



A taxonomic revision of the South Asian hump-nosed pit vipers (Squamata: Viperidae: *Hypnale*)

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Abstract

The hump-nosed pit vipers of the genus *Hypnale* are of substantial medical importance in Sri Lanka and India, being included among the five snakes most frequently associated with life-threatening envenoming in humans. The genus has hitherto been considered to comprise three species: *H. hypnale*, common to Sri Lanka and the Western Ghats of peninsular India; and *H. nepa* and *H. walli*, both of which are endemic to Sri Lanka. The latter two species have frequently been confused in the literature. Here, through a review of all extant name-bearing types in the genus, supplemented by examination of preserved specimens, we show that *H. nepa* is restricted to the higher elevations of Sri Lanka's central mountains; that *H. walli* is a junior synonym of *H. nepa*; and that the endemic species widely distributed in the island's south-western 'wet-zone' lowlands is *H. zara*. We also draw attention to a possibly new species known only from a single specimen collected near Galle in southern Sri Lanka. We illustrate all four species in colour, and provide a key to their identification and maps delineating their distribution.

Key words: Sri Lanka, India, Western Ghats, taxonomy, snake, viper, *Hypnale*, *zara*, *nepa*

Introduction

Although rarely fatal to humans, hump-nosed pit vipers (genus *Hypnale*) are widely implicated in snakebite in Sri Lanka and south-western India, accounting for between 20 and 70 % of all reported bites (Ariaratnam *et al.*, 2008; de Silva, 1981; De Silva *et al.*, 1983; Joseph *et al.*, 2007; Premawardena *et al.*, 1998; Seneviratne *et al.*, 2002; Simpson & Norris, 2007). Despite their medical importance—and their having been among the earliest snakes for which the pathology of envenomation was studied (Davy, 1821: 90–93)—the identities and geographic distributions of the snakes that constitute this genus have remained poorly understood.

In the most recent taxonomic review of the hump-nosed pit vipers Gloyd & Conant (1990) recognized two species—*Hypnale nepa* (Laurenti, 1768) and *H. walli* Gloyd, 1977—as being endemic to the southwest 'wet zone' quarter of Sri Lanka, including the central hills and Knuckles Range, and a third—*H. hypnale* (Merrem, 1820)—as being widely distributed throughout Sri Lanka and southern India. In the mainland, *H. hypnale* has been recorded mainly from the southern part (up to about 16°N) of the Western Ghats, the range of mountains that borders the west coast of the Indian peninsula (Smith, 1943).

In seeking to identify these snakes with a view to studying their venom, we found that the delineation and distribution of the species did not match with the information provided in the review by Gloyd & Conant (1990) and accounts by other authors (e.g., Wall, 1921; Smith, 1943; Deraniyagala, 1955; Gloyd, 1977a; de Silva, 1980; de Silva, 1990; Somaweera, 2006). We decided therefore to clarify the taxonomy of this group by reviewing all the historical names, re-examining the name-bearing specimens, redescribing the valid species