

SHORT COMMUNICATION

**A MOLAR TOOTH OF *HEXAPROTODON* (HIPPOPOTAMIDAE)
FROM UPPER PLEISTOCENE DEPOSITS OF THE CENTRAL
PROVINCE OF SRI LANKA**

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Geologically the island of Sri Lanka (spanning 79°39'E to 81°53'E longitude; 5°54'N to 9°52'N latitude) is an extension of peninsular India and forms part of the Indian shield, one of the oldest and most stable parts of the earth's crust (Cooray, 1984b). Cyclic connections and separations of Sri Lanka and India have occurred over time, and Sri Lanka's endemic flora and fauna apparently evolved in periods of variable duration of separation from the main sub-continental mass. Several factors have been instrumental in regulating the influx of animals, outbursts of volcanic activity in India affected earlier migrations, and eustatic movements influenced those of the Tertiary and Quaternary.

Very few vertebrate fossils are known from Sri Lanka. Miocene chondrichthyans and osteichthyans are known from Arnakallu (Fig. 1, location 7). Vertebrates of Plio-Quaternary age have been retrieved from once stream-swept sand that now is situated at depths of 2-12 m. Most of these fossils have been found in the strike valleys of the Ratnapura district, Sabaragamuwa Province. These deposits are of comparatively limited occurrence and are generally known as the Ratnapura beds (Cooray, 1984a). Such deposits have been recorded in valleys around Kuruwita (1), Getahetta (2), Eheliyagoda (4), Ratnapura (3), Karangoda (5), Ellawala (6), Gonapitiya, Kamarangapitiya, Hangamuwa, Kalawana, Pelmadulla and Balangoda (numbers in parentheses refer to fossil localities marked on Fig. 1). These beds are 15-91 cm in vertical thickness and have yielded a crocodylian and a terrapin that probably resided in the former river system (Deraniyagala, 1952), along with the hippopotamus *Hexaprotodon polarindicus* (Deraniyagala, 1963, 1992), the ridge-browed elephants *Hypselephas* and *Palaeoloxodon*, the Asiatic elephant *Elephas maximum*, the buffalo *Bubalus*, the gaur *Bibos* and the rhinoceros *Rhinoceros* (Deraniyagala, 1955). The presence of water-worn pebbles and boulders, and fossils of the water snail *Tanaria*, indicates that the area represented by the fossil beds passed through either pluvial phases (Deraniyagala, 1992) or alternatively a torrential phase (Cooray, 1984a).

The most recent of the Sri Lankan mammalian fauna is either not distinguishable from its Indian counterparts, or is differentiable at the subspecific level, consistent with a probable last separation of the two regions about 7,000 years ago (Deraniyagala, 1992). The Ratnapura fauna is most reasonably correlated with a branch of the Narmada fauna of India (Deraniyagala, 1992). With reference to the Ratnapura fauna, Cooray (1984a,b) suggested that similar deposits may be present in other valleys of the hill country. We herein confirm this by documenting the discovery of a tooth of the hippopotamus *Hexaprotodon* from this central hill country.

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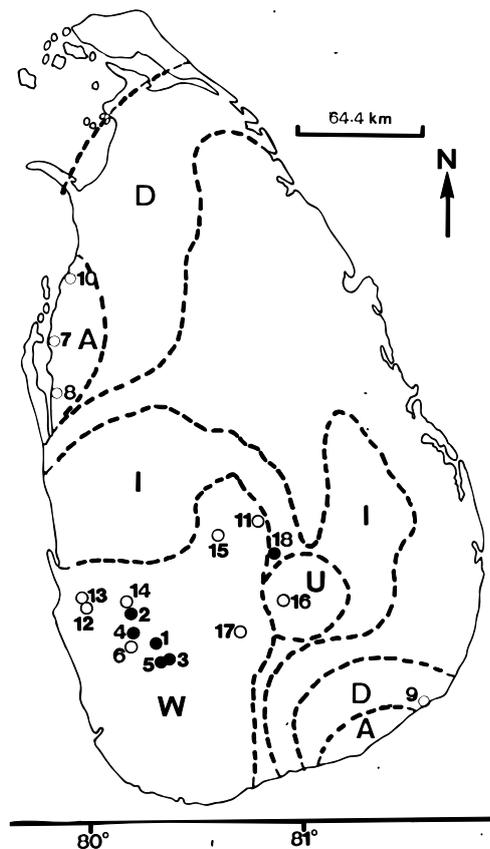


Figure 1. Map of Sri Lanka showing fossil localities (1-6, 18, solid circles) and potential fossil localities (7-17, open circles) of *Hexaprotodon* in Sri Lanka. 1. Kuruwita (06°46'N; 80°22'E); 2. Getahetta (06°54'N; 80°14'E); 3. Ratnapura (06°41'N; 80°24'E); 4. Eheliyagoda (06°54'N; 80°14'E); 5. Karangoda (06°41'N; 80°22'E); 6. Ellawala (06°46'N; 80°27'E); 7. Arnakallu (08°16'N; 79°49'E); 8. Puttalam (08°02'N; 79°50'E); 9. Minihagal-Kanda (06°22'N; 81°59'E); 10. Khadiramalai (08°31'N; 70°53'E); 11. Mahiyanganaya (07°19'N; 80°59'E); 12. Malawana (06°56'N; 80°02'E); 13. Biyagama (06°31'N; 79°58'E); 14. Avissawella (06°56'N; 80°13'E); 15. Peradeniya (07°15'N; 80°36'E); 16. Welimada (06°54'N; 80°25'E); 17. Horton Plains (06°48'N; 80°48'E); 18. Rikillagaskada (06°48'N; 80°48'E), Hanguranketa, Central Province. Sites 1-6, 11-15, 17 are located in the wet zone (W) of Sri Lanka; Sites 7-10 are located in the dry zone (D); Sites 16, 18 are located in the intermediate zone (I). Sites 7-17 are potentially of Pleistocene age, but lie outside of the Ratnapura beds and have not been dated. The following additional sites, all very close to the Ratnapura beds, are not marked on the map: Balahapuva and Muvagama (06°41'N; 80°23'E); Nagoda and Alapata (06°39'N; 80°21'E). Other abbreviations: A: arid zones; U: uplands.

Figure 2. Molar tooth of *Hexaprotodon* (specimen No. 1963, Department of Zoology, University of Kelaniya) from the Central hill country of Sri Lanka in A. frontal, B. lateral, and C. crown views. D. Holotype of *Hexaprotodon sivalensis sinhaleyus* (Deraniyagala, 1955) in lateral view for comparison.

A large molar tooth (Figures 2A, B, C) was discovered on March 2nd, 2000, at a depth of 6 m during the process of digging a deep well at Rikillagaskada (07°07'N, 80°49'E; Figure 1, location 18), Hanguranketa, Central Province, Sri Lanka. All the roots of the tooth were intact, but the crown was damaged.

This molar tooth is assignable to the genus *Hexaprotodon* on the basis of its general characteristics, and is most directly comparable to the molars of *Hexaprotodon polarindicus* (Deraniyagala, 1992). Remains of fossil hippopotamids in Sri Lanka generally consist of fragmentary, isolated teeth, thus necessitating comparison between faunas to be mainly based upon dental characteristics (Coryndon, 1978). The greatest breadth of the newly discovered molar tooth is 40 mm, and the length is 50.3 mm and height dimension is not attainable because of the damage to the crown (Fig. 2 A, B, C), but its overall proportions lie within the range of those of molar teeth assigned to *Hexaprotodon sivalensis* from Ratnapura housed in the Ratnapura museum (specimen F192, Deraniyagala, 1955, and other unnumbered specimens, Deraniyagala, 1938 ; 1955) greatest length range: 46-66 mm; greatest breadth range: 32-49 mm; crown height range: 36-49 mm. Its proportions also accord reasonably well with those of the holotype of *Hexaprotodon sivalensis sinhaleyus* housed in the Sri Lanka National Museum (Fig. 2D, compared with Fig. 2B). The latter taxon is now recognized as *H. sinhaleyus* and has been correlated with *H. polarindicus* by Deraniyagala (1992).

The scarcity of vertebrate fossils in Sri Lanka is exemplified by the quantity of one of its commoner mammals, the hippopotamus *Hexaprotodon*. This occurs in modest abundance in the Ratnapura gem gravels. Between 1935 and 1947, 25 isolated molars, eight canines or fragments thereof, five incisors or fragments thereof, two femora, parts of two humeri, and a few bone fragments were discovered. Since that time little else has come to light, save for the discovery of a left dentary in a gem pit near Ellawala, Ratnapura (Deraniyagala, 1992).

Hexaprotodon, one of only two recognized genera of Hippopotamus (Coryndon, 1977; 1978; Carroll, 1988), first appeared in India during the Tatrot phase of the Shivalikas, approximately 700,000 ybp (Deraniyagala, 1955). Its extinction is documented in the Godavari deposits of the middle Pleistocene of India, some 250,000 ybp (Deraniyagala, 1952). In Sri Lanka, however, it survived well into the upper Pleistocene and the specimen reported on herein expands the record of its known range which was heretofore restricted to the Ratnapura district, and confirms the presence of fossiliferous deposits of Upper Pleistocene age outside of the Ratnapura series.

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