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THE BIRDS OF EAGLE ISLAND A TROPICAL SAND CAY ON THE NORTHERN GREAT BARRIER REEF, AUSTRALIA

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Eagle Island is a low vegetated sand cay, typical of many along the Great Barrier Reef. It lies 8 km WSW. of Lizard Island. The first recorded visit by Europeans was that of Cook and Banks. Prior to them it had been used by aboriginals for turtle feasts, as turtle remains were found by Cook and later visitors. At Eagle Island Cook and Banks noted eagles and their young (which they shot); an enormous nest of sticks on the ground, which measured 26 ft around the circumference and 2 ft 8 ins high; and abundant "seafowl" (Wharton 1893, Hooker 1896). The next European encounter was by the H.M.S. Rattlesnake in August 1848, with the naturalist MacGillivray aboard (MacGillivray 1852). He had been intrigued by the report of the large nest because of a theory that it may have been the nest of a *Dinornis*, a large, flightless, extinct bird of New Zealand. MacGillivray was reported to have laid to rest that notion, made by an "impetuous American professor" (Chisholm 1822). Domm (1977) published an account of the seabirds and waders of the Lizard Island area, which included notes on Eagle Island.

This paper provides a list of birds seen at Eagle Island during brief visits by the author in February 1982, April 1983, and during extended visits when the author, sometimes with assistants, lived on the cay from November 1983 to mid-March 1984, late October 1984 to mid-March 1985, and October 1985 to late March 1986. A more detailed account of the seabirds that breed at Eagle Island has been publised in the Island Seabird Series of *Corella* (Smith and Buckley 1986).

STUDY AREA

Eagle Island (14° 42'S, 145° 23'E) is a vegetated sand cay situated at the northern edge of Eyrie Reef, a large patch reef of approximately 12 km^2. The vegetated area of the island is approximately 440 m by 120 m at its widest with its long axis running from NE. to SW. Significant portions are bordered by beach rock.

Eagle Island has a tropical climate with moderate fresh dry trade winds from May to October and moister winds of variable direction from November to April. The annual rainfall at Lizard Island is 2000 mm per annum and falls predominantly from January to April. Annual air temperatures range from 19°C to 33°C while sea surface temperatures range from 23°C to 29°C.

Floristically, the Island is composed principally of grassflat, with patches of closed scrub and low open woodland. A complete list of plant species is given in Appendix 1.

RESULTS

Eight or nine species were 'resident' at Eagle Island (see Appendix 2 for Systematic List and Definition of Terms). The status of the Silver Gull is questionable. Individual gulls were seen on the Island during all vists, but whether these flew regularly to and from other islands has not been ascertained. Other residents (Osprey, Eastern Reef Egret, Buff-banded Rail, Beach Thick-knee, Pied Oystercatcher, Bar-shouldered Dove, Pale White-eye, and White-breasted Wood-swallow) are distributed throughout the islands of the northern Great Barrier Reef (pers. obs.). The Buff-banded Rail, Bar-shouldered Dove, White-breasted Woodswallow and Pale White-eye all bred at Eagle Island.

Twenty-three species were 'regular visitors' to Eagle Island. Six of these were breeding seabirds and seven were non-breeding seabirds. Seven regular visitors were waders which breed in the northern hemisphere and overwinter in Australia. The Torresian Imperial Pigeon, another of the regular visitors to Eagle Island, spends its non-breeding period in the rainforests of New Guinea (Blakers *et al* 1984) and breeds at traditional sites on the Great Barrier Reef (Kikkawa, 1976).

Other regulars included the White-bellied Sea-eagle and the Sacred Kingfisher.

Birds seen or heard irregularly at Eagle Island included the White-tailed Tropic Bird, Great Egret, Brown Falcon, Sooty Oystercatcher, Little Curlew, Common and Sooty Terns, Satin Monarch and Yellow-bellied Sunbird.

Transients were relatively numerous. Two transient species were non-breeding seabirds and four were migrant waders from the northern hemisphere. Sightings of transient Red-capped Plover *Charadrius ruficapillus* and Red-necked Stint *Calidris rufisollis*, require confirmation. Other transients were land birds.

DISCUSSION

Sadly, there are only a few published lists of birds from long-term inhabitants of small cays and remote islands on the Great Barrier Reef. This is largely because of the logistical difficulties associated with long periods of residence. Notable amongst these are Booth (1970), Kikkawa (1970), Domm and Recher (1977), Draffan *et al* (1983).

During our stay at Eagle Island, 52 species of birds were recorded and Domm (1977) also recorded the Eastern Curlew *Numenius madagascarensis* there. By comparison, for the islands of the Capricorn-Bunker group on the southern Great Barrier Reef, 27 species have been noted at North Reef cay (Walker 1986) and 35 species at Lady Elliot Island, including historical records (Walker *In Press*); 27 species were recorded at Wreck Island, including all historical records and the beach washed specimen of the Fairy Prion (Booth 1970); 54 species at Fairfax Island, including historical records (Booth 1970); 67 species were recorded for One Tree Island, one of which was a dead Wandering Albatross (Domm and Recher 1977); and 72 species at Heron Island, including five introduced species and historical records (Kikkawa 1970).

Heron Island possibly has the highest species tally because of its long-term occupancy by ornithologists, compared with any of the other islands of the Capricorn-Bunker group. At Fairfax, One Tree, Wreck and Heron Islands, a significant number of continental land birds not known to breed on coral cay islands were recorded during the cooler months (Kikkawa

1970). It seems that during winter migrations or when food is scarce on the mainland, continental land birds are more likely to stray to offshore islands. Draffan *et al* (1983) found that many continental landbirds island hopped across the Torres Straits during migration. Unfortunatley we were absent through the cool months and are unable to say whether Eagle Island is on a well used winter migration pathway.

Seven species of seabird have bred at Eagle Island (Smith and Buckley 1986) compared with 13 species at Fairfax Island (Booth 1970) in the Capricorn-Bunker group (Table 1). However, Eagle Island appears to be on a par with One Tree Island as to number of breeding species. These islands are both cays, except that One Tree Island is coral shingle and Eagle Island is composed of sand. Both islands have experienced small amounts of human disturbance with little apparent effect on breeding seabirds. By contrast, larger man-made installations on Heron Island may have produced a smaller diversity of breeding species.

TABLE 1

The numbers of breeding seabird species recorded for each of the islands of the Capricorn-Bunker group. The largest number for each is in bold type.

	Booth (1970)	Kikkawa (1970)	Domm & Recher (1977)	Hulsman (1984) 1982-83	1983-84	Walker (1986) & (in Press)	Smith 1984-86
North Reef				1	3	**5**	
Tryon				3	**4**		
North West				1	**2**		
Wilson				2	**4**		
Wreck	5			5	**5**		
Masthead				6	**6**		
Erskine				3	**4**		
Heron		**5**		2	2		3
One Tree			**7**	4	5		
Hoskyn				5	**6**		
Fairfax	**13**			4	4		
Lady Musgrave				3	**6**		
Lady Elliot				4	3	**9**	

One species which seems to have suffered from human habitation is the White-bellied Sea-eagle. It has in the past bred at Wreck, One Tree and Heron Islands, but no longer does so (Booth 1970; Kikkawa 1970; Domm and Recher 1977) and the nest seen by Cook and MacGillivray at Eagle Island can no longer be seen, although White-bellied Sea-eagles do occasionally visit. The breeding status of other raptors at Eagle Island is unclear. Nests of the Osprey were present during our stays on the Island but none ever contained eggs or young. However, it usually breeds during the cooler months of the year in the northern sections of the reef (Domm 1977 and pers. obs.) when we were absent. Brown Falcons appeared to take up residency during tern breeding seasons but no nests were seen.

It is interesting to note that Mees (1969) designated Eagle Island as the southern limit of the Great Barrier Reef population of the Pale White-eye. For this reason alone, Eagle Island has considerable ornithological interest.

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APPENDIX 1

SYSTEMATIC PLANT LIST

Plant list for Eagle Island. Collected specimens are held by the Smithsonian Institution, Washington D.C. Plants were recorded or collected by Ralph Buckley (R.B.) in 1979 and David Stoddart (D.S.) in 1973.

Abutilon indicum R.B.; *Achyranthes aspersa* R.B.; *Alorus precatorius* DS4831; *Argusia argentea* R.B.; *Boerhavia diffusa* RB-3445; *Boerhavia repens* R.B.; *Canavalia maritima* R.B.; *Capparis lucida* R.B.; *Cassytha filiformis* R.B.; *Casuarina equisetifolia* R.B.; *Cenchrus echinatus* RB3443; *Clerodendrum inerme* RB-3440; *Colubrina asiatica* R.B.; *Euphorbia chamissonis* R.B.; *Flagellaria indica* R.B.; *Glycosmis pentaphylla* R.B.; *Guettarda speciosa* R.B.; *Ipomoea pescaprae* R.B.; *Ipomoea tuba* R.B.; *Lepturus repens* R.B.; *Micromelum minutum* R.B.; *Mimusops elengi* RB3448; *Planchonella obovata* DS4801; *Portulaca australia* RB-3326; *Pouteria sericea* RB3447; *Remirea maritima* RB3446; *Scaevola taccada* R.B.; *Sesuvium portulacastrum* R.B.; *Sophora tormentosa* DS4800; *Sporobolus virginicus* DS4808; *Stachytarpheta jamaicensis* DS4833; *Suriana maritima* R.B.; *Terminalia arenicola* R.B.; *Terminalia muelleri* DS4802; *Thuarea involuta* R.B.; *Tribulus cistoides* R.B.; *Tribulus solandri* R.B.; Unidentified RB-3441; Unidentified RB3467; *Vigna marina* DS4823; *Vitex trifolia* R.B.; *Wedelia biflora* RB3444.

APPENDIX 2

SYSTEMATIC BIRD LIST

Definition of terms:

Residents. Birds that appear to live at Eagle Island, based on non-winter visits.

Visitors. These were 'regular' in occurrence, e.g. birds migrating from the northern hemisphere and seabirds (breeding or non-breeding). Or 'irregular' in occurrence (non-breeding species only).

Transients. Seen on one occasion only and possibly occurring out of their normal range. Non-breeding.

Australian Pelican *Pelecanus conspicillatus.* Regular visitor. Counts of one to eight. Non-breeding.

Red-footed Booby *Sula sula.* Transient. One seen December 1983.

Masked Booby *Sula dactylatra.* Transient. One in March 1986.

Brown Booby *Sula leucogaster.* Regular visitor. Usually solitary. Non-breeding.

Great Frigatebird *Fregata minor.* Regular visitor. In the company of Least Frigatebirds. Non-breeding.

Least Frigatebird *Fregata ariel.* Regular visitor. Groups of less than 10. Non-breeding.

White-tailed Tropic Bird *Phaethon lepturus.* Irregular visitor. Single individuals seen 28 November, 1983 and 10 November 1984. Non-breeding.

White-faced Heron *Ardea novaehollandiae.* Transient. One on 15 October, 1985.

Great Egret *Egretta alba.* Irregular visitor. Counts of one to two individuals. Non-breeding.

Eastern Reef Egret *Egretta sacra.* Resident. Up to 102 individuals counted on one occasion. Breeds.

Osprey *Pandion haliaetus.* Resident. One to four birds per count.

White-bellied Sea-Eagle *Haliaetus leucogaster.* Regular visitor. Usually seen as single individuals but occasionally in pairs. Both juveniles and adults noted. Non-breeding.

Brown Falcon *Falco berigora.* Irregular visitor. Solitary. Non-breeding.

Buff-banded Rail *Rallus philippensis.* Resident. More than two birds resident, but no accurate estimate obtained. Breeds.

Beach Thick-knee *Burhinus neglectus.* Resident. One pair. No nests found.

Pied Oystercatcher *Haematopus longirostris*. Resident. One to two individuals per count. No nests found.

Sooty Oystercatcher *Haemotopus fuliginosus*. Irregular visitor. One to two individuals per count. No nests found.

Lesser Golden Plover *Pluvialis dominica*. Regular visitor. One to 11 birds per count. Non-breeding.

Mongolian Plover *Charadrius mongolus*. Regular visitor. Up to 47 noted in a count, but highly variable. Non-breeding.

Ruddy Turnstone *Arenaria interpres*. Regular visitor. Up to 45 counted at once. Non-breeding.

Whimbrel *Numenius phaeopus*. Regular visitor. Up to 20 noted at a time. Non-breeding.

Little Curlew *Numenius minutus*. Irregular visitor. One noted in the 1984-85 and 1985-86 seasons. Non-breeding.

Grey-tailed Tattler *Tringa brevipes*. Regular visitor. A maximum of 128 counted in November 1983. Non-breeding.

Common Sandpiper *Tringa hypoleucos*. Transient. One in November 1984.

Terek Sandpiper *Tringa terek*. Transient. One on 7 February, 1984.

Bar-tailed Godwit *Limosa lapponica*. Regular visitor. Counts from one to 10. Non-breeding.

Red Knot *Calidris canutus*. Regular visitor. Up to 33 counted. Non-breeding.

Sharp-tailed Sandpiper *Calidris acuminata*. Transient. One noted 19 February, 1985.

Broad-billed Sandpiper *Limicola falcinellus*. Transient. Two noted on consecutive days, 29 to 30 November, 1984.

Silver Gull *Larus novaehollandiae*. ?Resident. Counts from one to 22. No nests found.

Caspian Tern *Hydroprogne caspia.* Regular visitor. Up to three noted; an adult pair and a juvenile. More typically pairs. Probably breeds.

Common Tern *Sterna hirundo.* Irregular visitor. A maximum of 53 were seen during the period 29 November to 2 December, 1984, but counts usually much smaller. Non-breeding.

Roseate Tern *Sterna dougallii.* Regular visitor. Up to 24 birds were noted in counts between late November and early December, 1983. Breeds.

Black-naped Tern *Sterna sumatrana.* Regular visitor. A maximum of 254 adults were noted during the 1984-85 breeding season. Breeds.

Sooty Tern *Sterna fuscata.* Irregular visitor. Usually single birds. Non-breeding.

Bridled Tern *Sterna anaethetus.* Regular visitor. Breeds.

Little Tern *Sterna albifrons.* Regular visitor. A maximum of 50 counted 29 December, 1983. Non-breeding.

Crested Tern *Sterna bergii.* Regular visitor. A maximum count of 2,330 adults in January 1984. Breeds.

Lesser Crested Tern *Sterna bengalensis.* Regular visitor. A maximum of 186 counted on one occasion during the 1984-85 season. Breeds.

Common Noddy *Anous stolidus.* regular visitor. Always in groups of less than 10. Non-breeding.

Black Noddy *Anous minutus.* Regular visitor. Always in numbers less than 10. non-breeding.

Torresian Imperial-Pigeon *Ducula spilorrhoa.* Regular visitor. One to 8 noted. Breeds.

Bar-shouldered Dove *Geopelia humeralis.* Resident. No accurate count but greater than 10. Breeds.

Sacred Kingfisher *Halycon sancta.* Regular visitor. Single birds noted. ?Breeding.

Dollar Bird *Eurystomus orientalis*. Transient. Seen on 4 November, 1983.

Spectacled Monarch *Monarchis trivirgatus*. Transient. One on 3 January, 1986.

Satin Monarch *Myiagra cyanoleuca*. Irregular visitor. Single individuals only. Non-breeding.

Yellow-bellied Sunbird *Nectarinia jugularis*. Irregular visitor. Single birds. Non-breeding.

Pale White-eye *Zosterops citrinella*. Resident. At least eight occur. Counts were made at a feeding station. Breeds.

Spangled Drongo *Dicrurus hottentottus*. Transient. One on 26 February, 1985.

House Sparrow *Passer domesticus*. Transient, although large flocks occur on nearby Lizard Island. Non-breeding.

White-breasted Wood-Swallow *Artamus leuchorhyncus*. Resident. No estimate of population size. Breeds.

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BOOK REVIEW

READERS DIGEST COMPLETE BOOK OF AUSTRALIAN BIRDS, Second Edition, 1986.
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640 pp, 745 colour illustrations
R.R.P. $40.95

So much has changed in this edition that it might almost be another book instead of a revised edition of an earlier one. However, the format remains basically the same although the order of various sections is changed. Thus the information on bird behaviour which distinguishes species has been shifted from the end of the book to the beginning which makes more sense. The original book contains two chapters on behaviour, but this edition has so much added information that it has four chapters, with extra photos to illustrate the text. In these chapters there are excellent line drawings of legs, feet, beaks and nests. There is also an enlarged section on Functions and Care of Feathers, with good diagrams.

The chapter on Migrants and Nomads remains almost the same, except for some statistical data which one would expect to change as more research has taken place since 1976 when the first edition appeared.

In the body of the book not one page remains the same. Information has been brought up to date. Because few field guides were available in the early seventies the text of the first edition was mainly about identification. Many gaps in our knowledge have been filled since then so in this edition the stress is more on which habitats birds use, what they feed on, and where they breed.

English names now conform to the list published by the R.A.O.U. in the *Emu* 1978. Scientific names follow the classifications set out in the *Checklist of Birds of the World* by Peters in 1979. As Peters sets the standard order for the rest of the world we are now in line with overseas publications.

There has been some lumping and splitting to follow the latest scientific discoveries. For example the Calamanthus is split into two species, the Rufous *Sericornis campestris*, and the Striated *Sericornis fulginosus*. The Northern; Eastern and

Pale-headed Rosellas have been lumped under White-cheeked Rosella, each of the former three now being a subspecies.

There are also some extra species dealt with such as the Erect-crested Penguin *Eudyptes scalateri*. This was bound to happen as more and more observers are in the field now. Birds once regarded as vagrants have been proved more common than was thought, especially sea birds.

The photographic quality is almost as good as the first edition. Nearly all photos have been taken from the *National Photographic Index of Australia*. Some have been changed to give better views of the birds (e.g. Zebra Finch). Other changes are hard to understand. For example the new photo of the Yellow-billed Spoonbill does not show the yellow legs as did the original. Altogether 15 pictures seem better to me, but to balance this, in my opinion 12 are not as clear for identification purposes. On the credit side there are 13 additional photos of species either only mentioned before, or just listed in the Classification by Order and Family at the back of the first edition.

The maps have been completely revised and brought up to date with the *Atlas of Australian Birds*. For birders who do not have the *Atlas*, this edition is worth buying for these alone. The ranges of 111 birds have been extended while those of 34 have been reduced. Some other 32 maps have been altered but it is difficult to say if ranges are reduced or extended because of the odd shapes of the shaded areas.

Overall, this edition is a must for every birder, experienced or beginner.

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9. Mystery Photo 9 really was a bit too easy! The long, slender, mostly pale bill, white forehead, streaked side of the face and distinctive underwing pattern all point unerringly towards a Streaked Shearwater *Calonectris leucomelas*. It's not a bird which should pose any problems in this sort of view, but of course, it's also not often seen this well. So rather than discuss the obvious features visible in the photograph, I'll make a few comments on identifying the species in the distance, where it belongs.

In reasonable conditions, with a scope, Streaked Shearwaters are pretty easy up to about two kilometres, which unfortunately is about how far they usually are! Of course, the first

thing is to make sure you've got a shearwater, because it's embarrassing if your crippler turns out to be just a Skua, young Gannet or Booby. If you can't tell the difference, it's time to get in a bit of practice!

So let's consider a distant petrel which is dark above and white below, including most of the underwing, and it's large, at least the size of a Wedge-tailed Shearwater *Puffinus pacificus* and much bigger than a Fluttering Shearwater *P. gavia* but not nearly as large as an Albatross or Australasian Gannet *Morus serrator*. The most likely contenders, in order of probability, will be Streaked Shearwater, Buller's Shearwater *P. bulleri*, White-necked Petrel *Pterodroma cervicalis* or light-phase Wedgy. All these are rare, but the other possibilities are so outrageous that you might as well forget them unless you get incredibly good views.

In good light, the upperparts of a Streaked appear very brown and obviously paler than those of the Wedgies which are usually not far away. There is no prominent dorsal pattern, although the primaries and secondaries often look darker, the mantle paler and there may be a hint of a dark "M" mark across the inner wing. In better views, some show a pale, "V"-shaped mark across the base of the uppertail. The upper-parts of both White-necked Petrels and Buller's Shearwaters are essentially grey with prominent blackish "M" marks. The pattern of a Buller's is so pronounced that it will always be obvious but that of a White-necked is more subtle and rather dependent on light. Remember that anything can look brown in bright sunlight or blackish if the light is really dull. Pale-phase Wedgies look similar to ordinary Wedgies above, but bear in mind that their upperparts will vary somewhat in tone with fading and wear.

Size is another important point, as a Streaked is considerably larger than a Wedgy and this difference is usually quite obvious when the two species are seen together, which they usually are. In shape, a Streaked is rather similar to a Wedgy but looks even more slender-bodied and has broader wings that tend to be held a little straighter. Its flight is not very different from that of a Wedgy, although it may glide more and the wingbeats may look more powerful. Buller's and pale-phased Wedgies appear identical to ordinary Wedgies in size, shape and flight. By contrast a White-necked Petrel has a very different flight, arcing up much higher into the air

with rapid changes of direction and long periods of gliding. This difference is great enough that it should be obvious if a White-necked is watched for more than a few seconds. A White-necked is similar in size to a Wedgy but has straighter, narrower wings.

The underwing of a Streaked looks mainly white with a black trailing edge which broadens out towards the tip to occupy the full width of the primaries. The other dark markings are surprisingly difficult to see at any distance. In bright sunlight the white areas tend to "burn out" the dark areas and the trailing edge may disappear, though prolonged observations should eventually reveal it. White-necked Petrels vary in the extent of dark on the trailing edge but never show as much as a Streaked while a Buller's shows hardly any at all. Unfortunately, the underwings of a distant, pale-phased Wedgy look very similar to those of a Streaked.

The streaking on the head is variable in extent but impossible to see at a distance while the white forehead can often be noted from a long way, especially in bright light. If a white forehead is seen, it immediately eliminates any of the other confusing Shearwaters, but doesn't help with *Pterodroma*. In dull light, the white parts of the head may be very difficult to see, and the darker nape often gives the impression of a neat, black cap which makes the neck look shorter than it really is. In very favourable conditions, the distinctive, mainly white bill may be visible. But be wary, since dark bills may look pale due to reflection.

Although Streaked Shearwaters were almost unknown in Australian waters until the 1970s, they are now known to be fairly common in North Australian seas and regular, if uncommon, in eastern Australia, at least between Brisbane and Wollongong. January to March is the best time of year and in that period the species is quite likely to be seen by patient seawatchers from suitable headlands such as Point Lookout on Stradbroke Island. Birds sighted in this way are usually distant except in strong, onshore winds. Most sightings take place late in the afternoon when the birds are active and the light, on the east coast, is favourable.

I photographed the Streaked Shearwater in Mystery Photo 9 during a pelagic outing off Wollongong, NSW in February 1985.

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