

RINGKASAN

Daftar setiap jenis burung: yang diamati di Taman Nasional Dumoga-Bone, Sulawesi Utara beserta catatannya disajikan dalam tulisan ini. Pengamatan didasarkan pada hasil kerja lapangan yang dilakukan dalam tahun 1981, 1983 dan 1985-86. Daftar ini merupakan pangkalan data bagi penelitian burung lebih lanjut di daerah itu. Sejumlah 180 jenis burung penghuni Taman Nasional serta daerah perairan di dekatnya telah diberikan. Daftar burung ini meliputi daerah penyebaran yang lebih luas dan daerah penyebaran sebelumnya.

THE WATERBIRDS OF PULAU RAMBUT, JAVA

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Introduction

Pulau Rambut, in the Seribu Archipelago, Jakarta Bay (5° 38'S, 106° 42'E) is a small (25 ha) forested coral atoll which has been a nature reserve since 1937. Its present status is a strict Nature Reserve (Cagar Alam), and It has been identified as one of the most Important waterbird breeding sites of Java (Silvius *et al.* 1987). About half the Island's vegetation is tidal mangrove, dominated by *Rizophora* spp., but the southern part of the Island is covered with dryland forest with a tree canopy reaching 20 m. The south and south of the island is bordered by a narrow strip of dry beach forest dominated by *Casuarina equisetifolia*. A comprehensive description of the vegetation is provided by Kartawinata & Waluyo (1977: see also Figure 1).

The authors, with Pandu Hartoyo from the Indonesian Directorate General of Forest Protection and Nature Conservation (PHPA) visited P. Rambut between 11 and 14 January 1987. During this period rough estimates were made of the numbers of waterbirds present on the island, with a brief assessment of the threats to the nesting waterbird colony. This paper is a summary of our findings and a review of literature on the waterbirds of P. Rambut.

Methods

Estimates of the numbers of waterbirds using P. Rambut are based on counts of birds visible from the observation tower (which overlooks the breeding colony), and on observations of birds leaving and returning to the island at first light and after 1700 hrs. Unfortunately it was not possible to accurately record the numbers of any species involved in these movements because birds moved over a broad front encompassing the whole southern part

of the island. In addition considerable numbers of birds, in particular egrets and Black-crowned Night Herons', arrived or left during darkness. No attempt was made to count the birds from within the colony.

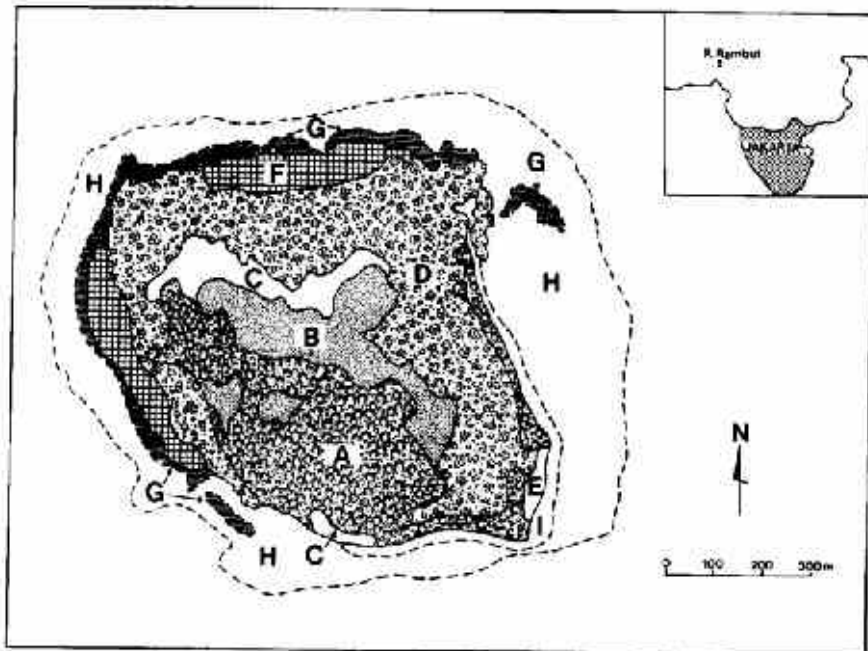
During more than 30 man-hours of observation from the observation tower, notes were made on evidence of breeding activity and on the location of the main breeding areas used by different species of waterbird. The number of Flying Foxes *Pteropus vampyrus* roosting on the island was estimated by making counts from the tower and below the roost.

1. Scientific names of birds are given in the table

Figure 1. Vegetation map of Pulau Rambut

(after Kartawinata & Maluyo 1977).

- (A) dryland forest, (B) dryland secondary
(C) *Scyphiphora-Pempbis* community, (D) mangrove
(E) *Ipomoea pes-caprae* community, (F) *Thalassia-Enhalus* community, (G) lagoon, (H) coral reef, (I) sandy beach.



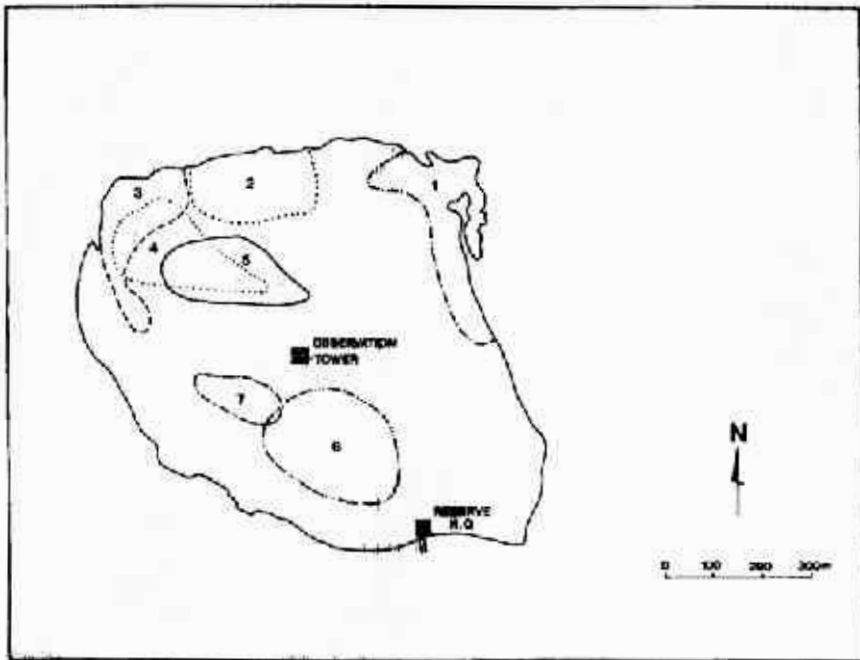
Results

Table 1 gives estimates of the numbers of waterbirds using P. Rambut during the period of observation. Although most *Ardea* herons and Great Egrets were probably visible from the observation tower, other species of: *Egretta* and Little Black Cormorant were mostly breeding and settled further away from the tower. These latter species were often hidden with in the mangrove canopy making reliable counting impossible. Hence numbers of some species may be under estimated.

Figure 2.

Sketch-map of Pulau Dua identifying the main breeding areas for Waterbirds and roosting site of Flying Foxes (area 7) in January 1998.

Breeding areas as follows: (1) Grey Heron, (2) Little Black Cormorant, (3) Little and Cattle Egrets, (4) Great Egret, (5) Purple Heron, (8) Oriental Darter.



The main breeding areas used by different species of waterbird are roughly identified on Figure 2. Most species were primarily breeding in distinctive species clusters. Some species clearly intermingled, such as Great Egret with Purple Heron and Little Egret with Cattle Egret. Some species seemed to confine their breeding activity to mangrove, such as Cattle Egret, Little Egret, Little Black Cormorant and most of the Grey Herons. Other species were primarily breeding in dryland forest, such as Oriental Darter. Black-crowned Night Heron bred all over the island and is therefore not included in Figure 2.

Flying Foxes were found roosting only in trees of the dry land forest in the vicinity of the tower. The total population was estimated to be less than 3000; 1900 were counted from the observation tower.

Discussion

The waterbird species reported to breed on P, Rambut have been listed by van Strien (1981), whilst Milton & Marhadi (1984), Wiriosoepartho (1986) and Wiriosoepartho *et al.* (1986) have documented their sightings of waterbirds on the island. Unfortunately Milton & Marhadi (1984) did not make estimates of the number of each species present on the island during their visit so that comparisons with our counts are not possible. Wiriosoepartho (1986) estimated numbers of each waterbird species on the island by counting birds leaving and arriving. A team of observers was spaced at 100m intervals along the beach, from where they counted birds between 0530 and 0730 hrs and between 1800 and 1800 hrs.

Although such a survey method is to be commended for minimising disturbance to the colony, it is likely to lead to some inaccuracies. Firstly, care needs to be taken to avoid double counting by different observers, or of birds flying "in circles". Secondly, our observations indicated that some bird species arrived before and after the times sampled by Wiriosoepartho for counting. In particular, large numbers of egrets arrive at the island after 1800 hrs. Furthermore, it is often very difficult to distinguish individual species of egret or cormorant in the poor light of early morning and late evening.

Whilst it is therefore not realistic to closely compare the two sets of counts 1983/84 with those from our visit (1988), some conclusions can be made about the occurrence of waterbird species on P. Rambut. Table 2 summarises the data on water bird occurrence from our different studies. The following discussion summarises what is known about the waterbird species of P. Rambut, using data derived from Table 2 and published elsewhere.

Although Great-billed Heron and Little Green Heron are included in Table 2, they are probably rare on the island, and the fact that they were not seen on particular visits may not have significance.

Species Accounts

Oriental Darter. Present all year. Occupied nests have been found in January and March, but it is not clear whether they breed at other times.

Cormorants. Little *Phalacrocorax niger* was very rare on the island in January 1988 whilst Little Black Cormorant *P. sulcirostris* was abundant. However the latter species was not recorded in March 1984 by Milton & Marhadi (1984). It is conceivable that Little Black Cormorants do not visit the island except to breed, and were not present in March 1984 when Milton & Marhadi carried out their survey; however, it also seems possible that they misidentified cormorants on the island, since Little Cormorants were not observed on the island in August (G. Allport, pers. comm.), but Little Black Cormorants were breeding in large numbers.

The only conclusion that can be made from available data is that cormorants are present all year, although species composition may change. The status of the two cormorant species on P. Rambut requires further investigation.

Ardea Herons. Purple and Grey Herons are common visitors to the island all year round. In January 1988 many Purple Herons were breeding and most occupied nests had young, many of which were near fledging. In contrast, few Grey Herons had nests, although some birds were in breeding plumage. Those breeding appeared to be on eggs. These two *Ardea* species perhaps therefore have different main breeding seasons. Both species were defending nests in August 1984, but neither had eggs or young (G. Allport, pers. comm.)

Javan Pond Heron. This species was not recorded in January 1988 or in November 1983. If the species still breeds on P. Rambut, the data suggest that it does so at a particular season, and that it is not a common visitor to the island at other times. The figure of 1,102 Javan Pond Herons counted in April 1984 by Wiriosopartha (1986) seems high considering that Milton and Marhadi (1984) only recorded this species on four of 20 censuses in March 1984 and that G. Allport (pers. comm.) only saw one bird on the island in August 1984.

Cattle Egret. This species apparently breeds on P. Rambut in small numbers and is probably present throughout the year.

Pacific Reef Egret. Even experienced observers can have difficulties in distinguishing between white phase Pacific Reef Egret and Little Egret. Thus the count of 232 individuals identified in flight as the former by Wiriosopartha (1986) in November 1983 should be queried.

Nevertheless, this species is apparently present all year, although the number breeding on the island is unknown. Milton & Marhadi (1984) found it breeding in March 1984 (numbers not quoted).

Little Egret. Present all year and probably breeding in large numbers. Very few individuals appeared to be breeding in January 1988, even though large numbers of small egrets, probably this species, were present on the island during darkness.

Plumed Egret. Despite very careful scrutiny of all larger egrets on Pulau Rambut in January 1988, no Plumed Egrets were identified, although it is possible that roosting birds included this species. All the larger egrets observed by the authors with yellow or largely yellow bills were Great Egrets. Allport & Wilson (1986) mistakenly report seeing Plumed Egrets on P. Rambut since they did not in fact identify any egrets as this species (G. Allport, pers. comm.). Whilst Milton & Marhadi (1984) reported Plumed Egrets as breeding in March 1984, and Wiriosoepartho observed the species in April 1984 (but not in November 1983), the possibility of misidentification should not be ruled out as in 1988 Great Egrets with yet to be feeding young. The status of Plumed Egret on P. Rambut requires further investigation.

Great Egret. Apparently present all year, and breeding in January and March. In January 1988 this species was the most abundant breeding egret.

Black-crowned Night Heron Large numbers of this species breed and roost all over P. Rambut. The species is present throughout the year.

Milky Stork. First reported breeding on P. Rambut in 1974 (C. Darsono, in Allport & Wilson 1986). The count of 242 birds recorded by Wiriosoepartho (1988) in November 1983 may have been an over-estimate or an influx of temporary visitors, as during all other surveys far fewer birds have been observed. In March 1984 there were 14 birds on the island associated with 10 nests (Milton & Marhadi 1984), whilst Allport & Wilson (1986) saw 79, including juveniles, in August the same year. This species probably visits the island sporadically throughout the year. Milky Storks have certainly declined on Java in recent years, and the P. Rambut colony is perhaps the only one on the north coast of Java, as the species no longer breeds on P. Dua (Milton & Marhadi 1985), or in the Brantas or Solo deltas of East Java (Erftemeijer & Djuharsa 1988).

Glossy Ibis. Records suggest that this species may not be present on P. Rambut all the year, being absent or rare in March/April. In August 1984 G. Allport (pers. comm.) counted 18 nests on the island, but there is no indication that this species still breeds there; it no longer breeds on P. Dua (Milton & Marhadi 1986).

Black-headed Ibis. This is a very rare bird on P. Rambut. None have been observed since 1984, when Milton & Marhadi (1984) saw 2 adults in March, and G. Allport (pers. comm.) counted 20 nests with large young on the fringe of the lagoon to the north-east of the observation tower in August. The species is in decline on Java and no longer breeds on P. Dua (Milton & Marhadi 1985). However, in February and March 1988, 25-30 adults,

associated with 8 neets containing young, were discovered near the Solo Delta in East Java (Erftemeijer & Djuharsa 1988).

Threats to the waterbirds of P. Rambut

The greatest threat to the waterbirds of P. Rambut are likely to exist on the mainland feeding grounds, rather than on the island itself. Milton & Marhadi (1984) cite heavy metal and toxic organic & inorganic pollution as notwnt tally serious threats on the feeding grounds, although no afudiw have been carried out. On the island disturbance by visitors and fishermen, who illegally enter the reserve to collect molluscs *Telescopium telescopium* for fishing bait, is often serious. Feral cats on the island are unlikely to pose a serious threat to the breeding Mater-birds.

Wiriosoepartho et al (1986) suspected that Flying Foxes were responsible for the observed difference in the numbers of water-birds estimated to be present between their two counts, five months apart, and suggested that 4-10,000 Flying Foxes on the island should be exterminated. This suggestion should not be taken seriously by the authorities, since Wiriosoepartho et: al (1986) neglected the most likely explanation for differences in their waterbird counts: seasonal variation. In January 1988 the population of Flying Foxes was less than 3000, all roosting in an area which did not appear to be particularly important for waterbirds.

Acknowledgment

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RINGKASAN

Karangan ini mengetengahkan perkiraan Jumlah burung air yang ada di Pulau Rambut, Teluk Jakarta, pada bulan January 1987, Jumlah ini di bandingkan dengan perkiraan jumlah yang di kemukakan oleh pengamat-pengamat sebelumnya, setain itu status 14 Jenis burung diterangkan secara singkat. Meskipun sensus yang menentukan dari jumlah burung yang berkembangbiak belum dilakukan, namun karangan ini merupakan keterangan tambahan yang sangat berguna bagi karangan burung di Pulau Dua oleh Milton & Marhadi yang diterbitkan dalam *Kukila 2*: 32-40 1985).

Tabel 2. Waterbird species observed on P. Rambut, 11-14 January 1988.
Count and estimated numbers of individual species

SPECIES	MAXIMUM COUNT * (1)	EST. MINIMUM NUMBER * (2)	BREEDING ACTIVITY
Little Black Cormorant <i>Phalacrocorax sulcirostris</i>	-	3000	Nests building, sitting on nests, eggs and young.
Oriental Darter <i>Anhinga melanogaster</i>	70	200	Some sitting on nests, displaying birds.
Grey Heron <i>Ardea cinerea</i>	198	400	A few birds or nests & in breeding plumage.
Purple Heron <i>A. purpurea</i>	397	800	Many birds or nests with young, some almost fledged.
Little Green Heron <i>Butorides striatus</i>	13	1	-
Cattle Egret <i>Bubulcus ibis</i>	12	50	Breeding plumage, probably active breeding.
Pacific Reef Egret <i>Egretta sacra</i> * (3)	-	1	-
Great Egret <i>E. ibis</i>	135	250	Birds in breeding plumage; at least seven nests with young.
Little Egret <i>E. garzetta</i>	30	100	Suspected of breeding, but not seenM in breeding plumage.
Unidentified Egret	-	2500	-
Black-crowned Night Heron <i>Nycticorax nycticorax</i>	-	4000	Many birds of nest
Glossy Ibis <i>Plegadis falcinellus</i>	130 - 150	130	No indication of breeding activity.
Milky Stork <i>Mycteria cinerea</i>	20	20	No indication of breeding activity.

* (1) Counts made from the observation platform.

* (2) Estimates, based on maximum count and observed nightly arrival or departure of roosting birds.

Table 2. Occurrence of waterbirds on Pulau Rambut

Source of data:	JAN. (1988) This Visit	MAR. (1984) Milton & Marha di	APR. (1984) Wirosoe- partho	AUG. (1984) Allport & Wilson	NOV. (1983) Wiro- soepartho
BIRD SPECIES					
Oriental Darter	<i>Anhinga Melanogaster</i>	B	B	*	*
Little Cormorant	<i>Phalacrocorax niger</i>	(%)	B	*	-
Little Black Cormorant	<i>P. sulcirostris</i>	-	-	*	B
Great-billed Heron	<i>Ardea sumatrana</i>	-	*	-	-
Grey Heron	<i>A. cinerea</i>	B	B	*	B
Purple Heron	<i>A. perpurea</i>	B	B	*	B
Javan Pond Heron	<i>Ardeola speciosa</i>	-	*	-	(%)
Little Green Heron	<i>Butoides stmtus</i>	0	(%)	-	-
Cattle Egret	<i>Bubulcus ibis</i>	P	B	-	*
Pacific Reef Egret	<i>Egretta sacra</i>	(%)	B	*	(%)
Little Egret	<i>E. garzetta</i>	P	B	*	*
Plumed Egret	<i>E. intermedia</i>	-	B	*	-
Great Egret	<i>E. aid</i>	B	B	*	*
Blick-crowned Night Heron	<i>Nycticorax nycticorax</i>	B	B	*	-
Milky Stork	<i>Mycterea cinerea</i>	*	B	-	B
Glossy Ibis	<i>Ptigadis falcinellus</i>	*	-	*	B
Black-headed Ibis	<i>Threskiornis melanocephalus</i>	-	(%)	-	B

* (3) Observed during a walk around the periphery of the island.

- Not recorded

P Probably breeding, but not conclusive indications found.

B Breeding confined, Breeding records for August 1984 derive from G.A. Allport (pers. comm.)

* Present, breeding unconfirmed or not documented

(*) Present in very small numbers (data complete for January only; for March, a species is assumed to be uncommon if Milton & Marhadi (1984) recorded the species on 3 or less of 20 census walks).