	...	...	185	175	165
Tail*	...	...	...	...	173	168	162
Hind foot, s. u.*	...	...	...	...	39	34	36
Ear*	...	...	...	...	14	14	14
Skull and teeth:—	...	...	...	...			
Greatest length	...	...	...	...	48	46	—
Basal length	...	...	...	...	41.5	40	41
Palatal length	...	...	...	...	24	24	24.5
Upper molar series (alveoli)	...	...	...	...	15	14.8	14.8
Tip of <i>pmx</i> to lachrymal notch	...	...	...	...	17.8	17.7	17.6
Rostral breadth at diastema	...	...	...	...	6.8	6.5	6.0
Interorbital breadth	...	...	...	...	13.8	13	13
Zygomatic breadth	...	...	...	...	24	23	23

\* Native collector's measurements, taken in the flesh.

4. *Crocidura murina* (Linn.).

1 ♂ ad., 1 ♀ subad., 7 Sept. 1919 [Nos. 2698, 9/ CBK.].  
Dr. Malcolm Smith's collector.

Medium sized animals, in colour grey tinged with brown.  
New for the islands.

5. *Pteropus hypomelanus condorensis* Peters.

*Pteropus condorensis* Peters, M. B. Akad. Berlin, 1869, p. 393  
(Pulo Condore).

*Pteropus hypomelanus condorensis* Anderson, Cat. Chiroptera B. M.,  
1, 1912, p. 110.

Not obtained by Dr. Smith's collector. Very few topotypes  
have been collected and all Museum specimens have been mounted  
and must now be more or less faded.

6. *Rhinolophus minor* (Horsf.).

Not obtained by Dr. Malcolm Smith's collector.

Recorded from Pulo Condore by de Pousargues (Mission Pavie  
Indo-Chine, Etudes Diverses III, 1904, p. 544).

7. *Ratufa melanopepla condorensis* Kloss.

Antea, p. 71.

New for the islands.

8. *Sciurus germaini* A. M.-Edw.

*Sciurus germanii* A. Milne-Edwards, Rev. et Mag. Zool. 1867, p. 193  
(Pulo Condore)

5 ♀ ad., Pulo Condore, 8—10 Sept. 1919 [Nos. 2707—11/  
CBK.].

Intense black all over, lustrous on the tail and upper parts.

This squirrel is so isolated that it is difficult to decide whether other black animals should be treated as subspecies of it. One, *S. albivexilli* mihi (P. Z. S. 1916, p. 47) occurs only on Koh Kut Id., S. E. Siam; while the second, *S. nox* Wroughton (Ann. & Mag. Nat. Hist. (8) II, 1908, p. 397) seems confined to a small area of Siam



lying between Cape Liant and Sriracha to the north. The Koh Kut animal, besides being larger, has a white tail tip: but the other only differs in greater size.

It is curious that the isolated squirrels from Siam and Pulo Condore should resemble each other so closely in colour, while *Macaca atriceps irus*, from Koh Kram, an island a few miles from Cape Liant, also resembles the Pulo Condore Macaque much more nearly than it does animals from the adjacent Siamese mainland.

Here too we have a case, as with the Tupaia, of another Pulo Condore animal more closely resembling forms from Siam than others of the nearer parts of Indo-China.

Measurements of *Sciurus germaini*.

No.	...	...	...	2707	2708	2709	2710	2711
Sex	...	...	...	♀	♀	♀	♀	♀
				Teeth much worn.	Teeth slightly worn.	Teeth slightly worn.	Teeth slightly worn.	Teeth worn.
Head and body*	...	...	...	190	185	180	185	195
Tail*	...	...	...	168	165	160	160	160
Hind foot, s.u.*	...	...	...	39	36	38	37	40
Ear*	...	...	...	18	19	18	20	18
Skull and teeth:—								
Greatest length	...	...	...	47.5	47.3	45.8	48.0	48.8
Condyllo-basilar length	...	...	...	41.0	40.0	37.5	39.8	41.3
Palatilar length	...	...	...	19.4	20.0	18.8	19.0	20.3
Diastema	...	...	...	10.7	10.5	9.9	9.5	11.0
Upper molar row (alveoli)	...	...	...	9.0	8.9	8.9	9.4	9.5
Median nasal length	...	...	...	13.0	14.1	14.0	14.0	14.8
Interorbital breadth	...	...	...	17.6	16.7	16.0	16.2	17.2
Zygomatic breadth	...	...	...	28.3	28.0	27.0	27.5	29.0

\* Native collector's measurements, taken in the flesh.

'6 *Rattus rattus germaini* (A. M.-Edw.).

*Mus germaini* A. Milne-Edwards, Rech. Mamm., 1874, p. 289 (Pulo Condore); Bonhote, Fasciculi Malayenses, Zool. 1, 1903, p. 37 ("Cochin' China." Errore?); id., P. Z. S., 1905, p. 390.

*Mus germaini* de Pousarges, Mission Pavie Indochine, Etudes Diverses, III, 1904, p. 548 (Poulo-Condore).

1 ♂ ad., 1 ♂ vixad., 1 ♂ subad., Pulo Condore, 8—13 Sept. 1919 [Nos 2712—4/CBK.]. Dr. Malcolm Smith's collector.

Above:—a grizzle of ochraceous and black (the subadult animal ochraceous-buff and black): base of fur dark grey showing somewhat on the sides and lower parts of the limbs. Hands and feet white. Below:—the adult whitish on the neck, the remaining part creamy, the bases of the hairs scarcely grey: scrotum partly rufous (possibly stained). The scarcely adult animal ivory, the bases grey where the white underparts meet the colour of the sides. The subadult example almost throughout greyish white below owing to the pronounced grey bases. Tails dark throughout.

Skulls robust without any peculiar features, except that in the oldest and youngest specimens the palatal foramina (which are, combined, long ovals) are rather abruptly contracted for the anterior two millimetres. Rostrum fairly long and rather slender.

I cannot hold with Bonhote that this rat has anything to do with *R. griseiventer* (Fascic. Mal., t. c., pp. 35—8): it is a member of the coarser, more heavily built, white-bellied section of *rattus* rats, which are quite distinct from that animal and its allies.



Measurements of *Rattus rattus germaini*.

No. ... ..	2712	2713	2714
Sex ... ..	♂	♀	♂
	Teeth slightly worn.	Teeth scarcely worn.	Subad., teeth unworn.
Head and body* ... ..	190	174	159
Tail* ... ..	225	221	165
Hind foot, s.u.* ... ..	37	35	39
Ear* ... ..	24	24	22
Skull and teeth:—			
Greatest length ... ..	44.0	43.0	39.4
Condyllo-basilar length ... ..	39.0	37.0	34.2
Diastema ... ..	12.3	11.0	9.9
Upper molar row (alveoli) ... ..	7.2	7.9	7.1
Combined palatal foramina ... ..	8 × 3 4	7.8 × 3	7.1 × 3
Median nasal length ... ..	17.0	15.8	13.7
Breadth combined nasals ... ..	5.1	4.5	4.8
Zygomatic breadth ... ..	20.1	20.0	18.3

\* Native collector's measurements, taken in the flesh.

