Acrochordus arafurae

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Authority: McDowell, 1979

Common Name: Arafura File Snake, Elephant Trunk Snake

Description (Shine and Lambeck 1985; Shine 1986b; Houston and Shine 1993; Cogger 1994; Healey 1997; Holem 1999): A large and heavy-bodied snake with loose flabby skin. Colours can vary slightly, however in most the dorsal surface is a dark gray to light brown with dark brown or black reticulations extending from a broad vertebral band forming cross-bands or a blotchy appearance. Reticulations extend onto the ventral surface, which is white. Scales are numerous and small, with 120-180 rows at mid-body. The scales are also strongly keeled, giving them a rough granular appearance and texture, like that of a file. There are 11-14 scales between nasal and eye regions and 9-11 scales between the lip and eye regions. They have a series of loreal scales, but no enlarged ventral, anal, or subcaudal scales and no mid-ventral fold. They are sexually dimorphic with females being significantly larger than males. Adult females will average lengths of 1.55 metres and weigh 1.5kg, whereas males will average 1.22 metres in length and weigh only 700g. Large adult females can reach a maximum length of up to 2.5 metres. Females also have larger heads, heavier bodies and shorter tales than males. File snakes are non-venomous and solid toothed. The tail is prehensile.

Similar species (Shine 1986c; Cogger 1994; Shine *et al*. 1995;): The family Acrochordidae has only one genus and three species. They are thought to be only distantly related to other extant snakes. Their appearance and ecology are unique and unlike any other family of snakes. Only two species of Acrochordids occur in Australia – *A. arafurae* and *A. granulatus*. *A granulatus* is much smaller than *A. arafurae* with an average length of 60cm. The skin does not have the loose flabby appearance and has light cross bands on the dorsal surface that fade gradually on the belly. They also have a distinct mid-ventral fold. Sexual dimorphism is less pronounced. The third species, *A. javanicus*, which occurs in Southeast Asia and does not extend as far south as Australia, is superficially similar to *A. arafurae*. However, *A javanicus* is typically much heavier bodied, with a mass nearly twice that of individual *A. arafurae* of the same length.

Range (Cogger 1994): Coastal and adjacent areas of Northern Territory and Western North Queensland, Australia and also New Guinea.

Ecology and behaviour (Shine and Lambeck 1985; Shine 1986a; Shine 1986b; Shine 1986c; Lilywhite and Sanmartino 1993; Houston and Shine 1993; Cogger 1994; Houston and Shine 1994a; Houston and Shine 1994b; Houston and Shine 1994c; Holem 1999): *A. arafurae* is entirely aquatic and inhabits freshwater streams and lagoons wherever monsoonal floods permit them to enter permanent water, however they do occasionally wander into estuarine waters and even the sea. They frequently occur in high densities in billabongs during the dry season, often reaching population densities of 100 individuals per hectare. Densities are lower in the wet season when they are able to leave the billabongs and disperse into shallow waters

over the floodplain. Mature females tend to occur in deeper water than the much smaller males and immature females. Individuals will surface to breathe after often extremely long periods of time under water. It is believed that their very high blood volume relative to body mass allows for storage of high levels of oxygen. They are largely nocturnal and will hide under floating vegetation, rocks and logs during the day. They are almost entirely piscivorous, but will also eat carrion. They hunt at night by swimming considerable distances very slowly through the water. They will not respond to prey until they actually touch it, which is an unusual characteristic among snakes. Sexual dimorphism also creates differences in niche utilization among mature females and males and immature females. The large mature females tend to feed on much larger prey items found in deeper waters and will be more selective, whereas smaller individuals often feed on many small prey items in the shallows. This probably accounts for the larger heads of mature females. Live fish are killed by constriction. The loose flabby skin enables the snake to seize their prey and hold onto them during constriction. They have incredibly low metabolic rates (less than half that of other reptiles) and are thought to feed only a few times a year. Their digestive efficiency is remarkably high, as they are able to completely break down fish bones and scales. They move about extensively during the wet season and show a strong seasonal shift in habitat utilization. Feeding tends to be more frequent in the wet season, however they will feed throughout the entire year. For most of the year*, A. arafurae* is homeothermic, with body temperatures remaining within a range of a few degrees. Like a few other species of snakes, they appear to exhibit reduced activity on nights approaching a full moon. This could be attributed to the vision-dependency of predator avoidance, however it could also indicate the existence of an endogenous lunar rhythm. Predators of filesnakes include saltwater crocodiles (*Crocodylus porosus*), whistling kites (*Haliastur sphenurus*), black-necked storks (*Xenorhynchus asiaticus*), fork-tailed catfish (Ariidae) and probably most significantly, white-breasted sea eagles (*Haliacetus luecogaster*). They are also an important traditional food item of Aboriginal people, and are collected by feeling under logs and floating grass mats and among *Pandanus* roots. They are most frequently hunted in the late dry season when population densities are highest. Large gravid females are highly prized.

Breeding biology (Shine 1986a, Shine 1986b; Shine 1986c; Houston and Shine 1994a; Houston and Shine 1994b; Shine *et al*. 1995; Dubach *et al*. 1997): Because *A. arafurae* is a low energy specialist, they have incredibly low rates of reproduction, probably only once per eight or ten years. The longer tails of males are thought to reflect the need to fit the hemipenis into the base of the tail. Mating occurs in the dry season. They are viviparous and females will give birth to 10-30 live young late in the wet season. Dubach *et al*. (1997) reported that *A. arafurae* can also reproduce parthenogenetically. They are thought to produce equal numbers of males and females, with neonates averaging 36.6cm in length and 25.9g in mass. In comparison to most other snake species, *A. arafurae* grow more slowly and mature at later ages. Females will reach sexual maturity between 7-12 years, but will show substantial growth for at least the first 16 years of life. Males are sexually mature at 5 years of age, after which they will show a sharp decline in growth rate.

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