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## Rusty Monitor predation

### Probable predation of the semi-aquatic Rusty Monitor Lizard (*Varanus semiremex*) by a Groper

Predation of varanids (Monitor lizards) is limited to some degree due to many large species being apex predators or placed high in the food chain. Juveniles or smaller species of monitors, the latter often referred to as Pygmy Monitors in Australia, are far more susceptible to predation and succumb to a range of predators. Snakes, larger lizards, birds of prey and carnivorous mammals are known to prey on smaller varanids (Pianka *et al.* 2004). Not surprisingly, the author was unable to find any reference to predation of a monitor by a fish; hence, the following documented observation of a Queensland Groper regurgitating a Rusty Monitor is of some significance.

The Rusty Monitor (*Varanus semiremex*) is a semi-aquatic species of monitor lizard endemic to Queensland and restricted to coastal mangroves. Until recently, little had been documented about its natural behaviour in the wild. While information on husbandry (Jackson 2005), feeding behaviour, home range and longevity (Tremul 2017) has been published, the only predation records are inferred from their behaviour in response to the presence of Coastal Carpet Pythons and birds of prey (Tremul 2017). Here I present new data on the probable predation of a Rusty Monitor by a fish.

On the 17th of January 2017 at 11:40 am, Kurt Emmerton was fishing for Mangrove Jack in Monte Christo Creek (adjacent to Curtis Island) when he caught a juvenile Queensland Groper in approximately 3 metres of water. Once the fish was netted he realized that it had what appeared to him to be a 'crocodile-like' creature in its mouth. Both fish and reptile were lifted into the boat, placed on the floor and quickly photographed before releasing the fish and discarding its prey (Fig. 1.). The fish was confirmed by Jeff Johnson, Ichthyologist, at the Queensland Museum as a Queensland Groper (*Epinephelus lanceolatus*) I identified the lizard as a Rusty Monitor (*Varanus semiremex*), based on dorsal pattern, size and head scalation.

Estimated measurements of goanna and fish by use of scale in Fig.1 are 50-52 cm and 42-45 cm respectively. Cogger (2014) lists the Rusty Monitor as having a total length of 60 cm. Hence the Rusty Monitor regurgitated in figure 1 was of adult size, whilst the Queensland Groper, a

large fish measuring up to 2.7 metres long, was a juvenile (J. Johnson, pers. comm.).

The Rusty Monitor is well known as an inhabitant of tidal mangrove swamps along the east coast of Queensland (Wilson & Swan 2013; Cogger 2014) and I have observed individuals swimming between partially submerged trees on numerous occasions (Tremul 2017). This behaviour would potentially place the species as vulnerable to predation by large surface feeding fish.

The Queensland Groper is a formidable, opportunistic predator and is likely to take advantage of an opportunity to prey on a monitor swimming above, particularly in a shallow water situation (Jeff Johnson, pers. comm.).

The Rusty Monitor in this observation was probably swimming when eaten, rather than being picked up as floating carrion; the overall body condition and marks where the flesh has been torn are consistent with a recent kill. The bite radius and its position on one side of the lizard's body are typical of damage caused by a fish of this size (Jeff Johnson; pers. com).

Based on the photographic evidence, there is no indication to suggest that the monitor was mauled or gnawed earlier or that it had been dead for any period of time. Although it is not possible to determine where the monitor was eaten, the groper's capture site was surrounded by mangrove habitat that is suitable for Rusty Monitors. Hence the author believes that the Queensland Groper, along with other large carnivorous surface-feeding fish inhabiting estuaries, is a predator of the Rusty Monitor. A direct observation of this type of predation is unlikely to occur as Rusty Monitors are cryptic in behaviour and the fish would snatch its prey quickly from the surface. Perhaps this explains why there are currently no records of a Rusty Monitor engaging in underwater feeding behaviour.

Observations of swimming behaviour (Tremul 2017) show that Rusty Monitors swim directly to an exit point. A swimming monitor holds its head clearly above water in a position allowing it to have good vision of its surroundings but leaving it exposed to attacks from below. By reducing its time spent in the water, a monitor decreases its vulnerability to aquatic predators, an understandable tactic in light of the present observation.

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FIG. 1. Queensland Groper with a regurgitated Rusty Monitor. Image provided by Kurt Emmerton.

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