

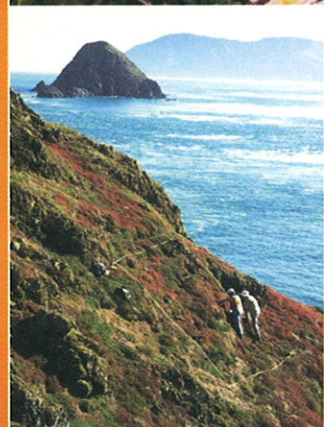
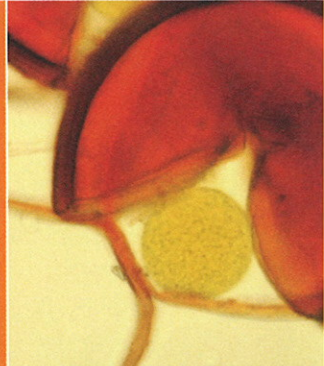
Bio-Protection & Ecology Division

Survey of Birds in Mangrove, River Mouth and Coastal Habitats in Sarawak. Assessment of Their Role in Monitoring the Health of Mangrove and Coastal Ecosystems and a Search for the Critically Endangered Silvery Pigeon

by

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Lincoln University Wildlife Management Report No. 41



CHRISTCHURCH
NEW ZEALAND
www.lincoln.ac.nz



**Lincoln
University**
Te Whare Wānaka o Aoraki

ISSN 1177-6242

ISBN 978-0-86476-183-5

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PREPARED FOR:

Feindt Foundation in Germany

Club 300 Foundation for Bird Protection in Sweden

Sarawak Forestry Corporation

2006

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Introduction

Mangrove forests are an important feature of tropical coasts and play a crucial role in influencing the ecological health of the inshore marine ecosystem. Like their terrestrial counterparts, mangrove forests are under threat through a variety of destructive human practices. Mangroves in particular, and river mouth habitats in general are strongly influenced by land management practices in the catchments of the rivers they drain. Many fish and other marine species, including some important to commercial and subsistence fishermen are dependent on mangroves or other river mouth habitats for at least part of their life cycle. Management decisions about these ecosystems are often made without adequate knowledge of their ecology, nor are changes in the health of the catchments adequately monitored resulting in an insidious decline in fish stocks and ecosystem health. It is impractical, probably impossible, to monitor fish or other marine animals directly and ecosystem health is such a nebulous concept it is difficult at best to gain some readily repeatable and quantifiable measures that reflect it. For a state such as Sarawak where resources are limited and where there are few suitably trained local observers there is a need to find a proxy measure of the relative health of mangrove and other coastal ecosystems.

Birds are the best known group of animals and are arguably the easiest group of animals to use to monitor ecological change. There are relatively few species when compared with invertebrates or fish, and they are more easily observed, monitored and identified than reptiles or mammals. There is an excellent field guide for the birds of Borneo (MacKinnon & Phillipps 1993) plus a few less complete but still useful guides to the common species (Francis 1984, Davison & Fook 1996). In addition the classic work by Smythies (1999) provides a useful insight into the status of many Borneo birds in the first half of the 20th century. It may not be necessary for observers to be able to identify all species. Certain species of birds are susceptible to habitat degradation and are restricted to moderately intact, healthy ecosystems while others occur in degraded habitats but not intact ecosystems. Some species of seabird and wading bird are easily counted and annual counts can be used to monitor environmental change. Unlike those for fish, marine invertebrates, mammals, reptiles or insects, certain bird monitoring techniques do not require expensive or specialised equipment, and once calibration studies have been done, techniques are easy to learn

and can be carried out relatively quickly by a careful observer with little training. The key to their success is robust calibration studies, observer training and observer diligence.

There are two approaches we could take in using birds as a monitoring tool. Firstly we could compare all the species present and their relative abundance in two or more locations, or at a single location at regular intervals. Alternatively we could choose indicator species that are sensitive to the ecological factors we wish to assess.

While there is a need to assess the health of mangrove forests in Sarawak and birds offer a potentially valuable tool for this there appears to be only one study of birds in Sarawak mangrove forests (Gregory-Smith 1998).

Birds in other coastal habitats in Sarawak, or indeed elsewhere in Borneo, are poorly documented. Distribution surveys and colony counts of seabirds (those species that feed exclusively or primarily at sea) are fragmentary although the threats to Asian seabirds have been acknowledged (Wells 1991, de Korte 1991). Terns are the main group of seabirds that breed in Sarawak. Certain Sarawak tern colonies occupied during the 1950's are no longer used and the numbers nesting at Pulau Tukong Ara, the largest known colony in Sarawak declined between the 1950's and 1980's (Mackenzie & Salter 1986). The tern population on Pulau Tukong Ara has increased subsequently (Sim Lee Kheng & Japar 2000).

The situation elsewhere in South East Asia is no better (Croxall et al 1984, Croxall 1991). De Korte (1984) highlights how little is known about marine birds any where in South East Asia and documents dramatic declines in the numbers breeding at most of the few colonies where counts have been made.

Shorebirds, (those species that obtain most of their food along the shoreline¹), have been impacted by all manner of coastal developments that have destroyed or altered favoured feeding and roosting sites. Sites important to shorebirds tend to be at river mouths, in estuaries and in mangroves, all locations favoured for industrial estates, housing and agriculture. These sites are also vulnerable to pollution or sedimentation from materials that may originate far upriver. The status of shorebirds birds is equally poorly documented. The only systematic survey of the Sarawak coast was carried out in 1985 and that only covered the coast between Santubong and Kuala Igan (Edwards & Polshek 1987). That paper provides a useful summary of the little information available on the status of shorebirds in Sarawak up to 1986. Little recent work appears to have been carried out.

In this report I present the results from a pilot study of birds in mangroves and other coastal habitats. Most of our work was carried out in two mangrove-dominated river mouths. The Samunsam River drains a catchment that lies almost entirely within the Samunsam Wildlife Sanctuary and has experienced no forest clearance. Conversely there has been extensive forest loss and other changes in the nearby Sematan River catchment. Additional observations were made on the Talang and Satang Islands and records were kept of all seabirds encountered while traveling between these areas.

¹ The term shorebird is often used to refer specifically to Charadriiformes, sandpipers, plovers and their kin. In this report I include all shore-line feeding birds such as herons and kingfishers as well as the Charadriiformes.

This study builds on my previous survey of coastal birds at Samunsam, Bako and the Talang Talang Islands (Wilson 2002).

During this survey I was accompanied by Dr Jonathan Palmer a plant ecologist who is interested in undertaking further studies of the ecology of mangrove forests. He has made an assessment of work he would like to carry out and the contribution his proposed studies would make to the management of coastal habitats (Appendix 1).

In September 2001 I made a provisional sighting of a silvery pigeon (*Columba argentina*) on Pulau Talang Besar (Wilson 2004). If confirmed this would be the only time this species has been recorded since the 1930's and the opportunity was taken to visit this and other suitable islands to search for this bird.

Objectives

The objectives of this survey were

1. To determine the species of birds present in mangrove forests, in the river mouths, along the coast up to 2 kilometres from the river mouth and at sea up to 2.5 kilometres from the two river mouths visited.
2. To devise methods for obtaining quantitative estimates of the abundance of selected species in each of the above habitats and where possible make baseline counts of selected species.
3. To select species suitable for monitoring the environmental health of mangrove and other river mouth and coastal ecosystems in Sarawak.
4. As opportunity allowed survey suitable beaches for the Malaysian plover (*Charadrius peronii*) a near-threatened species known to occur at Samunsam river mouth.
5. To visit the Talang Talang and Satang Satang Islands to search for the critically endangered silvery pigeon.

Methods

As this was a pilot survey and counting methods were under trial. A brief description of the methods trialed follows.

1. Mangroves. Two methods were trialed and neither proved effective. The first involved recording birds seen in the mangroves from a boat cruising slowly along the seaward or river edge of the mangroves. Very few birds were seen and the numbers of individuals encountered and the species recorded are unlikely to accurately reflect birds actually present. At Samunsam Wildlife Sanctuary there is a short board walk through the *Rhizophora* dominated mangroves. Timed (15 minutes is a suitable time interval) slow walks along the boardwalk proved an effective survey method but this is practical only where boardwalks exist. During my earlier visit to Bako National Park I surveyed birds during timed walks through the mangroves. This method is suitable in the firm substrate, open under story mangroves at Bako but is impractical in the muddy, tangled *Rhizophora* dominated mangroves encountered on this survey.
2. River mouths. This is an easy habitat to survey. I made counts from jetties or waterfront viewpoints near the river mouths. Fixed viewpoints should be adopted

and I suggest 15 or 20 minutes are appropriate search times to adopt. The method is to scan the area from one side to the other using a spotting telescope and binoculars. During this period count all roosting or feeding birds present and record the birds that fly past. Only count those species that feed or roost in the water or on the river banks.

3. Coastal sand spits and beaches. At both Sematan and Samunsam extensive sandbanks are exposed at low tide. Systematic surveys of these were conducted with the help of an assistant. One person followed the coast, walking slowly 10-20 m inland from the waters edge while the second person was 10-20 m inland from the seaward observer. Both scanned the sand ahead of them. I recorded all birds seen by either observer between the waters edge and designated points inland from the counters. Additional transects were made if necessary until the birds on all parts of the sandbank were counted. It is important that observers maintain contact to avoid double counting of birds and to ensure the entire area is surveyed.
4. Whenever we were traveling by boat between the localities visited I recorded departure and arrival times as a measure of search effort and recorded every bird seen while on passage. If necessary the boat was stopped to allow me to identify birds seen. As the number of seabirds encountered in inshore tropical waters is normally very low a continuous count is more appropriate than the 10 minute sample count that is standard practice in temperate seas.

Systematic observations were made of seabirds and coastal birds at all localities visited and where possible estimates were made of their abundance. Intensive searches were made for the silvery pigeon on all islands visited. In addition records were kept of the terrestrial birds observed but these observations were made on an opportunistic basis. It was not possible to compile a complete list of terrestrial species present or to make any estimate of their abundance.

Areas visited and dates.

31 October 2005, arrive in Kuching.

1 November, meetings in Kuching with Oswald Braken Tisen and others at the Sarawak Forestry Corporation and Andrew Tukai Salang from the State Planning Unit. Travel to Sematan.

2-5 November, Samunsam Wildlife Sanctuary.

5- 7 November, Talang Talang Islands.

7-9 November, Sematan.

9-11 November Kuching, meetings with Oswald Braken Tisen and Andrew Tukai Salang.

11-12 November, Satang Satang Islands.

12-13 November Kuching, depart for New Zealand.

Annotated list of bird species encountered.

Lesser Frigatebird, *Fregata ariel*, 2 November, one frigatebird, almost certainly a lesser frigatebird seen at sea midway between Sematan and Samunsam.

Striated Heron, *Butorides striatus*, one or two birds seen each day in the mangroves near the Samunsam jetty.

Javan Pond Heron, *Ardeola speciosa*, one seen each day on the lawns at the Samunsam Wildlife Sanctuary headquarters, usually seen in puddles left after rain showers.

Cattle Egret, *Bubulcus ibis*, 8 November, two in a paddock with cattle near Palm Beach Resort, Sematan.

Pacific Reef Egret, *Egretta sacra*, 5 November, two birds present on each of the Talang Islands and both Satang Islands. All birds were seen on rocky coasts and all reef egrets seen were dark phase birds.

Intermediate Egret, *Egretta intermedia*, several sightings of white egrets, probably intermediate egrets, were made at Sematan and along the Samunsam River. On 2 November four birds were seen at one time near Sematan town.

Small bittern, species not determined several sightings at Samunsam in mangroves near the jetty, and one seen 1-2 km further up river.

Jerdons Baza, *Aviceda jerdoni*, on 6 November a medium to large, broad-winged hawk was seen over Pulau Talang Kecil. We provisionally identified this bird as a Jerdon's Baza. On 8 November a pair of Jerdon's Bazas was seen along a narrow stretch of the main branch of the Sematan River, several kilometers upstream from the town. These birds circled overhead before landing on an emergent tree close to the river.

Brahminy Kite, *Haliastur indus*, two seen each evening roosting in Casuarinas on the south side of the Samunsam River mouth. At 1600 hrs on 8 November one Brahminy kite flew up river past Sematan town.

White-bellied Fish-eagle, *Haliaeetus leucogaster*, one was seen flying over Pulau Talang Besar on three different occasions and on 6 November, one was seen over Pulau Talang Kecil. It is possible all four sightings could have been of the same individual. A White-bellied fish-eagle was seen over Pulau Satang Besar on both 11 and 12 November.

Domestic Chickens, *Gallus gallus*, a small flock was seen roaming around the buildings on Pulau Satang Besar.

White-breasted Waterhen, *Amaurornis phoenicurus*, 12 November, one seen by the Forestry house on Pulau Satang Besar. Mr Abol whose family has owns the island told me that this species was first seen on the island only recently.

Pacific Golden Plover *Pluvialis fulva*, 9 November, four seen on the sandy beach between Sematan town and the Palm Beach Resort.

Malaysian Plover, *Charadrius peronii*, and Kentish Plover (*C. alexandrinus*). Pairs and single birds were present on tidal sand flats on either side of both the Samunsam and Sematan River mouths (Table 3) and at the time all birds were provisionally identified as Malaysian Plovers. I looked carefully at every bird seen at close range

(half or more of the birds seen) and using MacKinnon and Phillipps (1993), the only field guide I had with me at the time, I was confident those at least were indeed Malaysian plovers and not the very similar Kentish plover. MacKinnon and Phillipps suggest these two species are quite readily distinguished. According to Smythies (1999) Kentish plovers occur in Sarawak only as passage migrants or winter visitors, and while Kentish plovers mix with other wading birds, Malaysian plovers seldom mix with other species, are always seen singly, in pairs or in threesomes and are tame. All birds on the Samunsam and Sematan sand flats were singletons or in pairs, were regularly spaced over the tidal sand flats, appeared to be territorial, all but one were separate from other wading birds and allowed close approach, suggesting they were Malaysian plovers. However, subsequent consultation of another field guide (Robson 2000) shows these two species to be very similar and lists Kentish plover as a species that breeds in the Greater Sundaes Islands. I did confirm the presence of both species but in retrospect am not able to suggest the proportion of the birds seen that were Malaysian or Kentish plovers.

One plover seen at Samunsam feeding alongside a turnstone was photographed and it was positively identified from that photo as a Kentish Plover.

Whimbrel, *Numenius phaeopus*, 4 November, one whimbrel seen on sand flats on the south side of the Samunsam River.

Marsh Sandpiper, *Tringa stagnatilis*, 4 November, two on sand flats on the south side of the Samunsam River.

Common Sandpiper, *Tringa hypoleucos*, small numbers on the beaches and sand flats at the mouths of both the Samunsam and Sematan Rivers, on other sandy beaches visited and a few seen on the river banks as far up both the Samunsam and Sematan River as we went. One, possibly two common sandpipers were seen on the sandy beach and coastal rocks on Pulau Talang Besar on both 5 and 7 November.

Ruddy Turnstone, *Arenaria interpres*, 4 November, one turnstone on sand flats on the south side of the Samunsam River.

Sanderling, *Calidris alba*, 9 November, one seen on the sandy beach just west of Sematan.

Curlew Sandpiper, *Calidris ferruginea*, 2 November, 1 seen on the beach at Palm Beach Resort, Sematan.

Black-naped Tern, *Sterna sumatrana*, only one black-naped tern was positively identified during six and a half hours of at sea observations and a group of six seen offshore from the Palm Beach Resort were the only other terns positively identified as belonging to this species. Two small terns seen near the Talang Islands on 7 November were probably black-naped terns.

Great Crested-tern, *Sterna bergii*, only two great crested-terns were positively identified during observations at sea. Great crested-terns were commonly seen close to the mouth of the Sematan River where on 7 November at least 30 terns were seen

roosting on the sandbars at the river mouth. Most, probably all were great crested-terns.

Little Green-pigeon, *Treron olax*, one seen on 2 November at Palm Beach Resort, Sematan.

Pink-necked Green-pigeon, *Treron vernans*, 4 November, one in trees near the buildings at Samunsam Wildlife Sanctuary. On 8 November, 2 males and 2 females were seen in trees near the Palm Beach Resort, Sematan. On 5 November two small green-pigeons with green wings and green heads, probably female pink-necked green-pigeons, seen in tall broad-leaved trees on the northern end of Pulau Talang Besar.

Green Imperial-pigeon, *Ducula aenea*, three seen in tree-tops 1-2 km up the Samunsam River on 3 November and at least one in the forest canopy on Pulau Satang Besar on the evening of 11 November.

Pied Imperial-pigeon, *Ducula bicolor*, Pulau Talang Besar is an important night-time roost for pied imperial-pigeons. Each evening pigeons began arriving from the mainland about 1645 hrs with stragglers still arriving at 1800 hrs. At least 200 were seen arriving on the island on 5 November. Groups were seen departing towards the mainland during the first two hours after dawn each morning. Small numbers remained on both Talang Islands during the day. On 6 November, about 15-20 pigeons seen while circumnavigating Pulau Talang Besar at 0925-0938 hrs and at least three on Pulau Talang Kecil shortly there after. The same pattern of arrival late afternoon and departure early morning was observed on Pulau Satang Besar but fewer birds were seen, at least 44 were seen leaving the island on 12 November, but twice that number could well have been on the island overnight. The converse pattern was seen at Sematan where groups of 1-10 birds were seen arriving on the mainland in the early morning and departing late afternoon.

Silvery Pigeon, *Columba argentina*, in September 2001 I made a probable sighting of this critically endangered bird on Pulau Talang Besar (Wilson 2004) and the primary purpose of our visit to the Talang and Satang Islands was to search for this species. No confirmed sighting of a silvery pigeon has been made since the 1930's so it is important to follow up my 2001 sighting. I made slow circumnavigations of each of the four islands searching for the birds from a small boat 25-100 m offshore. Such circumnavigations were made of Pulau Talang Besar at least twice on each of the days we were present. In addition shore-based searches were made on all but Pulau Satang Kecil. Shore based searches comprised both walks through the forest and binocular and telescope scans of the canopy from observation points that allowed a large area of canopy to be scanned. Forest searches were not very productive due to the tall canopy and often dense under growth that restricted visibility and from a boat or from canopy scans bird would only be seen if they were in the top-most canopy branches. No silvery pigeons were found.

Spotted Dove, *Streptopelia chinensis*, not uncommon around the buildings and lawns at Samunsam Wildlife Sanctuary but not seen away from this human influenced area. Very common at both the resort and in town at Sematan.

Blue-crowned Hanging-parrot, *Loriculus galgulus*, 4 November, a pair seen in Casuarinas near the office at Samunsam Wildlife Sanctuary.

Hodgson's Hawk-cuckoo, *Cuculus fugax*, 3 November, one seen in trees between the resthouse and the beach at Samunsam Wildlife Sanctuary.

Asian Koel, *Eudynamys scolopacea*, identified as present on Pulau Satang Besar by Ibriham bin Edie, a national park employee when browsing my field guide. I saw one brown speckled bird of the size and jizz of a female koel and heard calls that resemble the calls of the koel as noted in the field guide (MacKinnon & Phillipps 1993).

Chestnut-breasted Mulkoha, *Phaenicophaeus curvirostris*, 4 November, one seen in trees between the resthouse and the beach at Samunsam Wildlife Sanctuary.

Lesser Coucal, *Centropus bengalensis*, one or two present in long grass and low scrub between the resthouse and the staff accommodation block, and the forest at Samunsam Wildlife Sanctuary.

Silver-rumped Swift, *Raphidura leucopygialis*, 3 November, 10-15 seen about 1 km up stream from the jetty, Samunsam River.

Little Swift, *Apus affinis*, 2 November, several seen at Sematan town.

Collared Kingfisher, *Todirhamphus chloris*, one pair usually present near the jetty and a few others seen along the Samunsam River. Also present in the Sematan River both near the town and further upstream.

Dollarbird, *Eurystomus orientalis*. During the morning of 6 November a largish dark bird with conspicuous white under wing patches in its outer wing and a long, narrow tail was watched hawking insects over Pulau Talang Besar. It's wingspan was about twice that of the wood swallows that were present at the same time. Four of these birds were seen over Pulau Satang Besar 0700-0740 hrs on 12 November. The conspicuous white under wing markings and the general size of the bird leaves little doubt that these were dollarbirds.

Asian Black Hornbill, *Anthracoceros malayanus*, one female seen perched in a large tree close to the jungle track at Samunsam Wildlife Sanctuary.

Common Goldenback, *Dinopium javanense*, 3 November, one seen in casuarinas near the jetty at Samunsam Wildlife Sanctuary.

Pacific Swallow, *Hirundo tahitica*, common and seen in virtually all habitats at all places we visited. Probably about 100 resident at the Samunsam Wildlife Sanctuary and apparently nesting under eaves of the staff quarters. Small numbers seen along the river as far up stream as we went. At Sematan Pacific swallows were common at Palm Beach Resort and in town, with smaller numbers upriver. The only swallow positively identified, but I suspect Barn Swallows (*H. rustica*) were also present in town at Sematan and possibly elsewhere. A few Pacific swallows were present on all islands visited.

Large Woodshrike, *Tephrodornis gularis*, 3 November, one seen in casuarinas near the jetty at Samunsam Wildlife Sanctuary.

Fiery Minivet, *Pericrocotus igneus*, 4 November, two in casuarinas near the jetty and two others in casuarinas near the resthouse, Samunsam Wildlife Sanctuary.

Common Iora, *Aegithina tiphia*, a few seen in trees near the office at Samunsam Wildlife Sanctuary.

Yellow-vented Bulbul, *Pycnonotus flavescens*, common at Palm Beach Resort, in fields nearby and in town at Sematan. Small flocks near the buildings on both Talang Talang Islands.

Cream-vented Bulbul, *Pycnonotus simplex*, 4 November, about five in trees near the buildings at Samunsam Wildlife Sanctuary, plus about five in the nearby mangroves.

Bronzed Drongo, *Dicrurus aeneus*, identified from my field guide as present on Pulau Satang Besar by the boatman, however I was unable to confirm that the black drongo-like birds I saw were actually drongos let alone this species.

Greater Racket-tailed Drongo, *Dicrurus paradiseus*, 3 November, one seen in casuarinas near the jetty Samunsam Wildlife Sanctuary.

Velvet-fronted Nuthatch, *Sitta frontalis*, 3 November, two seen in casuarinas near the jetty at Samunsam Wildlife Sanctuary.

Magpie Robin, *Copsychus saularis*, 4 November, at least one in casuarinas near the jetty at Samunsam Wildlife Sanctuary.

Ashy Tailorbird, *Orthotomus ruficeps*, 2 and 9 November, a pair seen in flowering shrubs in the Palm Beach Resort garden, Sematan.

White-breasted Wood-swallow, *Artamus leucorhynchus*, four or five seen circling high above the forest on Pulau Talang Besar early each morning and late each afternoon. Two seen overhead at Pulau Talang Kecil on 6 November.

Asian Glossy Starling, *Aplonis panayensis*, common both at Palm Beach Resort and in town at Sematan.

Hill Myna, *Gracula religiosa*, 4 November, one seen flying overhead from the resthouse at Samunsam Wildlife Sanctuary.

Plain Sunbird, *Anthreptes simplex*, 3 November, one or two seen in casuarinas near the jetty Samunsam Wildlife Sanctuary.

Plain-throated Sunbird, *Anthreptes malacensis*, 6 November, one pair seen on Pulau Talang Kecil.

Copper-throated Sunbird, *Nectarinia calcostetha*, 4 November, one pair seen from the mangrove board walk Samunsam Wildlife Sanctuary.

Olive-backed Sunbird, *Nectarinia jugularis*, the most commonly seen species of sunbird, recorded each day and at all localities we visited. Most sightings were in areas of human habitation including gardens, and in trees, vines or scrub on the edges of disturbed areas. However a pair was seen on the jungle track at Samunsam Wildlife Sanctuary well away from sites of human influence.

Spectacled Spiderhunter, *Arachnothera flavigaster*, 4 November, one or two beside the jungle track at Samunsam Wildlife Sanctuary.

Yellow-eared Spiderhunter, *Arachnothera chrysogenys*, one seen from the mangrove board walk Samunsam Wildlife Sanctuary.

Yellow-rumped Flowerpecker, *Prionochilus xanthopygius*, one or two flowerpeckers with blue dorsal surfaces and red on their breasts, most likely to be yellow-rumped flowerpeckers, were seen on 4 November, beside the jungle track at Samunsam Wildlife Sanctuary.

Eurasian Tree Sparrow, *Passer montanus*, at Samunsam Wildlife Sanctuary restricted to the clearing surrounding the buildings. Very common at Palm Beach Resort and in town at Sematan. A few present on the islands but only seen close to the buildings and not observed in the forest.

Black-headed Munia, *Lonchura malacca*, on 8 November a small flock was seen in a field near Palm Beach Resort, Sematan.

Table 1. The bird species observed at each of the four locations visited in western Sarawak, November 2005.

	Samunsam	Sematan	Talang Islands	Satang Islands
Striated heron	x			
Javan pond heron	x			
Cattle egret		x		
Reef egret			x	x
Intermediate egret	x	x		
Small bittern	x			
Jerdon's baza		x	x	
Brahminy kite	x	x		
White-bellied fish eagle			x	x
White-breasted waterhen				x
Golden plover		x		
Malaysian plover and Kentish plover	x	x		
Whimbrel	x			
Marsh sandpiper	x			
Common sandpiper	x	x	x	
Ruddy turnstone	x			
Sanderling		x		
Curlew sandpiper		x		
Black-naped tern		x		
Crested tern		x	x	
Little green pigeon		x		
Pink-necked green-pigeon	x	x	x	
Green imperial pigeon	x			x
Pied imperial pigeon		x	x	x
Spotted dove	x	x		
Blue-crowned hanging parrot	x			
Hodgson's hawk cuckoo	x			
Asian koel				x
Chestnut-breasted mulkoha	x			
Lesser coucal	x			
Silver rumped swift	x			
Little swift		x		
Collared kingfisher	x	x		
Dollarbird			x	x
Asian black hornbill	x			
Common goldenback	x			
Pacific swallow	x	x	x	x

Large woodshrike	x			
Fiery minivet	x			
Common iora	x			
Yellow-vented bulbul		x	x	
Cream-vented bulbul	x			
Bronzed drongo				x
Racket-tailed drongo	x			
Velvet-fronted nuthatch	x			
Magpie robin	x			
Ashy tailorbird		x		
White-breasted wood-swallow			x	
Asian glossy starling		x		
Hill myna	x			
Plain sunbird	x			
Plain-throated sunbird			x	
Copper-throated sunbird	x			
Olive-backed sunbird	x	x	x	x
Spectacled spiderhunter	x			
Yellow-eared spiderhunter	x			
Tree sparrow	x	x		
Black-headed munia		x		

Table 2. Sea and shore birds recorded at Sematan in November 2005 and at Samunsam Wildlife Sanctuary in September 2001 and November 2005. The numbers given are the maximum seen at any one time and may underestimate the total number present.

	Semitan November 2005	Samunsam November 2005	Samunsam September 2001
Striated heron		1	
Javan pond heron		1	
Intermediate egret	4	1	
Small bittern		1	
Brahminy kite	1	2	2
Golden plover	4		13
Malaysian plover and Kentish plover	17	26	3
Greater sand plover			14
Whimbrel		1	2
Curlew			8
Marsh sandpiper		2	
Common sandpiper	5	4	7
Ruddy turnstone		1	5
Sanderling	1		
Rufous necked stint			1
Curlew sandpiper	1		
Black-naped tern	6		30
Crested tern	c30		9
Rufous backed kingfisher			1
Collared kingfisher	1	2	1

Table 3. Shorebird counts at Samunsam and Sematan

	Samunsam, sandflats, north side of river	Samunsam, sandflats, south side of river	Beach, Palm Beach Resort, Sematan	Sematan sandflats, east side of river	Sematan sandflats, west side of river	Beach, Sematan River to Palm Beach Resort
Date	3 Nov	4 Nov	2 November	8 Nov	9 Nov	9 Nov
Time	1010-1200 hrs	1045-1230 hrs	0900-0915 hrs	1615-1720 hrs	0855-0930	0930-1000 hrs
Tide	Low	Low	low	Rising	High	High
Golden plover						4
Malaysian plover and Kentish plover *	3	26	1	16	4	3
Small plover unidentified				3		
Whimbrel		1				
Curlew sandpiper			1			
Marsh sandpiper		2				
Common sandpiper	3	4	2	5	4	3
Sanderling					1	
Ruddy turnstone		1				
Blacknaped tern			6			
Crested tern				12		
Small unidentified tern			5			
Collared kingfisher	2					

* Both Malaysian Plovers and Kentish Plovers were present but the numbers of each were not determined.

Table 4. Observations of seabirds at sea, in western Sarawak waters, November 2005

	Sematan-Samun-sam	Samun-sam-Talang Besar	Talang Talang Islands	Talang Besar-Samun-sam-Sematan	Sematan-Talang Besar and return.	Telaga Air-Satang Besar	Satang Besar-Telaga Air
Date	2 Nov	5 Nov	6 Nov	7 Nov	7 Nov	11 Nov	12 Nov
Time	1305-1350 hrs	0925-0950 hrs	0938-0943 & 1152-1157 hrs	0725-1030 hrs	1145-1230 & 1445-1515 hrs	1150-1210 hrs	1120-1140 hrs
No minutes observation	45	25	10	185	75	20	20
Lesser frigatebird	1						
Great crested tern		1		1			
Black-naped tern				1			
Unidentified Tern		2		2			
No. birds/search-hour	1.3	7.2	0	1.3	0	0	0

Total observation time 380 minutes 6.33 hours, 0.16 frigate birds per hour and 1.11 terns per hour of observation.

Discussion

There is little information on the distribution and abundance of seabirds along the coast of Sarawak. The black-naped and great crested-terns are the only species of seabird observed during this visit that are known to breed in the region and as egg-laying occurs in April and May (Smarby-Stone 1991) their breeding season was long over before this survey was conducted. I counted terns at Samunsam in August 2001 (Wilson 2002) when up to 30 black-naped terns and nine great crested-terns were seen each day roosting on rocks at the mouth of the Samunsam River. None were seen at Samunsam during the November 2005 visit. Six black-naped terns were seen off Sematan in November 2005 and one during a single count in August 2001. No great crested-terns were seen at Samunsam in 2005, but about 30 were seen roosting on sand flats at the Sematan River mouth. None had been recorded there in August 2001. The encounter rate for terns at sea was 1.9/hour in August 2001 (Wilson 2002) and 1.1/hour in November 2005. One lesser frigate bird was seen on both the August and November trips.

Bridled terns also breed in this part of Sarawak with the largest colony being on Pulau Tukong Ara near the Satang Islands. No bridled terns were seen either in August 2001 (Wilson 2002) or November 2005 but they were quite common, as were black-naped terns, during surveys done in these waters during their breeding season (MacKenzie & Salter 1986). The differences in the numbers seen presumably reflect seasonal changes in distribution and not a decline in numbers.

With the exception of the Malaysian and Kentish plovers, both of which breed locally the other Charadriiforme wading birds were more abundant and more species were present in September 2001 than in November 2005. This is exactly what would be expected given that these breed at high latitudes in the Northern Hemisphere and the majority winter in temperate zones of the Southern Hemisphere. Although a few may remain in Sarawak over the northern winter (November to March) most will stop only briefly in Sarawak sometime between July and November, (most in August or September) during migration. Common sandpipers are the only migratory species that regularly over-winters in South-East Asia thus similar numbers might be present in both September and November.

The most comprehensive survey of Sarawak wading birds was carried out between 28 September and 1 November 1985 (Edwards and Polshek 1987). They surveyed the coast between Santubong and Kuala Igan, a different and larger area with a wider variety of habitats than in this survey. As might be expected they recorded a wider range of species in their survey. All wading bird species recorded in this survey were also recorded by Edwards and Polshek (1987). The only discrepancies in relative abundance were Malaysian plovers and Kentish plovers which they found to be rare in the areas surveyed by them.

The birds of the mangroves are much more problematic and the non-obtrusive survey methods trialled in this study provided little useful information. One previous study of birds in Sarawak mangroves used mistnetting to determine species presence and they compiled a much more extensive list than I managed (Gregory-Smith 1998).

Mistnetting is time consuming, requires at least two experienced people who have been especially trained in mistnetting and bird handling techniques. Mistnets are moderately expensive and would be easily damaged in the thick tangled mangroves at Samunsam and Sematan. Unless great care is taken in extracting birds from nets, birds are likely to be injured or die. Although Gregory-Smith does not provide any quantitative estimates of relative density of the species caught, given sufficient time it is possible to obtain quantitative estimates of density using mistnets. Mistnet surveys do not meet the criteria I was seeking, simple, quick and useable by local people after only limited training. However, if I returned to Sarawak I would want to trial this methodology in mangroves.

The main reason for visiting the Talang Talang and Satang Satang Islands was to search for the critically endangered silvery pigeon, a provisional sighting of which was made on Palau Talang Besar in 2001 (Wilson 2004). That is the only recorded sighting of that species since the 1930's. I spent three days on Palau Talang Besar and two on Palau Satang Besar and during that time made extensive searches but no silvery pigeons were seen. I also briefly visited Palau Talang Kecil and searched Palau Satang Kecil from a boat close to shore but was unable to land on that island. From the sea and during telescope scans of the canopy it was possible only to see birds in the outer canopy of the tall rain forest that clothes these islands. Inside the forest visibility was restricted by the tall trees and often dense foliage so it would be easy to over look a small population of silvery pigeons even if they were present. I remain confident that the bird seen in 2001 was indeed a silvery pigeon and not a pied imperial pigeon, large numbers of which were present on four islands. Due to the extreme rarity of the silvery pigeon it is important that the islands be revisited by ornithologists at the earliest possible opportunity.

Three species, Malaysian plover, black hornbill and fiery minivet, that are listed by Birdlife International (Stattersfield & Caper 2000) as near threatened were seen during this survey. This is the lowest threat ranking used by Birdlife which identifies those species which are at some risk of extinction. Of these Malaysian plovers appeared moderately common at the mouth of both the Samunsam and Sematan Rivers, although some of the birds seen were no doubt the much more widely dispersed and common Kentish plover. The diagnostic markings of the Malaysian plover were seen on some birds but at the time I did not realise Kentish plovers were resident in Borneo, so I did not observe each bird as closely as I should have. About five Malaysian plovers were seen on the Samunsam sand flats in September 2001 when the birds were in bright breeding plumage and I could be certain of their identity (Wilson 2002). The tidal sand flats on either side of both these river mouths are important habitats for this species and measures should be taken to protect them. Only four Malaysian plovers were seen during a wader survey of the coast between Santubong and Kuala Igan (Edwards & Polshak 1987). Of the other two threatened species I saw only two fiery minivets and one black hornbill, all at Samunsam Wildlife Sanctuary.

Acknowledgements

I am especially grateful to Oswald Braken Tisen from the Sarawak Forestry Corporation and Andrew Tukai Salang from the Sarawak State Planning Unit for help in obtaining permits to visit Samunsam Wildlife Sanctuary and the Talang and Satang

Islands, and for their assistance arranging transport to and from the field sites. Thanks also to the park staff at all the reserves visited for providing accommodation and other assistance. I thank Mr Abol who owns land on Pulau Satang Besar for transport to that island and for arranging accommodation there. Special thanks to Dr Jonathan Palmer who did so much to organise the trip and to him and Greg and Sheila Brunskill for making this such an enjoyable expedition. May we have many more adventures together. Sheila spent many hours under the hot Sarawak sun helping me make the counts and observations reported here.

Airfares to Sarawak and most accommodation and internal travel were funded by the Feindt Foundation in Germany. A grant from the Club300 Foundation for Bird Protection in Sweden allowed us visit the Talang Talang and Satang Satang islands to search for the silvery pigeon. Thanks to both these foundations and in particular Dr Dan Dietrich and Dr Henrik Lind from these foundations for their support.

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