Rec. zool. Surv. India, 91 (3-4) : 471-474, 1992

DISTRIBUTION OF FIDDLERS IN INDIA

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More than sixty two species of fiddler crabs thrive in the tropical and subtropical regions of the world, of which nine species taxonomised under five subgenera have been reported to occur in the East, West coasts and the Andaman and Nicobar Islands of India (Fig. 1). The differential distribution of tropical and temperate fiddlers is considered to be the result of differential genotypic expressions of the ability to withs-

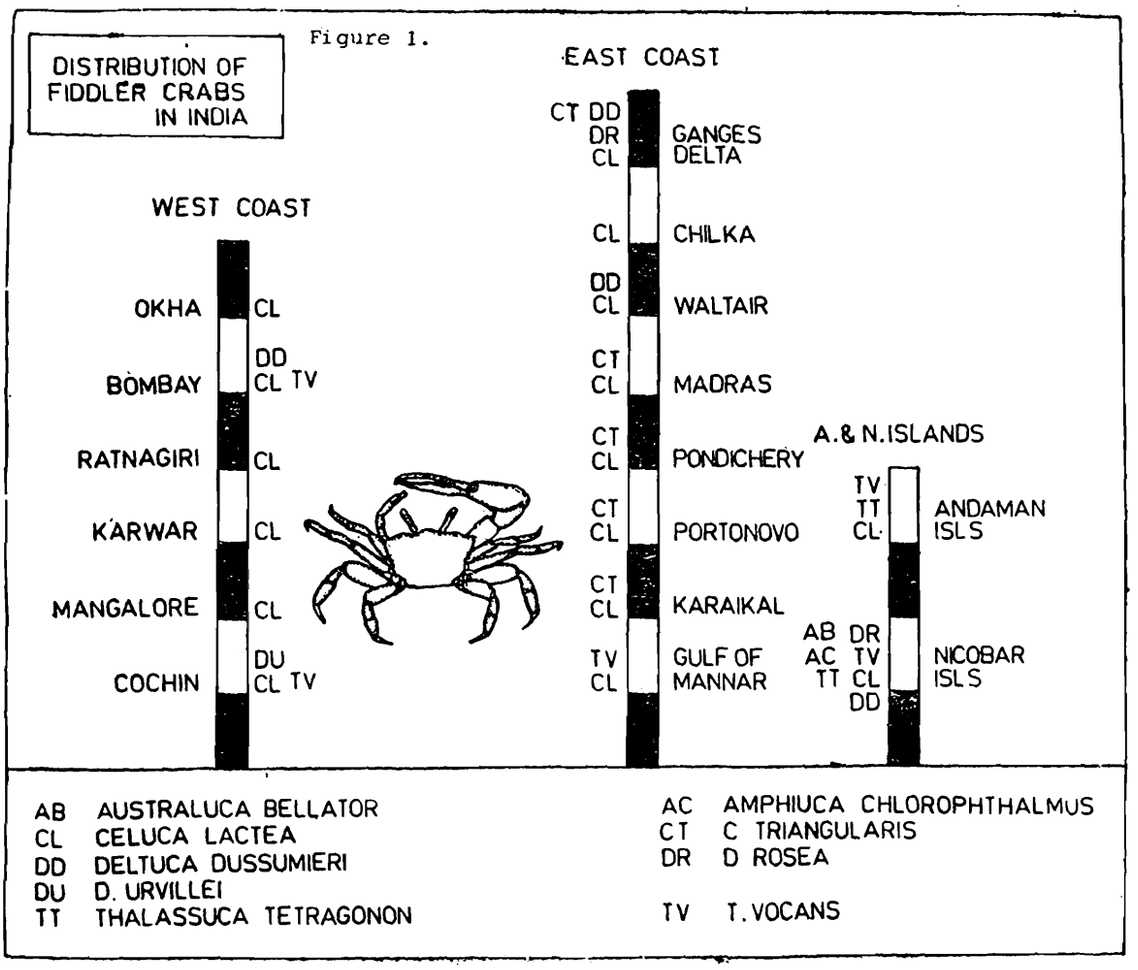
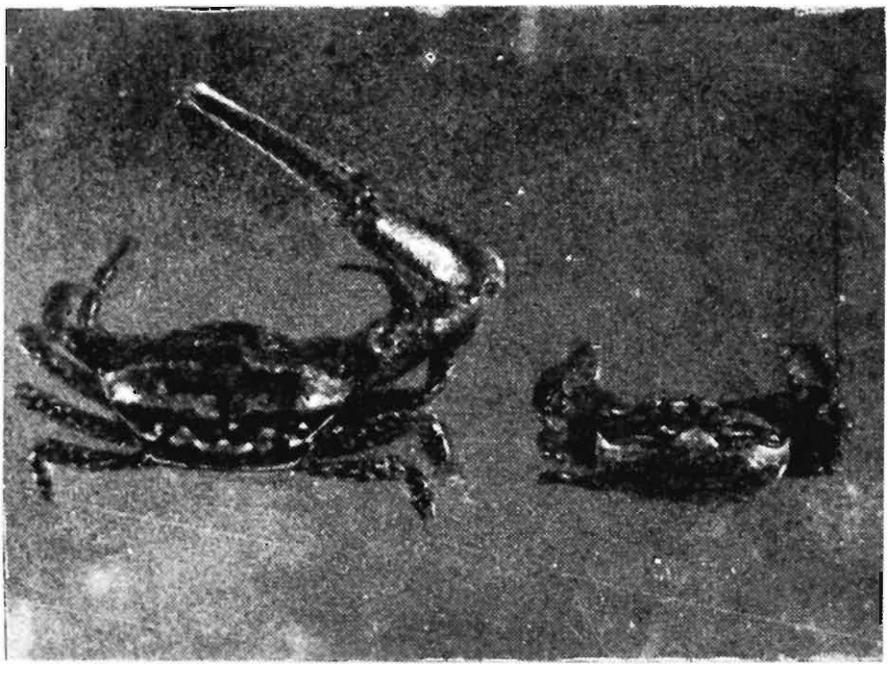


Fig. 1

tand extremes of temperature (Vernberg and Tashian, 1959). Vernberg (1959 a, b) noticed pronounced physiolgical differences between tropical and temperate fiddlers and stated that during evolution and distribution different patterns of thermal acclimation



Uca (*Celuca*) *triangularis bengali*

have resulted. The available literature on the distribution of fiddlers in India is scattered and hence this attempt to present a comprehensive list with a note on taxonomy.

From the distribution point of view, *Uca* (*Thalassuca*) *vocans*, *U.* (*T.*) *tetragonon* *U.* (*Deltuca*) *rose*, *U.* (*Celuca*) *triangularis* and *U.* (*Amphiuca*) *chlorophthalmus* are tropical Indo-Pacific ; *U.* (*C.*) *lactea* and *U.* (*D.*) *dussumieri* are Indo-Pacific ; *U.* (*D.*) *urvillei* tropical anp subtropical western Indo-Pacific and *U.* (*Australuca*) *bellator central* Indo-Pacific. The record of the presence of *U.* (*Australuca*) *bellator* at Nancowry of the Nicobar group of Islan has been considered to be questionable by Crane (1975) due to the dubious, inherently impossible to somewhat unlikely place of occurrence. This view remains to be verified.

In the Wess coast, four species belonging to three subgenera recorded i. e. *U.* (*C.*) *lactea*, *U.* (*D.*) *dussumieri*, *U.* (*D.*) *urvillei*, and *U.* (*T.*) *vocans* are of common occurrence *Uca marionis* has been synonimised to be *U.* (*T.*) *vocans* ; *vocans* extends from the west coast (Bombay) to the South-east coast (Gulf of Mannar).

In the East coast five species brought under three subgenera, i. e. *U.* (*C.*) *triangularis*, *U.* (*D.*) *dussumieri*, *U.* (*D.*) *rosea* and *U.* (*T.*) *vocans* occur. U. (D.) rosea has been noticed to occur in the Gangetic delta and in the east eoast upto Chilka. *U.* (*D.*) *acnta* of Alcock's collections deposited in the Zoological Survey of India turned out to be *U.* (*D.*) *rosea on closea* examination (Misra, 1986 Personal commumication).

U. (*C.*) *triangularis* occurs in localities of optimal summer rainfall (South-West monsoon), high relative humidity and temperature, the maximum of which lies in between 30 and 40°C. In Australia also a similar distribution pattern has been noticed by Jones (1986 Personal communication). The occurrence of *triangularis* has not been reliably recorded so far from the West coast and hence it is practically evident that it is an East coast species in India. It is interesting to note that *triangularis* of Australia also inhabit predominantly the north-east to the East coast, from Melville Island near Darwin to Mackay in Queensland (Jones, 1986 Personal communication).

U. (*C.*) *lacta* and *triangularis* sometimes occur sympatrically with marginal mix up in the Gangetic delta and South-east coast of India.

Nobili (1903) recorded the presence of *triangularis* in the South-east coast at Pondicherry and Henderson (1893) at Madras. Panikkar and Aiyar (1939) reported the absence of *triangularis* at Madras. *U.* (*C.*) *triangularis bengali* does occur in Madras (Ennore and Adyar estuaris, Plate-1) and exhibits a patchy distribution, restricted to the high saline areas where the substratum is clay-mud.

The Aneaman and Nicobar group of Island harbour a richer fiddler tauna with seven species broght under five subgenera of which four species are found in common

to the East coast. One can observe that *U.* (*D.*) *urvillei* is restricted to the West Coast, *U.* (*C.*) *triangularis* to the east coast and *U.* (*T.*) *tetragonon*, *U.* (*Australuca*) *bellator* and *U.* (*Amphiuca*) *chlorophthalmus* to the A & N Islands. It is evident that two subgenera enjoy peninsular distribution while the other three insular. *U.* (*D.*) *dussumieri*, *U.* (*C.*) *lactea* and *U.* (*T.*) *vocars* are common to the East, West coasts and the Islands.

The taxonomy of the fiddlers had always been a point of disagreement among the workers. Crane (1957) divided the fiddlers into two non-systematic groupings based on form and complexity of the species-typical waving displays by the males. The narrow fronted primitive fiddlers exhibit vertical waves while the more advanced broad fronts show in addition to the vertical components a lateral waving display pattern. Quite unfortunately, intermediates are also of common occurrence. von Hagen (1976) added "jerker or Ruckwinker" group. Bott (1973) accommodated the fiddlers in ten genera. Crane (1975) constructed a likely phylogeny of the genus with nine subgenera based on morphological characters and male waving display. The lock and key concept of the reproductive apparatus responsible for reproductive isolation does not appear to work atleast in Minuca (Thurman, 1982). Thurman (1985) inferred that body structures and reproductive armature reflect ecological adaptation rather than phylogenetic affinity. Hence, classification based on certain morphological characters as diagnostic traits leads to confusion. von Hagen (1976) preferred "to avoid the clumsy subgeneric or even generic splitting and to adhere to the familiar plain use of *Uca*". Jones and George (1982) refrained from commenting on the unfortunate situation and added handedness also as an additional tool useful in arriving at a better taxonomic system. The biochemical studies like enzyme analysis (Selander *et al*, 1971) have revealed some geographic variations in *Uca*. Albrecht and von Hagen (1981) produced biochemical evidence (differential electrophoretic) in support of the views of Crane (1975) on relationships and phylogeny ; hence, the taxonomic system proposed by Crane (1975) is followed in this work as it appears to best suited.

ACKNOWLEDGMENTS

I thank the Director, Zoological Survey of India, Calcutta for facilities. Thanks are due to Dr. Asket Singh, Dr. Thirumalai and other collegues who had been helpful at various stages. This study is based on a thesis submitted in partial fulfilment of the degree of Doctor of Philosophy to the University of Madras.

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