

Morphological Characteristics of Short Sea Snake, *Lapemis curtus* (Shaw, 1802), with Notes on New Identification Characteristics

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A morphological study of the short sea snake, *Lapemis curtus* was carried out. Two specimens of *L. curtus* were collected during fieldwork in vast area of west of the Chabahar Bay Mouth (Gulf of Oman) in 2011. A list of new important identification morphological characteristics of this species is also provided.

The sea snakes are comprised of at least two groups: (1) *Laticauda*, which spend much of their life at sea but come on land to lay their eggs, and like terrestrial snakes have fully developed ventral scales, and (2) hydrophiid, the viviparous and fully aquatic “true” sea snakes, which have many morphological adaptations to a fully marine life (Keogh, 1998). While Rasmussen et al. (2011) has stated that the taxonomic status of the sea snakes is still under review and no general agreement exists at the moment. Traditionally, sea snakes have been regarded as one family, Hydrophiidae, with *Laticauda* as the most primitive genus. Sea snakes occur in the tropical and subtropical waters of the Indian and Pacific Oceans from the east coast of Africa to the Gulf of Panama. Most species are found in the China Sea, Indonesia, and the Australian region. They have also been found in lakes in Thailand, Cambodia, the Philippines, and the Rennell Island (Rasmussen, 2001). Many species of sea snakes are recorded from different regions of Persian Gulf. Studies on sea snakes tend to be poor because of logistic difficulties inherent in sampling them (Palot and Radhakrishnan, 2010). *Lapemis curtus* (Shaw, 1802) is a moderate sized (up to 900mm) venomous sea snake distributed from the Southwest Pacific to the Persian Gulf (De Silva, 2011). As the identification of sea snakes to the species level is very difficult, morphological characters are very important for identification of this sea snake in the area.

Two alive adult male specimens were collected at western Chabahar Bay Mouth (Fig. 1) at 60° 28' 22" E, 25° 17' 23" N, from water surface during the day. The specimens were deeply anesthetized by chloroform, labeled, and photographed by digital camera and then were fixed in 10% formalin solution.

The morphometric measurements: Total length of the body is 90-106 cm, Head length (from the tip of the head to the edge of parietal scales) is 31-33 mm; tail length is 84-86 mm (vent to end of tail); trunk circumference (in largest part) is 140-160 mm; Widest part of the tail is 31-33 mm (around vent); the distance from the tip of snout to the last parietal scale is 31-32 mm; total weight of body is 507-672 gr. Coloration: dorsally with dark brown transverse stripes extended towards yellow ventrally. There are 53-55 dorsal dark transverse stripes.



FIGURE 1. The Chabahar Bay.

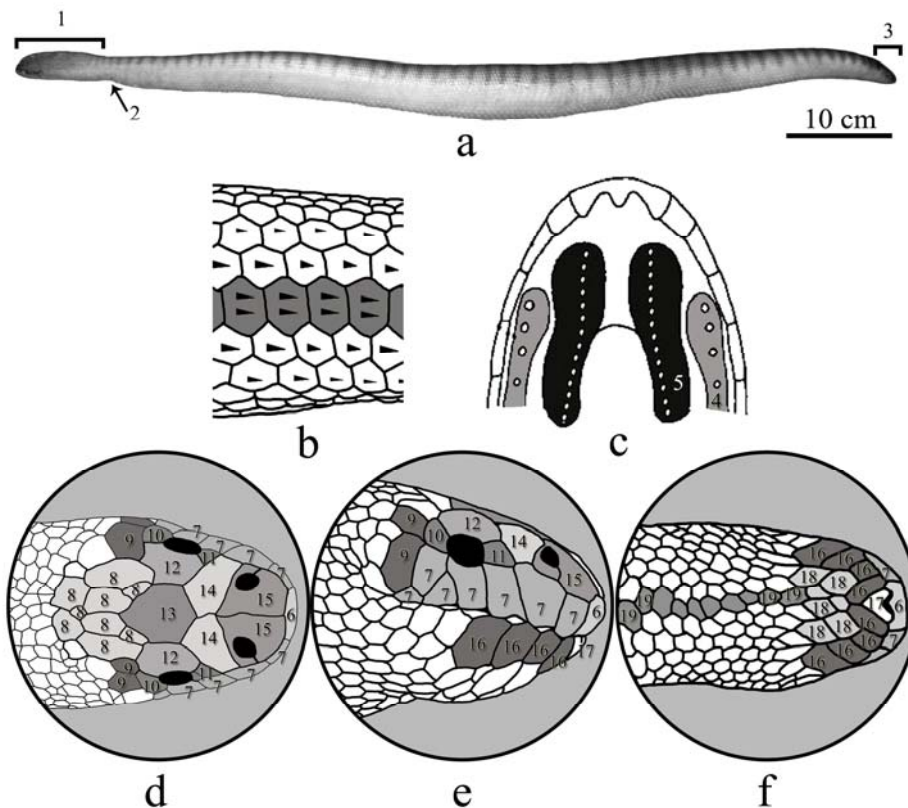


FIGURE 2. Specific features of the teeth and scales. a: general aspect of *L. curtus*, b: ventral view of the trunk (ventral scales are highlighted), c: Upper jaw, palatine (black) and maxillary (gray) bones, d: dorsal view of the head, e: lateral view of the head, f: ventral view of the head. 1, Tail; 2, Vent; 3, Head; 4, Maxillary teeth; 5, Palatine teeth; Scales of 6, Rostral; 7, Supralabials; 8, Parietals; 9, Temporals; 10, Postocular; 11, Preocular; 12, Supraocular; 13, Frontal; 14, Prefrontals; 15, Nasals; 16, Infralabials; 17, Mental; 18, Sublinguals; 19, Mid Mandibulo-Pharyngial.

TABLE 1. The list of discriminative morphological characteristics of *L. curtus* (Based on Karthikeyan and Balasubramanian (2007), Rasmussen (2001) and present findings).

Characteristic	Karthikeyan and Balasubramanian (2007)	Rasmussen (2001)	Present Findings
Parietal scales	Broken into small pieces, both scale not in even shape.	-	Similar to Karthikeyan and Balasubramanian (2007)
Rostral scale	From the dorsal view it is small size but protrudes downwards as a large part.	-	“
Frontal scale	Large and hexagonal shape	-	“
Supraoculars	Half round shape	-	“
Prefrontals	Smaller than nasals, contact with pre and supraocular scales and usually in contact with second upper labial	-	“
Nasals	Occupies large area, triangular shape towards rostral, Nasals in contact with one another	-	“
Preoculars	One preocular touches with third upper labials	-	“
Postoculars	1 or 2 postoculars	-	1 postocular
Temporals	2, rarely 3, anterior temporals	-	2 anterior temporals
Supralabials	7-8 upper labials, 3-4 bordering eye	-	6-7 upper labials on each side, 2 bordering eye
Mental	Heart shape	-	Similar to Karthikeyan and Balasubramanian (2007)
Infralabials	4 pairs, which 3 rd and 4 th pairs are bigger	-	“
Sublinguals	Very small size genials	-	“
Ventrals	Difficult to discriminate. Small and often divided, falling into 260 to 361.	Very small and difficult to discriminate 114 to 230 in number	Easy to discriminate (except posterior part of body). Small and a few are divided. 149 to 229 in number
Maxillary teeth behind the poison-fangs	-	3 to 6	3
Scale rows around neck	-	23 to 35	29 to 32

Fragmented ventrals occur more frequently in the midbody region than in the anterior body region. The posterior third of body shows ventral scale fragmentation, which is also described by Smith (1926) and Gritis and Voris (1990). As stated by Rasmussen (2001), scales on the lowermost rows on flanks were larger compared to dorsal scales. This is similar to present findings.

Karthikeyan and Balasubramanian (2007) and Rasmussen (2001) provided identification characteristics list of *L. curtus*. The morphological characteristics of present caught specimens were also observed and compared.

Discriminative characteristics: The list of identification morphological characteristics of newly found specimens of *L. curtus* are presented in Table 1 and this is compared with those described characters in Karthikeyan and Balasubramanian (2007) and Rasmussen (2001). The specific features of the anatomy of specimens are presented in Fig. 2.

Additional taxonomic characters for *L. curtus*: There are 10-12 Mid Mandibulo-Pharyngeal scales (small and moderately smooth scales with irregular arrangement before ventrals which have no spines). There are 14 teeth on palatine bone (upper jaw) and 12 on lower jaw on each side in one row. There are 37-39 scale rows around the middle of the body (highest diameter), 34-35 around vent and 26-29 around tail (widest part). There are 312-327 dorsal scales along the midline of the body (after head shields towards tail end), which bear tiny spines. There are 41-43 postvent scales, which are moderately larger than others and have hexagonal shaped scales on most dorsal part of the tail. Gritis and Voris (1990) have described spiny scales almost on all body parts.

LITERATURE CITED

- De Silva, A., Sivaruban, A., Ukuwela, K.D.B., Rasmussen, A.R., Sanders, K.L., 2011. First record of a sea snake (*Lapemis curtus*) feeding on a Gastropod. *Herpetology Notes* 4, 373-375.
- Gritis, P.A., Voris, H.K., 1990. Variability and significance of parietal and ventral scales in the marine snakes of the genus *Lapemis* (Serpentes: Hydrophiidae), with comments on the occurrence of spiny scales in the genus. *Fieldiana Zoology* 56, 1-13.
- Karthikeyan, S., Balasubramanian, T., 2007. Species diversity of Sea Snake (Hydrophiidae) distributed in the Coramantal Coast (East Coast of India). *International Journal of Zoological Research* 3(3), 107-131.
- Keogh, J.S., 1998. Molecular phylogeny of elapid snakes and a consideration of their biogeographic history. *Biological Journal of the Linnean Society* 63, 177-203.
- Palot, M.J., Radhakrishnan, C., 2010. First record of Yellow-bellied Sea Snake *Pelamis platurus* (Linnaeus, 1766) (Reptilia: Hydrophiidae) from a riverine tract in northern Kerala, India. *Journal of Threatened Taxa* 2(9), 1175-1176.
- Rasmussen, A.R., 2001. Sea Snakes, in: Carpenter, K.E., and Niem, V.H. (Eds.), *FAO species identification guide for fishery purposes, the living marine resources of the Western Central Pacific*, volume 6. Food and Agricultural Organization, Rome, 3987-4008.
- Rasmussen, A.R., Murphy, J.C., Ompi, M., Gibbons, J.W., Uetz, P. 2011. Marine Reptiles. *PLoS One* 6, 1-12.
- Smith, M.A., 1926. *Monograph of the sea snakes (Hydrophiidae)*. Printed by order of the Trustees of the British museum (Natural History) London, 1-130.