

## REDISCOVERY OF APRASIA ROSTRATA ON THE MONTEBELLO ISLANDS, WESTERN AUSTRALIA

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### INTRODUCTION

The worm lizards in the genus *Aprasia* are comprised of twelve known Australian species that have slender bodies with short blunt tails and minute limb flaps (Wilson and Swan 2003). Nine species occur in Western Australia and almost exclusively along the coast. The most northerly-distributed species of worm lizard is *A. rostrata* on the Montebello Islands, which has undergone several taxonomic changes since its discovery. Two specimens were collected on Hermite Island by Frank L. Hill in 1952 during the testing of the first British atomic weapons (Hill 1955). The specimens were described as *A. repens rostrata* (Parker 1956) and subsequently Kluge (1974) elevated them to a full species *A. rostrata*. Storr (1979) described *A. rostrata fusca* from the adjacent mainland and in doing so returned the Hermite Island population to a subspecies *A. rostrata rostrata*. Both populations are now treated as full species (Storr *et al.* 1990).

### LACK OF KNOWLEDGE

As is the case with many groups of Australian lizards, it is apparent that our current taxonomic knowledge of the fossorial worm lizards is incomplete. The recent description of *A. picturata* from the arid interior of Western Australia (Smith and Henry 1999) and the preliminary investigations by Aplin and Smith (2001) have drawn attention to the unresolved taxonomy of *A. fusca* and the closely related *A. rostrata*. A recent morphological and genetic examination supports the view of Aplin and Smith (2001) that the informal '*Aprasia fusca* group' is comprised of several undescribed species between the North West Cape and Perth. However, this assessment did not include the insular species *A. rostrata* due to a lack of material. In order to facilitate the current taxonomic examination to determine the status of this population and its relationships to *A. fusca* on the

mainland we considered it crucial to collect worm lizards from the Montebello Islands.

It had been suggested that its restriction to a single island makes it very vulnerable to threatening processes that include human disturbance and predation by introduced animals (Cogger *et al.*, 1993). Combining this with recent surveys on the islands that have not collected further specimens (Burbidge *et al.* 2000; Richardson *et al.* 2006) this species is considered vulnerable (Commonwealth; 2006 IUCN Red List) and Schedule 1 fauna 'that is rare or likely to become extinct' (WA Government Gazette, 9 April 2002).

#### SEARCH FOR WORM LIZARDS

Even though Hill (1955) states he "is neither botanist nor zoologist" he was fortunately prescient enough to collect natural history specimens during his spare time. Providing us with some insight towards potential locations to commence searching for *A. rostrata*, he more importantly mentions "the *Lygosoma* (= *Lerista bipes*) coming into the tents at night". Were the *Aprasia* he collected captured the same way?

We visited the Montebello Islands from 18–23 August 2006 and spent three days searching on Hermite Island (northern tip) at 20°25'22"S 115°31'54"E and Claret Bay at 20°29'36"S 115°31'40"E. We suspected the latter locality was where the British crew established camp, as

it was adjacent to the derelict infrastructure used during the atomic weapons testing. The habitat at this location consisted of a sandy beach and low fore dunes vegetated with *Acacia coriacea*, *Spinifex* and low shrubs. On 19 August two adult male *A. rostrata* (WA Museum R165986-987) were excavated using a 3-pronged cultivator in white sand beneath embedded *Acacia* stumps with live ant colonies. The serendipitous nature in finding these highly cryptic lizards was confirmed the next day after an unsuccessful morning of searching on the same fore dunes.

We also searched on Trimouille Island, Louis William Lagoon for two days at 20°23'11"S 115°33'18"E collecting one adult male (R165984) and one immature *A. rostrata* (R165985) in an area of undulating white sand dunes with low, clumping *Acacia coriacea*. Similar to Hermite Island, the microhabitat was identical consisting of embedded stumps with live ant colonies. A search on the sandy North West Island at 20°22'08"S 115°32'02"E for one day was unsuccessful.

#### DISCUSSION

The effort required in locating these four individuals by hand over five days suggests *A. rostrata* is 'naturally scarce', however this is clearly presumptuous when dealing with such highly cryptic animals whose basic natural history is so poorly known. For

those species that are very cryptic, it often requires a considerable length of time to reveal their presence by conducting trapping programs (How and Shine 1999). The only systematic pit trapping conducted on the Montebello Islands did not record *A. rostrata* (Burbidge *et al.* 2000). However, based on personal observations when conditions are optimal, it is possible to reveal reasonable numbers of small elusive reptiles *i.e.* *Aprasia* spp. by raking. The main advantage with this method is that it allows you to target a particular microhabitat. This appears to be the case with the widespread southwestern species *A. repens*, which is locally abundant on the Swan Coastal Plain near Perth but appears to be scarce further north on the Geraldton Sandplains (pers. obs.).

Studies by Webb and Shine (1994) on *Aprasia* diets reveal a remarkable example of convergent evolution with blind snakes (Typhlopidae) based on their striking similarities in overall morphology, feeding structures and feeding ecology. Webb and Shine (1994) further state that both groups appear to feed exclusively on the larvae and pupae of ants and are also similar in being 'binge' feeders, feeding infrequently but taking very large numbers of small prey items in each meal. The collection sites of the four *A. rostrata* involved excavation from beneath embedded stumps with live ant colonies in sandy

areas with *Acacia coriacea*. Based on the studies by Webb and Shine (1993) and our observations, it is plausible to suggest that *A. rostrata* is more widespread but only in suitable areas of sandy habitat that combine *Acacia coriacea* with stumps/leaf litter and ant colonies. In order to validate this statement further ground surveys are required on the Montebello Islands and the geographically proximate Barrow Island.

In essence, *A. rostrata* has a restricted distribution on the Montebello Islands, however the combination of a remote location and fossorial lifestyle would appear to benefit its conservation status. Suffice to say, the collection of these four individuals from two islands shows the atomic tests, introduced feral cats and black rats have not caused any local extinction (Burbidge *et al.* 2000; Wilson and Swan 2003). Its entire geographic range is protected within the Class A Montebello Islands Conservation Park that is vested in the Western Australian National Parks and Nature Conservation Authority and managed by the Department of Environment and Conservation (DEC, previously CALM). Attempts to eradicate feral cats on the Montebello Islands have been successful though black rats are still present on Hermite Island (Algar *et al.* 2002).

The collection of four *A. rostrata* from Hermite and Trimouille

Islands will facilitate the current taxonomic revision on the 'Aprasia fusca group' and determine its phylogeny within an assemblage of morphologically conservative but divergent group of fossorial lizards. The privilege to visit the Montebello Islands and successfully collect *A. rostrata* after a 54-year hiatus provided the opportunity to photograph this species in life for the first time and record some important habitat/microhabitat details.

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