Reptiles of the Bay: *The bird-eating Brown Tree Snake, 'Boiga irregularis', is a common species which can be a nuisance to bird-fanciers.*

It can be pugnacious when provoked and is a ready biter. However, in the medical sense, it is of little consequence.

It is well known on several islands of Moreton Bay.

CHARACTERS, COVES AND CLIFFS

8

THE REPTILES OF MORETON BAY

Jeanette Covacevich

"ISLANDS POSSESS MANY ADVANTAGES for study of the laws and phenomena of distribution ... compared with continents they have a restricted area and definite boundaries ... The number of species and genera they contain is always much smaller than in the case of continents, and their peculiar species and groups are usually well defined and strictly limited in range... their relations with other lands are often direct and simple ... and they exhibit ... certain peculiarities ... whose study offers many points of interest ..."

Alfred Russel Wallace[1]

Moreton Bay is dotted with some forty islands. These vary in size and shape; in distance from the adjoining mainland and from each other; in geological history, substrate and topography; and as a consequence vary in vegetation, water availability and patterns of animal and plant species diversity and population size. They and the shallow, subtropical waters of the Bay are a paradise for zoogeographers. Textbook principles usually conveyed as dry, written theories are here, in the Bay, as living "in the flesh" examples.

The Reptiles of Moreton Bay: Stephen's Banded Snake, 'Hoplocephalus stephensii' is found on North Stradbroke Island in Moreton Bay. This is a venomous species whose bite can have severe local effects.

Knowledge of the reptiles of Moreton Bay is far from complete, even at the most basic level of knowing which species occur where, and when (for marine species like the turtles and sea snakes). In the literature[2,3] and records of the Queensland Museum, however, we have a good picture of both species diversity and some patterns of occurrence for them.

Reptiles are known to occur on eleven Moreton Bay islands. That there are no records for so many of the Bay islands does not, of course, mean they are devoid of reptiles. Some of the tiny mangrove mud islands may be, but most have not been the subject of any fauna surveys and are, therefore, unknown zoologically.

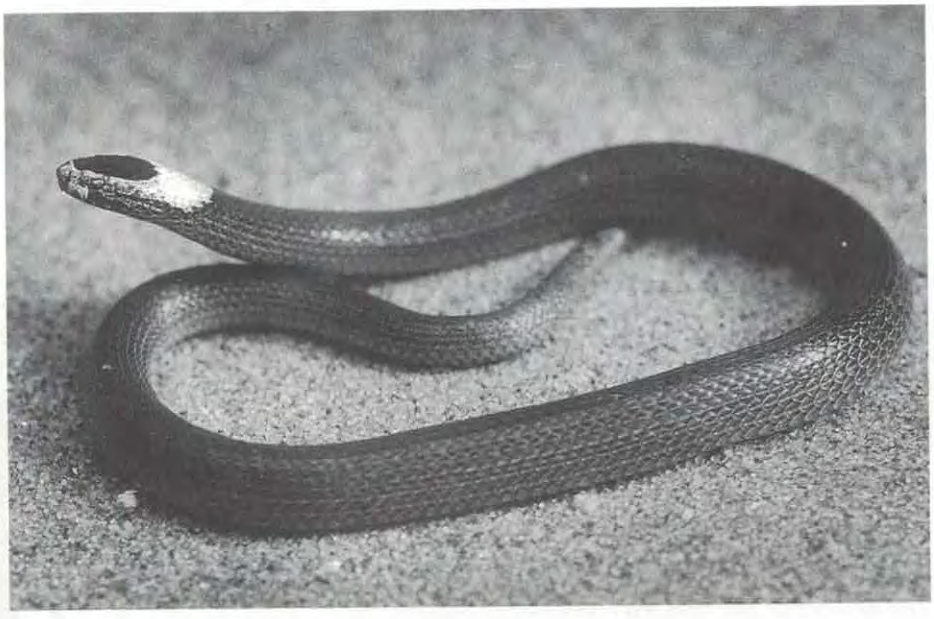
What we do know of the reptile species of the Bay islands confirms that they illustrate perfectly several key zoogeographic principles. They show –

1. *There are fewer species on islands or island clusters than there are in an area of similar size on an adjoining, near mainland.*

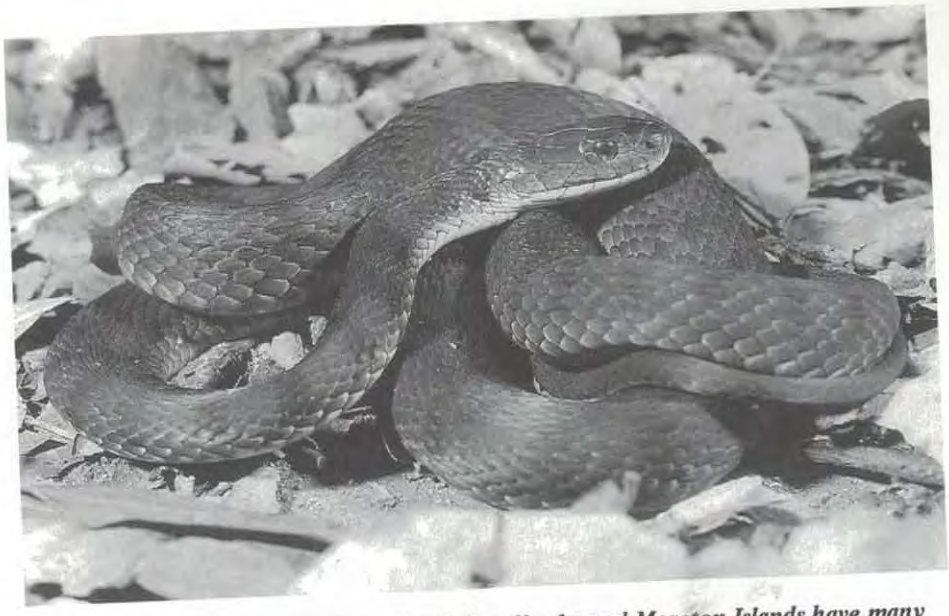
2. *Proximity to a mainland source of colonizing species is a major factor in determining species diversity on an island.*

3- *Given similar distance from mainland colonizing species,*
4. *a larger and more diversely vegetated island will support more species than one that is smaller, with less soil, vegetation and habitat diversity; and older islands usually support more species than islands with more recent origins.*

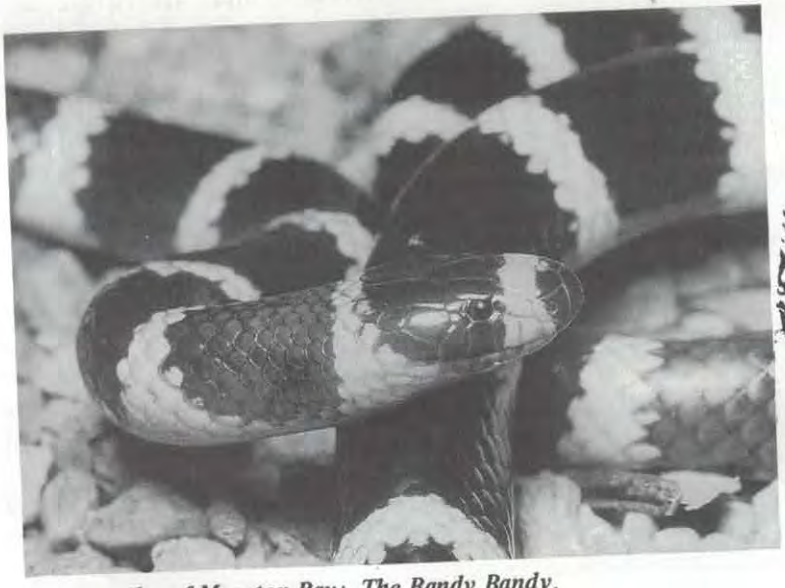
5. *When two (or more) islands form from one, the straits between them act as barriers so that older separations have more impact on species diversity than those more recent.*



The Reptiles of Moreton Bay: The White-naped Snake, 'Cacophis harriettae' is venomous, but has venom of low toxicity, and can be considered harmless. So far, in Moreton Bay, it has been found only on Macleay Island.



The Reptiles of Moreton Bay: North Stradbroke and Moreton Islands have many more reptile species than the other islands of the Bay. The Rough-scaled Snake, 'Tropidechis carinatus' occurs on both, but is not known elsewhere in the Bay. It is common on the adjoining near mainland. It is potentially a dangerous snake and has caused fatalities and near-fatalities in south-eastern Queensland.



The Reptiles of Moreton Bay: The Bandy Bandy, 'Vermicella annulata' can be confused with Stephen's Banded Snake, 'Hoplocephalus stephensii', because both are dramatically black and white banded. The Bandy Bandy is a common species, infrequently seen because of its burrowing habits and shy, nocturnal activity.

South-eastern Queensland is very diverse herpetologically. On the mainland – in the area with an 80 km radius of the Brisbane General Post Office – there are 85 species of reptiles (freshwater turtles, lizards and snakes). To date a total of 38 species are known from the islands of Moreton Bay.

ISLAND SPECIES

South Stradbroke, North Stradbroke, Moreton, and Bribie Islands are all composed almost entirely of sand. The two Stradbrokes were joined until 1896, and what might be termed Stradbroke "the greater" may, in turn, have been joined to, or at least separated by much narrower waters from both the Southport Spit and Moreton Island.[4] Bribie Island is so close to, and separated from the mainland by such shallow water that a small drop in sea level would see it and the mainland rejoined – as they have surely been in recent geological times.

The reptiles of these islands have been well documented.[2-3] On North Stradbroke – the largest and most diverse – there are 35 species; on Moreton, 19; Bribie, 12; and South Stradbroke, 4. These figures correspond well with what would be expected from a study of zoogeographic theory of size, habitat diversity, and length of separation from the mainland and each other.

Russell (with 3 species), Macleay (4), Coochiemudlo (3), Peel (7), and St Helena (5) are all continental islands, separated from the mainland when sea levels rose. Their reptile species are less well surveyed than those of the large sand islands, and they are not a perfect "fit" with zoogeographic theory. Russell Island should have the most species because it is the largest. Examination of the species list for Russell confirms that knowledge of the species is wanting, rather than any zoogeographic theory. For Russell, Queensland Museum records show snakes only – the Brown Tree Snake, *Boiga irregularis;* the Keelback, *Tropidonophis mairii;* and the Bandy Bandy, *Vermicella annulata.* For Coochiemudlo, too, only snakes are recorded – the Keelback, *Tropidonophis mairii,* the Marsh Snake, *Hemiaspis signata;* and the Small-eyed Snake, *Rhinoplocephalus nigrescens.*

On Macleay Island, we have specimen records of 4 reptiles – all snakes, the 3 species known from Russell, and the White-naped Snake, *Cacophis harriettae.*

It is unlikely that no small skinks have colonized these islands, as they have St Helena and Peel Islands. Further studies will doubtless provide more accurate data on species diversity for these islands and, in the light of studies elsewhere,[5] it does not seem unreasonable to predict that they will conform better with expected patterns.

The mud-mangrove islands of Moreton Bay are generally close to the mainland; of recent origin geologically; of small size; and of low habitat diversity. They are also all but unknown as far as their reptile populations are concerned. On Eden and Tabby Tabby Islands the small skink, *Lampropholis delicata* is common, but there are no data for Pannikin, Lagoon, Mosquito, Tuleen, or Never Fail Islands; and the host of other similar islands in the southern, narrow part of the Bay.

Potentially Dangerous Species

Some of the snakes which occur in Australia have extremely toxic venoms. Fourteen species are known to have inflicted fatal bites or are believed capable of doing so. Many of these species are known from the islands of Moreton Bay –

Eastern Brown Snake, *Pseudonaja textilis* (from North Stradbroke Island). This species has been collected and observed many times on dunes backing northern beaches on the island.

Tiger Snake, *Notechis scutatus* (from North Stradbroke Island). This is a 1912 record. The species has not been reported since then on the island.

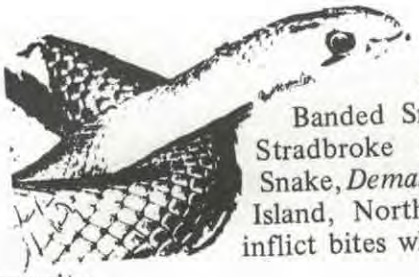
Death Adder, *Acanthophis antarcticus* (from North Stradbroke Island). There are many records from the island. The most recent is from 1975, about 9 years after the Cane Toad, *Bufo marinus* was introduced to the island.[4] Cane Toads are highly toxic to most Australian animals which attempt to eat them, and Death Adders are known to die following attempts to eat Cane Toads.[6] While young, Death Adders are frog-eaters.[7] At this stage they are known to prey on Cane Toads, and die in the process. It does not seem unreasonable to suggest that the presence of Cane Toads has played some part (along with habitat destruction) in the apparent decline of Death Adder populations on North Stradbroke Island.

The Reptiles of Moreton Bay: The skink, 'Ctenotus taeniolatus', is strikingly marked, and moves like lightning. It is an insect feeder, and is one of the common species found on the islands in Moreton Bay, Queensland.

Rough-scaled Snake, *Tropidechis carinatus* (from Moreton Island, North Stradbroke Island). The Moreton specimen – the only record known for this species from the island – came from Comboyuro Point in 1984. *Tropidechis carinatus* is apparently common in northern parts of North Stradbroke (Point Lookout, Fern Gully, Blue Lake and near Dunwich).

Red-bellied Black Snake. *Pseudechis porphyriacus* (from North Stradbroke, Moreton Island, Peel Island). Records for this species are scant. Those from Moreton are from the 1970s. No date accompanies the Peel specimen. Frogs form a major part of the diet of this species, so ingestion of Cane Toads may have played a part in its apparent scarcity.

Small-eyed Snake, *Rhihoplocephalus nigrescens* (from North Stradbroke Island, Macleay Island, Coochiemudlo Island). This species is common and widespread on the islands from which it is known. It is a skink eater.



Two other species which warrant caution occur on the islands. Stephen's Banded Snake, *Hoplocephalus stephensii* (North Stradbroke Island) and the Yellow-faced Whip Snake, *Demansia psammophis* (Bribie Island, Moreton Island, North Stradbroke Island, Peel Island) can inflict bites which result in local symptoms of varying severity.

Rare Species

The conservation status of the reptiles of Queensland has recently been reviewed.[8] Two of the species from the islands, both skinks, are of special concern to planners and managers charged with ensuring the natural quality, including a rich biodiversity, is preserved in Moreton Bay. *Ctenotus arcanus* is noted as occurring in small, isolated (and therefore vulnerable) populations. It is also poorly known.[8] *Ophioscincus truncatus* is classed as being rare.[8] It is one of a handful of species which occur in coastal heaths and elevated rainforests in south-eastern Queensland.

These species are of special interest to zoogeographers because they evidence the parallel evolution in Australia of heaths (on impoverished soils) and rainforests (on rich soils) in moist eastern Australia.[9]

MARINE SPECIES *

Moreton Bay is a haven for marine turtles. All the turtles known from our Australian coastal waters have been recorded there – the Flatback, *Natator depressus;* the Olive Ridley, *Lepidochelys olivacea;* the Luth, *Dermochelys coriacea;* the Green, *Chelonia mydas;* the Loggerhead, *Caretta caretta*; and the Hawksbill, *Eretmochelys imbricata.*

L. olivacea and *N. depressus* are known only from isolated beach-washed or trawled specimens sent to the Queensland Museum early in the 1990s; *D. coriacea* is a regular seasonal visitor to the Bay. In the late Winter – early Summer months the large, black Luths are seen commonly from headlands on North Stradbroke and Moreton Islands. The remaining three species are resident in the Bay – *C. mydas* and *C. caretta* are widespread and have been the subject of intensive recent studies;[11,12] and *E. imbricata* is relatively scarce in the Bay, being associated generally with coral reefs.

All the Australian marine turtles are in need of urgent protection. The exact conservation status of the three resident Moreton Bay species is the subject of debate,[8] but all authorities agree that they warrant special attention.

***Data for the marine species were supplied generously by Patrick Couper of the Queensland Museum.**

The marine turtles move between wide-ranging (feeding/living) and restricted (breeding) areas; their populations are subjected to intense exploitation (as food or "tortoise-shell") outside Australian waters; and they fall victim to both accidental and deliberate destruction by fishermen, crabbers and vandals.

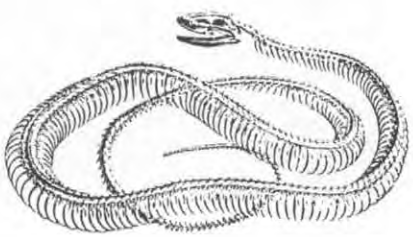
Eleven species of sea snakes have been recorded in Moreton Bay –

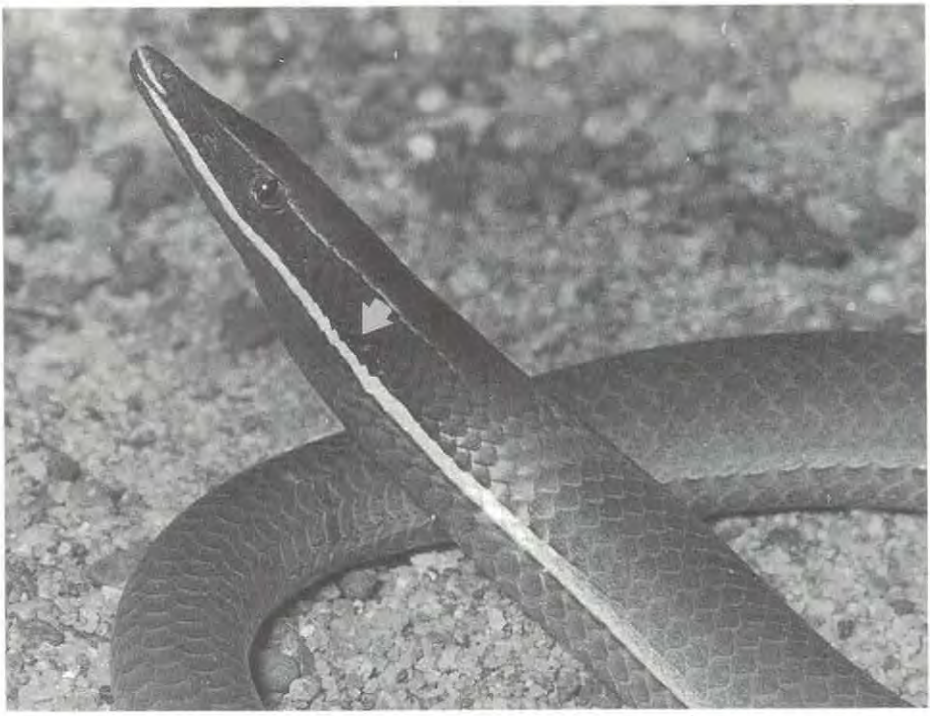
Acalyptophis peronii, Aipysurus eydouxii, Aipysurus laevis,
Astrotia stokesii, Disteira kingii, Disteira major,
Emydocephalus annulatus, Enhydrina schistosa,
Hydrophis elegans, Hydrophis mcdowelli, and
Pelamis platurus.

All species are venomous and, although toxicity of their venoms varies greatly, all should be treated with caution. Only the Elegant Sea Snake, *Hydrophis elegans* is resident in the Bay. Sea snakes are poorly known reptiles. Little is known of most aspects of their biology, but studies of their food preferences point to a very high degree of specialization in some species. *Emydocephalus annulatus,* for instance, feeds in burrows in coral reefs – on only blenniid and gobiid fish eggs; and *Astrotia stokesii,* a very large species, eats only frogfish, stonefish and grinners, all of which are very spiny bottom-dwellers. *Hydrophis elegans,* on the other hand, is a generalist. It feeds on fish, especially elongate species from soft-bottom close-to-shore waters and shrimps.[12,13]

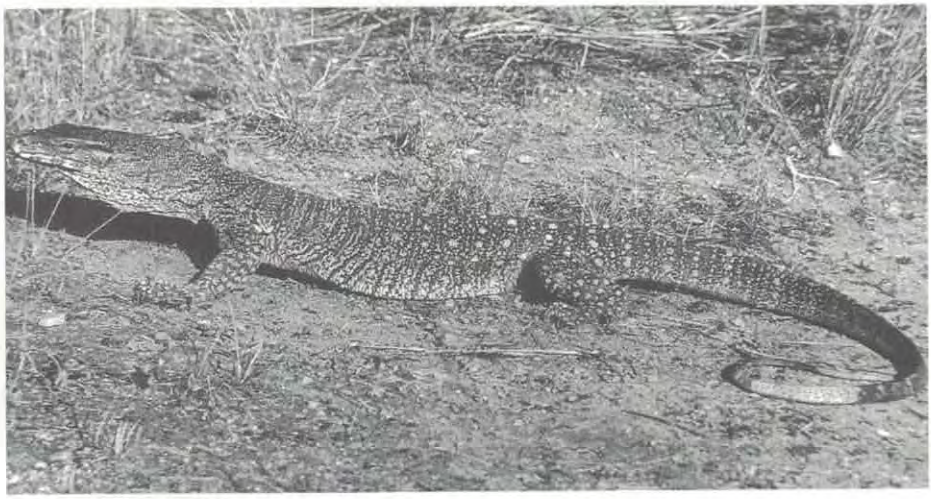
So little is known of the sea snakes that there are no data on population sizes or special vulnerabilities. None of the species occurring in the Bay has been accorded special conservation status.[8]

Those who live on and enjoy visits to the Moreton Bay islands can contribute much to the further understanding of the wildlife there. Many reptiles have been killed, both needlessly and accidentally. Everyone can help preserve the richness of natural life on the Bay islands by admiring, but leaving alone, the reptiles they encounter; and by striving to preserve natural vegetation wherever such precious stands remain.





The Reptiles of Moreton Bay: Burton's Legless Lizard, 'Lialis burtonis', is a voracious predator of small skinks. It is widespread on the islands of Moreton Bay. Like all lizards, it is harmless. The tiny opening of the external ear (arrowed) is the tell-tale sign that this "legless" reptile is not a snake.



The Reptiles of Moreton Bay: The Lace Monitor, 'Varanus varius' is a common Moreton Bay species.