

Highly venomous sea kraits must fight to get their prey

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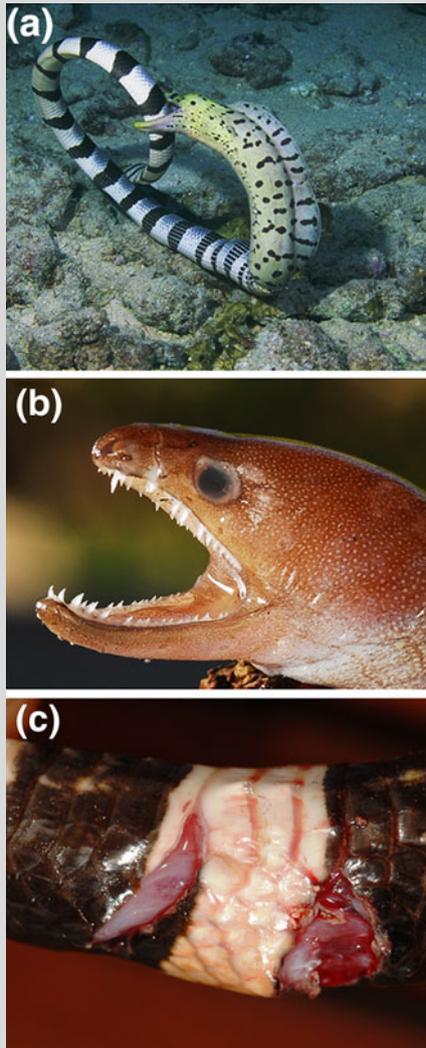


Fig. 1 **a** An adult female sea krait (*Laticauda colubrina*) swallowing a large moray eel (*Gymnothorax fimbriatus*). The eel bit the snake in an (unsuccessful) attempt to escape (R. Lang). This picture also illustrates the fact that sea kraits can swallow their prey tail first. **b** The head of a freshly regurgitated *Gymnothorax eurotus* found in the stomach of a specimen of *L. saintgironsi*; the sharp teeth are clearly visible (X. Bonnet). **c** A male *L. saintgironsi* caught at its arrival on shore, with two rows of deep cuts (X. Bonnet)

A long-term recapture study in New Caledonia has shown sea kraits (*Laticauda laticaudata* and *L. saintgironsi*) have a strong predator prey relationship with anguilliform fish (Brischoux et al. 2007; Ineich et al. 2007). Considering krait versus prey body size (sometimes almost of the same size), many conger eels (e.g., *Conger cinereus*) and moray eels captured by the sea kraits have the potential to retaliate. We observed typical “V-shaped” injuries on many snakes: 29.7% *L. laticaudata* had scars and 11.4% recent injuries ($N = 2,797$ individually marked snakes); 33.2% *L. saintgironsi* had scars and 9.5% recent injuries ($N = 3,582$). Deep cuts sometimes resulted in very large and deep wounds ($N > 100$). Because anguilliform fish are indeed capable of inflicting dangerous bites, the trophic relationships between these two predators are more complex than assumed: the benefit of maximising the amount of energy per foraging trip associated with the capture of large prey trades off against the injury risk that increases with prey size. Prey selection, searching effort, killing tactics, and venom efficiency selection can all be affected.

Figure 1a (20 m depth, island of Taveuni, Fiji, November 2004) clearly illustrates the ability of moray eels to bite sea kraits (see Fig. 1b) during predation as a defence mechanism. We regularly observed sea kraits with recent deep “V-shaped” bites coming on shore without prey in the stomach, possibly to rest and recover (Fig. 1c). Perhaps capturing fish is more difficult than previously assumed, even for the highly venomous sea kraits.

References

- Brischoux F, Bonnet X, Shine R (2007) Foraging ecology of sea kraits (*Laticauda* spp.) in the Neo-Caledonian lagoon. *Mar Ecol Prog Ser* 350:145–151
- Ineich I, Bonnet X, Brischoux F, Kulbicki M, Séret B, Shine R (2007) Anguilliform fishes and sea kraits: neglected predators in coral-reef ecosystems. *Mar Biol* 151:793–802

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