



Article

Aipysurus mosaicus, a new species of egg-eating sea snake (Elapidae: Hydrophiinae), with a redescription of *Aipysurus eydouxi* (Gray, 1849)

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Abstract

We describe a new species of egg-eating sea snake, *Aipysurus mosaicus* **sp. nov.**, from northern Australia and southern New Guinea. This species was previously considered to be an allopatric population of *A. eydouxi*, which occurs throughout the Sunda Shelf and in New Guinea. Molecular analyses reveal these two species to be sister lineages with fixed nucleotide substitutions at three independent mitochondrial and nuclear loci, and a deep phylogenetic divergence exceeding that of all other sampled species pairs in *Aipysurus*. *Aipysurus mosaicus* **sp. nov.** is also distinguished from *A. eydouxi* by morphological characters relating to scalation (e.g. number of ventral scales), colour pattern (e.g. number and shape of transverse body bands), internal soft anatomy (e.g. position of heart in relation to ventral scales), and skeletal morphology (e.g. shape of nasal and caudal neural spines). Additional sampling is needed to clarify the extent of geographic contact between *A. eydouxi* and the new species in New Guinea where they appear to be sympatric. It is likely that the boundaries between these taxa will be mirrored in other coastal sea snakes with ranges spanning the deep waters of the Timor Trench; discovery of such cryptic species will have important implications for conservation of this highly diverse but relatively poorly studied group of marine vertebrates.

Key words: anonymous nuclear, Hydrophiinae, Indo-Australia, marine, mitochondrial, morphology

Introduction

The viviparous sea snakes (Hydrophiinae: Hydrophiini) are the most species-diverse and probably also the youngest group of fully marine reptiles (Heatwole 1999; Sanders *et al.* 2010). The 61 species currently recognised mostly occupy shallow-water marine habitats and are distributed throughout the tropical and subtropical Indo-West Pacific (David & Ineich 1999; Heatwole 1999; Rasmussen *et al.* 2011). In addition to three semi-aquatic monotypic genera, two well-defined groups of viviparous sea snakes are recognised on the basis of morphological characters (Smith 1926; Voris 1977; Rasmussen 1997, 2002), and molecular sequence data (Lukoschek & Keogh 2006; Lukoschek *et al.* 2011). The *Hydrophis* group is by far the most species rich, with 48 species in 10 genera, many of which are widely distributed. The *Aipysurus* group contains only ten species in the genera *Aipysurus* and *Emydocephalus*, and most are restricted to the Australo-Papuan region.

Aipysurus monophyly is strongly supported by morphological and molecular data (Smith 1926; Voris 1977; Rasmussen 2002; Lukoschek & Keogh 2006). Smith (1926) described two new species of *Aipysurus* and so recognised a total of seven species: *Aipysurus apraefrontalis* Smith, 1926, *A. duboisii* Bavay, 1869, *A. eydouxi* (Gray,