

LITTLE-KNOWN AREA

Kupang Bay: an internationally significant wetland in West Timor, Indonesia

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Introduction

Endemic forest birds are not surprisingly the main focus of most birdwatchers visiting Wallacea but there are also sites here which support shorebirds and waterbirds in good numbers, and lie within the East Asian–Australasian Flyway (EAAF). About 10 km east of Kupang, provincial capital of West Timor, Indonesia, and adjacent to the Kupang Bay Marine Recreation Park (KBMRP), is an area of some 40 km² of intertidal mudflats, fishponds and beaches. About 80 species of waterbirds, including 39 shorebirds, have been recorded, with an unusual mix of Asian, Australian and cosmopolitan species. Total shorebird counts of between 2,000 and 5,500 birds confirm the site's importance. However, comprehensive evaluation has been hampered by a lack of recent field surveys, the most definitive data having been collected by Paul Andrew as long ago as 1985. In addition to shorebirds, the tidal rivers hold Estuarine Crocodile *Crocodylus porosus* (Andrew 1985), and the ocean supports sea-grass beds—the habitat of the Vulnerable Dugong *Dugong dugon* (Silvius *et al.* 1987) and the Vulnerable Whale Shark *Rhincodon typus*.

The objectives of this article are to update data on the shorebirds and waterbirds of Kupang Bay, with particular reference to the evidence that the Australian avifauna is more strongly represented than had previously been appreciated, and to encourage more visitors to focus on the area, publish their observations and thereby continue to raise awareness of its importance. Data from Andrew's 1985 survey (Andrew 1985, Silvius *et al.* 1987) are presented and, where possible, compared with more

recent information. Reference is made to international (1% of flyway population) and national criteria (0.1% of flyway population or 2,000 individual shorebirds) (Clemens *et al.* 2010).

Access and site description

The KBMRP covers 500 km² but the 40 km² intertidal component of most interest here appears to be outside the park boundaries (Figure 1). This area is readily accessible from the main Kupang–Soe road at km 21 and 22 for access to Tambak Oebelo, Oebelo flats and Oebelo (Merdeka) fishponds and mudflats (Plate 1), from the village of Taupkole-

Figure 1. Kupang Bay.

R: location of shorebird roosts (mainly from Andrew 1985). Sites mentioned in text: 1. Oesapa, 2. Lasaiana Beach, 3. Tambak Oebelo, 4. Oebelo flats, 5. Olio River, 6. Tambak Merdeka, 7. Oebelo mudflats, 8. Nunkurus River, 9. Bipolo fishponds, 10. Taupkole (and Bipolo forest), 11. Parite, 12. Kuka (Pan Muti).

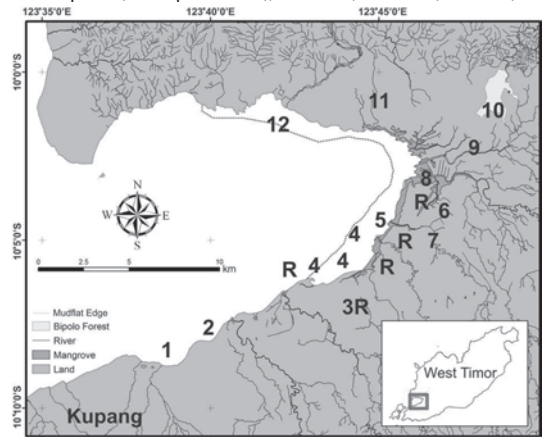


Plate 1. Extensive sand and mudflats at Oebelo Flats, Kupang Bay, 12 June 2004.



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Plate 2. Bipolo fishponds, Kupang Bay, 11 June 2004.

Plate 3. Extensive mudflats at Kuka (Pan Muti), Kupang Bay, 10 June 2004.

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Bipolo (via the well-known Bipolo forest) to access fishponds 1 km south of the village (Plate 2), and at Pariti village about 9 km west of Bipolo forest to access the Kuka (also known as Pan Muti) intertidal mudflats and fishponds (Plate 3). Commercially operated birdwatching tours make brief visits to the accessible Bipolo fishponds and Kuka mudflats—a tiny fraction of the Kupang Bay area.

The best description of Kupang Bay is by Paul Andrew, quoted in Silvius *et al.* (1987):

A large west-facing bay, with coral reefs fringing the northern and southern shores west of 123°42'E. There are approximately 4,000 ha of intertidal mudflats at the head of the bay, at the northwest corner of Oesau Plain... Some 1,400 ha of the mudflats lie seaward of the fringing mangroves; the mud is very soft, with mixed mud and rock along the northern edge, and sand flats and raised beaches along the southern edge near a raised coral headland. The remaining 2,600 ha of mudflats lie inland of the mangroves; they are devoid of vegetation and are inundated only on the higher spring tides...

Kupang Bay and Teluk Bone (on Sulawesi) are the only major intertidal wetlands in Wallacea. However, several wetland sites lie nearby, including the 70 ha Kera island near the centre of the KBMRP, 23 km from the intertidal mudflats, which provides habitat for shorebirds but is little surveyed (Johnstone 1994). Other nearby wetlands include Bina Plain, 53 km to the south-east, which was also surveyed by Andrew (1986); Perhatu mangrove swamp and mudflats in Silain Bay on Semau island, 41 km to the south-west (Johnstone *et al.* in press); wetlands on the northern Tapuafu peninsula of Roti island, 72 km to the south-west (Trainor 2005b) and the internationally important Ashmore Reef (in Australian territory) located about 257 km to the south-west (Milton 2005).

Significant surveys and observations from 1985

Paul Andrew's surveys

Paul Andrew surveyed the bay area (Figure 1) over 10 weeks in February–March and August–October 1985; he identified and mapped shorebird roosts, and counted waders and other waterbirds (Andrew 1985, 1986). A total of 5,520 waders was counted

at roosts and on exposed mudflats over a 3–4 day period in most of Kupang Bay (Andrew 1985) and this remains the only comprehensive shorebird count made here. The data showed a stronger Australian influence than was previously thought, including the first Timor records of Pied Heron *Egretta picata*, Glossy Ibis *Plegadis falcinellus* and Australian Pelican *Pelecanus conspicillatus*, and the first observations outside Australia of the *macrotarsa* race of Gull-billed Tern *Geochelidon nilotica* (Trainor 2011). Large flocks of Red-capped Plover *Charadrius ruficapillus* were noted, the first records since 1932, and several regionally uncommon or rare species were recorded, including Near Threatened Eurasian Curlew *Numenius arquata*, Near Threatened Asian Dowitcher *Limnodromus semipalmatus* and Caspian Tern *Sterna caspia*. His record of 5,000–10,000 Australian Pratincole *Stiltia isabella* (Silvius *et al.* 1987) is significant because it comprises 8–16% of the species's global population (Bamford *et al.* 2008). A flock of 360 Broad-billed Sandpiper *Limicola falcinellus* also exceeded the 1% international conservation criterion for this species's EAAF population; counts of seven other species met the national 0.1% criterion (Bamford *et al.* 2008)—Grey Plover *Pluvialis squatarola*, Red-

Plate 4. Male Red-capped Plover *Charadrius ruficapillus* in breeding plumage at Tambak Merdeka, Kupang Bay, 15 August 2012.



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capped Plover, Vulnerable Eastern Curlew *Numenius madagascariensis*, Near Threatened Black-tailed Godwit *Limosa limosa*, Red-necked Stint *Calidris ruficollis*, Curlew Sandpiper *C. ferruginea* and Sharp-tailed Sandpiper *C. acuminata*. The Vulnerable Great Knot *Calidris tenuirostris* was recorded as were resident Beach Thick-knee *Esacus neglectus* and Malaysian Plover *Charadrius peronii* (both Near Threatened). Andrew referred to 'thousands' of Oriental Pratincole *Glareola maldivarum* but no further details were given (Andrew 1985, Wetlands International Indonesia Programme 2014).

Subsequent important records

A single male Critically Endangered Christmas Island Frigatebird *Fregata andrewsi* was observed in July 1985 flying along a beach in the Bay about 8 km from intertidal mudflats (McKean 1987). In 1993 Holmes (1993) visited Kupang several times and made observations at Lasiana Beach (Figure 1), notably including July records of six species of possibly summering shorebirds, resident Malaysian Plover and a late Timor date (6 December) for Australian Pratincole. In October 1995, Verbelen (Verbelen 1996, P. Verbelen *in litt.* 2004) mapped the wetlands at Kuka (Figure 1), noted the first record of Ruff *Philomachus pugnax* (two birds), and observed Little Curlew *Numenius minutus*, more than 40 Royal Spoonbill *Platalea regia* and breeding Black-winged Stilt *Himantopus himantopus*. Niven McCrie recorded the first Timor Kentish Plover *Charadrius alexandrinus* at Lasiana Beach on 29 December 1994 (McCrie 1995). Raf Drijvers visited Kuka in August 1998 and recorded the first Australian Ibis *Threskiornis molucca* (Trainor *et al.* 2006).

Between 10–12 June 2004 CRT walked about 40 km through much of the area, including Olio River, Tambak Oebelo and Tambak Merdeka, Bipolo fishponds and the Kuka area, recording summering Palearctic shorebirds (Trainor 2005a, 2011). About 3,400 birds comprising 30 waterbird and coastal seabird species were counted, including 457 Red-necked Stint, 162 individuals of 11 other Palearctic migrant shorebird species, five Beach Thick-knee, breeding Black-winged Stilt, Little Tern *Sterna albifrons* and Red-capped Plover, a pair of Malaysian Plover and an estimated 1,500–2,500 Australian Pratincole. CRT revisited these sites on 15 December 2004 and 4–5 January 2005 and recorded 37 waterbird and coastal seabird species, including counts of 790 Palearctic migrant shorebirds, most notably 36 Broad-billed Sandpiper at Kuka, 37 Eastern Curlew and an estimated 350 Grey Plover *Pluvialis squatarola* roosting at Olio River.



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Plate 5. A group of Royal Spoonbills *Platalea regia* and an Australian Pelican *Pelecanus conspicillatus* at Oebelo flats, Kupang Bay, 8 September 2012.

Birdwatching tours, individual birdwatchers and ornithologists now regularly visit parts of the Bay, particularly Pan Muti and the Bipolo fishponds. Recent notable records include three Asian Dowitcher and 120 Black-tailed Godwit, including one bird ringed in Roebuck Bay, Western Australia (Robson 2011a, b), and some of the first records of vagrant Masked Lapwing *Vanellus miles*, including six at Bipolo in August 2005 (Trainor *et al.* 2009). Sunda Teal *Anas gibberifrons* are regularly reported and Grey Teal *Anas gracilis* has also recently been observed and photographed (Eaton 2011).

New frontiers?

The pioneering work of Paul Andrew and the contributions of subsequent visitors have improved data on waterbirds and coastal seabirds, particularly those of Australian origin, in the Bay and more widely on Timor. Species thought to be vagrants or ‘drought refugees’ (Johnstone 1944, Mayr 1944) are now known to be breeding residents or present annually for long periods.

The Australian species Red-capped Plover and Australian Pratincole occur in good numbers. Until relatively recently, Red-capped Plover was considered to be a vagrant to Timor. However, a nest with eggs has been found at the bay (Trainor 2005a) although counts of 250 birds in June 2004 and of only 47 in December 2004 and January 2005 suggest that some birds are visitors. Records of the species from Ashmore Reef, a known stop-over point between Australia and Wallacea, are lacking (R. Clarke *in litt.* 2014), so that the status of the population on Timor, Roti and Semau remains uncertain and worthy of taxonomic evaluation. The Australian Pelican and Royal Spoonbill were also considered vagrants or occasional visitors to eastern Indonesia (White & Bruce 1986) but are present year-round in the Bay (Andrew 1986) and in Timor-Leste (Trainor 2005a, 2011), and may breed occasionally on Timor. In Kupang Bay 10–100

pelicans are often present and up to 150 have been seen but ‘thousands’ were reported by local villagers during a well-remembered irruption, probably in 1978 (Andrew 1986). The Australian Darter *Anhinga novaehollandiae* is an infrequent visitor whilst other uncommon visitors are Australian Ibis, Glossy Ibis (up to 26 individuals recorded) and Masked Lapwing (up to 13 birds); all are likely to be vagrants from Australia. Kupang Bay is the only known place in the world where Australian species such as White-faced Heron *Egretta novaehollandiae* and Pied Heron might be seen alongside Eurasian species such as Purple Heron *Ardea purpurea* and Grey Heron *A. cinerea*, the latter recently observed here for the first time (Vermeulan 2010).

The status of Gull-billed Tern is also interesting; the first record of the distinctive *macrotarsa* race outside Australia was at Kupang Bay (Andrew 1986, Trainor 2011). This taxon and the Asian race *affinis* both occur regularly at Kupang Bay and, based on morphology and behaviour, may be distinct at species level (Rogers 2004, 2005). Similarly, the Whiskered Terns *Chlidonias hybrida* recorded at Kupang Bay in September 1985 were thought to be the Australian race *javanicus* (Andrew 1986) rather than an Asian taxon.

The significance of Kupang Bay

Kupang Bay is one of only two major intertidal wetlands in Wallacea and has been regularly mentioned as a significant wetland site for migratory waterbirds, but this is largely based on the 1985 shorebird counts and habitat surveys by Andrew (Andrew 1985, 1986, Silvius *et al.* 1987, Wetlands International Indonesia Programme 2014). These data have been used in site prioritisation proposals (Rombang *et al.* 2002, BirdLife International 2005, 2014) but some observations remain unpublished, resulting in confusion over the status of some species; limited data—particularly a lack of wader counts at known roosts—mean that numbers using the site are uncertain and this hampers drawing

definitive conclusions. In 1985 Paul Andrew recommended 'further survey work to fully document the area' and that is still urgently needed today. The best summary of Andrew's data was presented by Silvius *et al.* (1987):

A very important staging area for migratory shorebirds, thirty-two species of which have been recorded. The most abundant are as follows: *Stiltia isabella* (flocks of 5,000–10,000 in autumn), *Pluvialis squatarola*, *Charadrius ruficapillus* (over 400 in March and September 1985), *C. leschenaultii*, *C. veredus*, *Numenius phaeopus*, *N. madagascariensis* (over 250 in March and October 1985), *Calidris ruficollis*, *C. acuminata*, *C. ferruginea* and *Limicola falcinellus*.

Trainor (2011) speculated that shorebird numbers in the Bay may have declined since Andrew's surveys but this may also be due to the lack of comparable data—recent observations of 120 Black-tailed Godwit (Robson 2011b) compare quite well with 188 in 1985 (Andrew 1986), likewise 550 Red-necked Stint (Robson 2011a) compares well with 600 (Andrew 1986) and Grey Plover were also seen by Trainor (2011) in similar numbers to Andrew. Conversely, whilst Andrew (1986) recorded 360 regionally rare Broad-billed Sandpiper, Trainor (2011) recorded only 36. Similarly, several shorebirds and coastal seabird species have been noted breeding, but further work may show that Kupang Bay supports other breeding species.

Reference is made to the ecological and biodiversity significance of Kupang Bay in the Indonesian government National Conservation Plan (NDP/NDPA 1993, ANZDEC Consultants 1993), in the context of mudflats, mangrove forest, lowland forest, estuarine and alluvial beach ecosystems and habitat for Australian migratory birds and Estuarine Crocodile. However, 20 years later there has been little or no practical outcome. The Bay has been designated an Important Bird Area (BirdLife International 2014) because the Australian Pratincole population (Silvius *et al.* 1987) meets the international 1% of flyway population criterion (Bamford *et al.* 2008). Broad-billed Sandpiper numbers in 1985 also exceeded the 1% criterion for international significance; seven other shorebirds meet the 0.1% criterion for national significance; two Vulnerable and five Near Threatened shorebirds have been recorded; totals of >2,000 shorebirds in the area make it of national significance; shorebirds winter and summer at the site, and use it as a staging post on migration. Observations in June 2004 suggested that Kupang Bay may hold summering Palearctic migrants. But,

unfortunately, when Kupang Bay was one of 388 Important Bird Areas assessed in a recent review, it was not identified as having 'high biodiversity value' (MacKinnon *et al.* 2011).

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