

Return to Nilaveli: Edward Harrison Taylor's Sri Lankan herpetofaunal hotspot revisited

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THE American herpetologist Edward Harrison Taylor (1889–1978; Fig. 1) is widely remembered for his contributions to the systematics of selected taxa, such as caecilians and skinks of the genus *Eumeces*, as well as for his important works on the herpetofauna of the Philippines, Thailand, Mexico and Costa Rica (Adler, 1989). Taylor's contributions to the herpetology of Sri Lanka are less widely known, but no less significant. During the latter part of World War II Taylor was involved in intelligence gathering in Asia for the United States. While based in the region he visited Sri Lanka (then Ceylon) during parts of 1944 and 1945 and eventually published five papers on the lizard and snake fauna of the island (Taylor, 1947b, 1950a, 1950b, 1953a, 1953b) as well as a paper on the dating of Kelaart's *Prodromus Faunae Ceylonicae* (1947a), and a review of P.E.P. Deraniyagala's *A Colored Atlas of Some Vertebrates of Ceylon*, which appeared at the same time as Taylor's own major works.

Little is known of Taylor's sojourn in Sri Lanka. His own field notebooks reveal almost nothing. All of Taylor's material from Sri Lanka is listed in Volume 7 of his notebooks and falls in the range of his field series EHT 30165–31260. This run of numbers is interrupted by a smaller number of specimens from Malaysia, India and Singapore. The specimens from Sri Lanka itself total 898 and are in the following series of numbers EHT 30165–232, 30244–46, 30343–67, 30370–89, 30391–495, 30500–18, 30574–672, 305674–755, 30778–31058, 31059–062, 31067–31247, and 31250–31260. Virtually all of these have the locality "12 miles N Trincomalee" (Figure 2) or some variant thereof (e.g., 12–14 miles or 12–16 miles north of Trincomalee). A single specimen of *Python*

molurus was collected from a small island 1.5 miles offshore of the same locality and a few specimens were collected 21–23 miles inland of Trincomalee (the holotype of *Sphenomorphus rufogulus* has been incorrectly recorded from "21 mi. E Trincomalee" –a point in the ocean!; Smith *et al.*, 1964). Specimens without specific locality and probably some of those from localities other than Trincomalee were the result of exchanges with European museums and the Colombo Museum (Taylor 1950a). These include lizards from Kandy and Badulla (*Cnemaspis kandiana*), Galle (*Cnemaspis tropidogaster*), and Nuwara Eliya (*Calotes nigrilabris*)

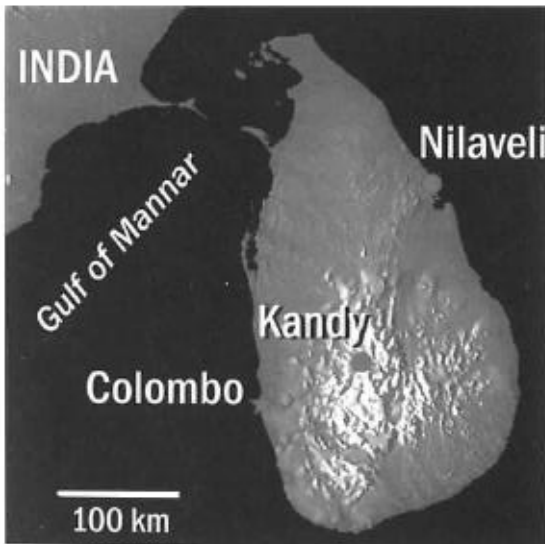
Most of Taylor's Sri Lankan material is today housed in the Illinois Natural History Survey (UIMNH) collection in Champaign, Illinois or in the Field Museum of Natural History (FMNH) in Chicago, Illinois, but Taylor's notes indicate that he made exchanges with other collections, including those in Basel and Amsterdam. The UIMNH collection contains 321 Sri Lankan specimens of amphibians and reptiles, at least 215 of which were collected by Taylor, whereas the Field Museum holds 228 reptiles and 357 amphibians from Taylor's Sri Lankan work. Taylor's herpetofaunal studies were based on these extensive collections, as well as 367 Sri Lankan squamates in the United States National Museum (USNM) and additional material from the collection of W.W.A. Philips, which was donated to the University of Kansas (Taylor 1950a).

We visited the area that Taylor used as his base during the period 6–8 November 2004 and collected in the vicinity of the Nilaveli Beach Hotel (8°42'22"–8°43'48"N, 81°10'41"–81°11'24"E). By road this hotel is ~18.2 km north of Trincomalee. We searched a number of



Figure 1. Edward H. Taylor circa late 1940s. Photograph courtesy of Kraig Adler.

localities between the hotel and a point approximately 2 km north of the hotel. Although it was not possible to determine exactly where the centre of Taylor's activity had been, this area certainly placed us within 1-2 km of it. The area was near the junction of the area of government control and that of LTTE (Liberation Tigers of



Tamil Eelam) at the time of our visit, but as we were in the area during a period of relative calm and rapprochement, our movements were not severely limited. The area consisted of beach front occupied by the hotel and, to the north, by a small fishing village. Just inland from the beach were some isolated patches of native strand vegetation as well as coconut plantations (Figure 3). We conducted our searches by day and night, turning all natural debris as well as trash, peeling bark where possible and scanning trees, shrubs and leaf litter for reptile activity.

Taylor collected material representing 47 species of reptiles north of Trincomalee. In our short stay we collected or observed 14 species of reptiles in the region (Table 1). Ten of these were also collected by Taylor. The four new records include *Varanus salvador* and *Geochelone elegans* (Figure 4), two widespread species that one must assume Taylor encountered, but that may have been passed over because they presented no taxonomic problems and were large and inconvenient to preserve. Another species, *Oligodon amensis*, may have been missed by Taylor, although it is one of the most common road killed snakes in Sri Lanka and it is odd that none were encountered during Taylor's lengthy stay in the region. We also observed, but did not capture, an unidentified agamid similar to *Calotes liolepis* – a species limited chiefly to the wet zone of southern Sri Lanka (Bahir & Maduwage, 2005).

Not surprisingly, Taylor, in a stay of several months, encountered many more snake species than we did. The most striking snake discoveries made by Taylor relate to typhlopids. He collected 34 typhlopids specimens from the area, all in sandy soil, some only a few feet from the shore of a salt water lagoon in debris left at the high water mark, others under leaves or coconut debris and others in the soil itself, usually under only a few inches of sand (Taylor 1947b). What makes these snakes interesting is that none were assigned by Taylor to

Figure 2. Map of Sri Lanka showing the position of Taylor's site 12 miles north of Trincomalee (Nilaveli) as well as the capitol, Colombo and the highland centre of Kandy. Map from the National Geophysical Data Center GLOBE (Global Land One-kilometer Base Elevation) digital map series.

Taxon	Taylor (1944-45)	Bauer & de Silva (2004)
Testudinidae		
<i>Geochelone elegans</i>		X
Agamidae		
<i>Calotes calotes</i>	X	X
<i>Calotes cf. liolepis</i>		X
<i>Calotes versicolor</i>	X	X
<i>Otocryptis nigristigma</i>	X	
<i>Sitana ponticeriana</i>	X	X
Gekkonidae		
<i>Geckoella collegalensis</i>	X	
<i>Hemidactylus brookii</i>		
<i>parvimaculatus</i>	X	X
<i>Hemidactylus depressus</i>	X	
<i>Hemidactylus frenatus</i>	X	X
<i>Hemidactylus leschenaultii</i>	X	X
<i>Hemidactylus triedrus lankae</i>	X	
Scincidae		
<i>Eutropis beddomii</i>	X	
<i>Eutropis floweri</i> (9/3/44)	X	X
<i>Eutropis carinata</i>	X	
<i>Lygosoma punctata</i>	X	
<i>Lankascincus fallax</i>	X	
(23 miles west of Trincomalee) [includes the synonym <i>Sphenomorphus rufogulus</i> , 21 miles E. Trincomalee (sic); 9/44, treated by Taylor as a separate species; synonymy fide Greer (1991)]		
<i>Nessia sarasinorum</i> (21 miles west of Trincomalee)	X	
<i>Nessia deraniyagalai</i> (16 mi N Trincomalee; 10/24/44)	X	
Varanidae		
<i>Varanus salvator</i>		X
Typhlopidae		
<i>Typhlops lankaensis</i> (9/13/44)	X	X
<i>Typhlops malcolmi</i> (10/5/44 and 11/44)	X	
<i>Typhlops tenebrarum</i> (10/5/44)	X	
<i>Typhlops veddae</i> (9/29/44)	X	
<i>Typhlops violaceus</i> (10/5/44)	X	
Uropeltidae		
<i>Rhinophis oxyrhynchus</i>	X	X*
Pythonidae		
<i>Python molurus</i> (small islet 1.5 miles offshore, 15 mi. north of Trincomalee)	X	

Taxon	Taylor (1944-45)	Bauer & de Silva (2004)
Colubridae		
<i>Ahaetulla nasutus</i>	X	
<i>Ahaetulla pulverulentus</i>	X	
<i>Amphiesma stolatum</i>	X	
<i>Boiga beddomi</i>	X	
<i>Boiga forsteni</i>	X	
<i>Cerberus rhynchops</i> (in a salt water lagoon)	X	
<i>Chrysopelea taprobanica</i>	X	
<i>Coelognathus helena</i>	X	
<i>Dendrelaphis bifrenalis</i>	X	
<i>Dendrelaphis oliveri</i> (1944)	X	
<i>Dendrelaphis tristis</i>	X	
<i>Lycodon aulicus</i>	X	
<i>Macropisthodon plumbicolor</i>	X	
<i>Oligodon amnensis</i>		X
<i>Oligodon taeniolatus</i> <i>ceylonicus</i>	X	
<i>Ptyas mucosa</i>	X	X
<i>Sibynophis subpunctatus</i>	X	
<i>Xenochrophis piscator</i>	X	
Elapidae		
<i>Lapemis curtis</i>	X	
<i>Microcephalophis gracilis</i>	X	
<i>Naja naja</i>	X	
<i>Pelamis platurus</i>	X	
Viperidae		
<i>Daboia russelii</i>	X	
<i>Hypnale hypnale</i>	X	

Table 1. Reptile species recorded in the vicinity of Trincomalee by Edward H. Taylor (in 1944-45) and the authors (2004). All of Taylor's material was collected "12 miles North of Trincomalee" unless otherwise indicated. Species whose type material was collected near Trincomalee are indicated in bold and their date of collection is indicated. Current names are used for all species. *observed on a subsequent visit to the Nilaveli region.

a known species (contra Mahendra, 1984). In all, Taylor described five new species of typhlopids at this single site – *Typhlops lankaensis*, *T. malcolmi*, *T. tenebrarum*, *T. veddae*, and *T. violaceus*. Mahendra (1984) synonymised all five of Taylor's species with *Ramphotyphlops braminus*, although other workers (e.g. de Silva, 1980) considered them valid or as doubtfully distinct (de Silva, 1990). The status of these taxa has yet to be critically assessed, but at present, all five are considered as good species and all remain known



Figure 3. View of overgrown coconut plantation and beach vegetation (foreground), 2 km north of Nilaveli.



Figure 4. Specimen of *Geochelone elegans* in situ in a tangle of roots, 0.5 km north of Nilaveli Beach Hotel.



Figure 5. Living specimen of *Typhlops lankaensis* from 0.5 km north of Nilaveli Beach Hotel.



Figure 6. Live specimen of *Eutropis floweri* from 1.0 km north of Nilaveli Beach Hotel.

only from the type locality (McDiarmid *et al.*, 1999). Type material for all of these is present in the Field Museum collection, but the holotypes of *Typhlops malcolmi* (EHT 30072) and *T. tenebrarum* (EHT 30063) are apparently lost (Hahn 1980). Despite intensive searching under leaf litter, logs and debris, we collected only a single specimen of one of these species, *T. lankaensis* (Figure 5), in sandy soil at the base of a coconut tree. This species was previously known only from the holotype (FMNH 100066) and numerous FMNH and UIMNH paratypes (Marx, 1976; Philips, 2003).

Interestingly, several lizard species represented by large series in Taylor's collection were not observed by us at all, despite focal searches for these taxa. In particular, the ground-dwelling gecko *Geckoella collegalensis* (Beddome, 1870) reported under "masses of coral and about a plant, *Zanzeveria zeylanica*, growing in sand and coral along the beach" by Taylor (1953a) was not located. Likewise, the agamid *Otocryptis wiegmanni* was found in forest by Taylor in the 1940s. Although we made special checks of the high tide zone to look for *Geckoella* cf. *collegalensis*, no coral rubble of any size was found along the beach and no geckos were located in any of the beach vegetation. Deraniyagala (1945a, 1945b) described *Gymnodactylus* (now *Geckoella*) *yakhuna* from Kalivila and *G. y. zonatus* from Manampitiya. Taylor (1953a) did not examine these specimens but, based on the

published descriptions, assumed that his *G. collegalis* from the east coast were not the same as Deraniyagala's species. Wickramasinghe and Somaweera (2002) mapped *G. yakuhuna* from Trincomalee, possibly on the basis of Taylor's records. We examined some of Taylor's specimens of this gecko (UIMNH 37508-15) and believe that they differ both from *G. yakuhuna* from the west coast of Sri Lanka and from *G. collegalis* from peninsular India, but the resolution of the status of the Trincomalee *Geckoella* awaits a thorough revision of this endemic South Asian genus (Manamendra-Arachchi, 1997).

We also examined Taylor's specimens of *Hemidactylus brookii parvimaculatus* (UIMNH 37553-58), a gecko we also found near Nilaveli, and *H. triedrus lankae* (UIMNH 37560), a species which we did not locate. Two specimens identified by Taylor as the latter species (UIMNH 37559, 37561) were actually *Hemidactylus depressus*, a species that reaches its northeastern limits near Trincomalee (Wickramasinghe and Somaweera 2002). The other *Hemidactylus* found by Taylor, *H. frenatus* and *H. leschenaultii* were common in 2004 and the latter species, which was found to be active both diurnally and nocturnally, was located both on trees and on buildings, including the army and navy guard posts along the road near Nilaveli. Another species reported in large numbers by Taylor near Trincomalee was the agamid *Otocryptis wiegmanni*. Taylor (1953a) noted that there were differences between his coastal specimens and those from highland localities, but recognised no taxonomic distinction between the two. Recently, however, Bahir & Silva (2005) described *Otocryptis nigristigma* from the dry zone (< 2000 mm rain/yr) forests of eastern Sri Lanka, restricting typical *O. wiegmanni* to the southwestern wet zone. Bahir & Silva (2005) mapped a locality for *O. nigristigma* just north of Trincomalee, probably corresponding to Taylor's site, but they did not list specimens from this locality in their material examined. We, therefore, confirmed this specific assignment by examining some of Taylor's original specimens (UIMNH 37530-35). *Otocryptis* spp. are forest dwelling lizards, but we found no suitable habitat in the immediate vicinity of Taylor's locality and

observed no *O. nigristigma*. The cases of both *Geckoella* and *Otocryptis* suggest that changing land use in the area may have resulted in the local extirpation of some of the herpetofauna.

Among the lizards, our most exciting find was *Eutropis* (formerly *Mabuya*) *floweri*, otherwise known only from the two types (holotype UIMNH 37565; paratype FMNH 178243) collected by Taylor in September 1944 (Smith *et al.*, 1964; Marx, 1976; Philips, 2003). Our single specimen (Figure 6) was found under the base of a coconut tree stump and was collected only after digging out the space underneath the stump. This same specimen was figured by Das and de Silva (2005). The specimen (AMB 8494, to be deposited in the Department of National Museums, Colombo) is a male of SVL 49 mm and tail length 62 mm. It agrees in all details of scalation with the description provided by Taylor (1950a).

Shortly after our visit to the area, the tsunami of 26th December 2004 hit with full force on this area of coast (Gunatilaka, 2005), completely destroying the Nilaveli Beach Hotel, along with neighboring villages and devastating the coastal zone within 1–2 km of the shore, and with it Taylor's original collecting site. Subsequently, interactions between the Sri Lankan government at the LTTE have deteriorated as well, hindering further field work in the area.

Recent intensive research in Sri Lanka has revealed spectacular diversity in frogs and reptiles (Pethiyagoda & Manamendra-Arachchi, 1998a, 1998b; Meegaskumbura *et al.*, 2002; Bossuyt *et al.*, 2004; Manamendra-Arachchi & Pethiyagoda, 2005; Meegaskumbura & Manamendra-Arachchi, 2005; Batuwita & Bahir, 2005) and a continuing stream of descriptions indicates that new taxa remain to be discovered in virtually all major herpetofaunal groups. The majority of this work, however, has been conducted in areas that been under government control for the majority of the period of the Sri Lankan civil war (begun in 1983). Taylor's locality near Trincomalee lies at the northern edge of this area and on the doorstep of Sri Lanka's far north, in which little herpetological work has been conducted. Given the tremendous diversity recorded by Taylor in a very small area, we believe that additional herpetological novelties may be expected from the region.

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