(*b*) Dorsal scutes subequal in Sri Lankan mugger ; only a few isolated ones enlarged ; while in the Indian mugger there are 2 median longitudinal rows of conspicuously widened dorsal scutes.

(*bb*) We found the median longitudinal rows of dorsal scales highly variable in the Indian sample, sometimes subequal, sometimes uniformly larger, smaller or equal in size to the other dorsals.

(*c*) Ventral collar of ' twice as deep ' scales in Sri Lankan mugger and none in Indian mugger.

(*cc*) In all of the Indian specimens a collar of enlarged scales is present though often not conspicuous in juveniles.

(*d*) Sri Lankan mugger not uncommon in saltwater.

(*dd*) The mugger in India has been hunted out of most of its original habitat which certainly may have included salt pans and estuarine areas, as reported in Sind.

Conclusion :

The great variation in scalation of local populations of the wide ranging *C. palustris* does not support Deraniyagala's contention that the Sri Lankan race is a separate subspecies. Evidence is presented in Table 1.

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C/O. MADRAS SNAKE PARK TRUST,
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February 23, 1982.

ROMULUS WHITAKER
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REFERENCES

DERANIYAGALA, P. E. P. 1936 : A new crocodile from Ceylon. Ceylon Journal of Sci., XIX, part 3.

WHITAKER, R. AND WHITAKER, Z. (1979) : Preliminary Crocodile Survey—Sri Lanka. *J. Bombay nat. Hist. Soc.* **76** : (1) : 66-85.

MCCANN, C. (1935) : A reptile and Amphibian Miscellany. *Bombay nat. Hist. Soc.* **41** : 742.

19. THE DISTRIBUTION OF THE GHARIAL

Malcolm Smith (1931) gives the distribution of gharial as :

' The Indus, Ganges, Mahanadi and Brahmaputra Rivers and their tributaries and the Kaladan River, Arakan. Barton (1929) records a specimen shot at the mouth of the Maingtha, a tributary of the Sweli River, Upper Burma ; it is the sole record from the Irrawaddy River system.'

Leaving aside the questionable occurrence in Burma, the gharial would appear to have a north Indian distribution in the Indo-Gangetic river systems and their tributaries. The occurrence in Mahanadi, and other rivers in Orissa (Singh and Bustard, in prepn.), appears somewhat anomalous.

During the course of a survey in Godavari River of Andhra Pradesh, information was

obtained concerning the previous occurrence of crocodiles, which from their description could only be gharial, in the Godavari. Since they apparently no longer occur there, having been wiped out in the post-Second World War crocodile hunting phase, which all but exterminated the gharial in its north Indian stronghold, it is not possible to further substantiate these reports two of which are presented below :

1. In June 1976, when visiting the trans-Godavari in the region of Papikonda Gorge with Mr. T. V. Subba Rao, Additional Chief Conservator of Forests (1) of the Andhra Pradesh State Forest Department, Mr. Subba Rao gave one of us (H.R.B.) definite information that gharial had been present a decade or more ago in the River Godavari. He stated that he had been told of long-snouted crocodiles by fishermen, the description of which could only apply to gharial. Since the only other crocodilian in this area of Godavari is the Indian mugger — the most short-snouted species of the genus *Crocodylus* — it is not possible that this animal was confused with the gharial.
2. In the winter of 1976 (Nov./Dec.) one of us (B.C.C.) was carrying out a survey of wild mugger (*Crocodylus palustris*) populations on the river Godavari and was likewise informed by fishermen that a crocodilian other than the mugger was formerly present in this River. Once again the descriptions provided by fishermen were of a long snouted crocodile which they drew and from the drawings could be positively identified as the gharial. Report said that it occurred at Gundam but also from Pochampad to Lanjamadugu, a stretch of 250 km. One such informant was Kussappa, son of Bhawani, aged approximately 35 years. He had been operating at Pochampad project for 15 years having originally come from Maharashtra. Kussappa said that the gharial in Godavari grew to a length of 12 to 18 ft. and confirmed seeing them during the early 1960's, evidence which was confirmed by other people. Gharial are reported to have been present in this area of the Godavari up to and including the early 1960's. Thereafter, however, these fishermen reported not having seen gharial.

Wainganga/Pranahita, a tributary of the Godavari originates from almost the same latitude as the Mahanadi River, the southernmost range for the gharial described so far. The records here presented indicate that the recent range of the gharial extended to South India.

In view of the former occurrence of the gharial in the Godavari, their occurrence in Mahanadi and the other river systems of Orissa no longer appears so anomalous.

We would be very interested to hear from readers who have *definite* records of gharial in Andhra Pradesh or in other areas where they are not generally known to have occurred. This information, such as old shikar records, would be very useful, since following the massive hunting of crocodiles, gharial must be expected to be extinct in most peripheral parts of their range. Hence such data cannot be collected today.

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REFERENCES

SMITH, MALCOLM (1931) : Fauna of British India. Reptilia and Amphibia Vol. 1, Loricata Testudines. Taylor and Francis, London.

BARTON, C. G. (1929) : The occurrence of the Gharial (*Gavialis gangeticus*) in Burma. *J. Bombay nat. Hist. Soc.* **33** : 450-451.

20. A RANGE EXTENSION OF *GEOCHELONE ELONGATA*

Three land tortoises are known from India, *Geochelone elongata, G. elegans* and *G. travancorica*. *Geochelone elongata* and *G.elegans* are widespread, whereas *G. travancorica* is restricted to the Travancore Hills and the western and eastern slopes of the Ghats (Annandale 1915).

Geochelone elongata has been found in Sal forests from the Jalpaiguri district, W. Bengal, Singbhum district, Bihar (Chaibassa and Chotanagpur), Orissa, Puri district, Simlipal in the Mayurbhanj district of Orissa, India, Bangladesh (Akyab and Chittagong Hill Tracts), Nepal, Burma, Cambodia and Vietnam (Biswas *et al.* 1978). The reference of Biswas *et al.* (1978) to Nepal *G. elongata* came from Smith (1931). An exact locality for Smith's record is unavailable. Apparently, this species is restricted to Sal forests.

In April 1974, one of us (C. A. R., witnessed by R. Whitaker) found an individual of *G. elongata* about 300 km further west than previously recorded. This specimen was found at dusk in Sal forest while returning from gavial survey work on the Ramganga River in northwestern Uttar Pradesh, Garhwal district, about 75 km west of the Nepal border. The specimen was active when found in the vicinity of the Gairal Forest Rest House, Corbett National Park, about 25-30 km northwest of Ramnagar. The specimen was photographed and released because it was found in a national park and collection permits were not available. Color slides are deposited in the Department of Herpetology, Museum of Comparative Zoology, Harvard University (MCZ slide collection catalogue number 778-79) and are available for verification of our identification.

Smith (1931) had speculated that the current distribution of *G. elongata* and *G. travancorica* is relictual and noted a similar distribution in *Malanochelys trijuga*. Smith also contended that it was unlikely that *G. elongata* ever extended across the Gangetic Plain. The Uttar Pradesh specimen and the report of Biswas *et al.* (1978) falsify this contention and suggests that *G. elongata* may yet be found in isolated patches of Sal forest throughout northern India.

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