



ISSN 0375-1511

Rec. zool. Surv. India : 112(Part-1) : 99-102, 2012

**A REPORT ON THE OCCURRENCE OF THE WATER-STRIDER,
HALOBATES MICANS ESCHSCHOLTZ, 1822 (HEMIPTERA : GERRIDAE)
FROM NAGAPATTINAM COASTAL WATERS, SOUTHEAST COAST OF INDIA**

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INTRODUCTION

The water-striders, *Halobates micans* (Hemiptera: Gerridae) was described in 1822 by Eschscholtz based on the material procured from unspecified locality some where along the Southeast coast of India. The allotype of this species was designated by Eschscholtz, which was collected from Nagapattinam coastal waters. There are 8 families, about 106 genera and approximately 1200 species of water-striders are distributed worldwide. The family Gerridae alone contains 56 genera with about 450 species belongs to 8 subfamilies. Of these, only a small percentage, 13 genera with about 100 species, are found in marine environment. The Gerridae and Veliidae are particularly difficult to delineate at the family level (China and Usinger, 1949). The specimens studied by them were collected from the sea surface.

They are wingless and exclusively marine, spending all stages of their life cycle on the sea-air interface (Zaitsev, 1971). There are only nine species of *Halobates* that are truly pelagic (Cheng, 1982; Cheng *et al.*, 1990; Andersen and Foster, 1992). These open ocean species have some characteristic that allow them to move on the ocean surface film (Cheng and Shulenberg, 1980). In spite of 80 genera and 275 species accommodated in 16 major families of aquatic and semi aquatic Hemiptera known from India (Thirumalai, 2002). During a recent survey in the Nagapattinam coastal waters,

about 100 specimens of *H. micans* were collected and the details are depicted below. In addition, a geographical distribution of *Halobates* spp. known so far from the Indian marine habitats is also provided.

MATERIAL AND METHODS

The specimens were collected from Nagapattinam coastal waters (Lat. 10°48'0N; Long. 79°50'24E) during routine survey at high tide in January, 2010. They were preserved in a 70% ethanol solution and identified using the key presented by Herring (1961) and White, 1883.

SYSTEMATIC ACCOUNT

Phylum ARTHROPODA
Class INSECTA
Order HEMIPTERA
Family GERRIDAE

Genus *Halobates*

H. micans Eschscholtz, 1822

Diagnosis : Body blackish with grayish pubescence and yellow markings; head with 2 triangular yellow markings meeting in the midline, ventral part of body in male with yellow markings, not extensive but conspicuous, lateral margin of proctiger of male roundly produced but not pointed, right styliform process curved outward, in female, the yellow colouration on the ventral part of body more extensive than in male.

DISCUSSION

Water-striders of the genus *Halobates* comprise the only known true oceanic insects. The genus comprises of 43 species of which 5 are distributed in all tropical oceans and the remaining 38 have been recorded from the near-shore, sheltered coastal waters of the tropical Indo-Pacific (Anderson and Foster, 1992). Of these 5 species viz., *H. galatea*, *H. flaviventris*, *H. formidabilis*, *H. trynae* and *H. micans* are known to occur in the Indian marine habitats. But *H. elephanta* Andersen & Foster, 1992, *H. germanus* White, 1883, *H. hayanus* White, 1883, *H. proavus* White, 1883 and *H. micans* Eschscholtz, 1822 are also recorded from Indian open sea species; the remaining species are known from India and apparently near-shore species preferring habitats that are sheltered from winds and wave action.

The present reports on the new arrival of *H. micans* from the coastal waters of Nagapattinam, further confirms the observation made by Andersen and Foster (1992) that *H. micans* inhabits sea surface of near-sea shore. Besides, a recent report on the distribution of *Halobates* in the open oceans (Pathak

et al., 1988) does not include *H. micans* a pointer to the fact that the species in all probability is not an open ocean habitat. The sea skaters, *Halobates* Eschscholtz (Gerridae: Halobatinae) include the only known oceanic insects: five pelagic species are distributed in all tropical oceans and further 40 species have been recorded from sheltered coastal waters of the Indo-Pacific (Andersen and Weir, 2003). *H. micans* is non-randomly distributed across the ocean surface (Cheng and Shulenberger, 1980; Cheng and Holdway, 1995). Cheng (1985) reported considerable variation in the ability of *Halobates* species to survive in different salinities. Sea birds and sea turtles have also been reported as *Halobates* predators (Senta *et al.*, 1993; Witherington, 2002). Bull *et al.* (1977), Cheng *et al.* (1984) and Schulz-Baldes (1989) have suggested that *H. micans* could be used as a bioindicator of cadmium distribution in the surface waters. During a recent faunistic survey in the Kannur district of Kerala, 7 specimens of *H. galatea* were collected from a group of 18 specimens observed in a mangrove habitat at Dharmadam (Radhakrishnan and Thirumalai, 2004).



Fig. 1 : Dorsal view of *H. micans*



Fig. 2 : Ventral view of *H. micans*

Table - 1 : Marine water-striders classification, number of marine species habitat preference and geographical distribution.

Genus	Habitat preference	Geographical distribution
<i>Halobates</i> , group White, 1883	Nearshore seas, mangrove and lagoons	Mainland coast, islands of tropical, subtropical Indian and Pacific Ocean
<i>Halobates</i> , group White, 1883	Open ocean	Atlantic, Indian and Pacific Ocean
<i>H. elephanta</i> Andersen & Foster, 1992	Coastal	Andaman sea and Arabian sea
<i>H. flaviventris</i> Eschscholtz, 1822		Bay of Bengal (Tamil Nadu)
<i>H. formidabilis</i> Distant, 1910	Coastal	Andaman sea and Bay of Bengal
<i>H. galatea</i> Herring, 1961	Coastal	Arabian sea
<i>H. germanus</i> White, 1883	Oceanic	Arabian sea and Bay of Bengal
<i>H. hayanus</i> White, 1883		Andaman sea
<i>H. micans</i> Eschscholtz, 1822	Coastal	Andaman sea, Bay of Bengal (Tamil Nadu) and Indian Ocean
<i>H. proavus</i> White, 1883	Coastal	Andaman sea (Nicobar Island)
<i>H. trynae</i> Herring, 1964	Coastal	Bay of Bengal (Andaman Nicobar)

REFERENCES

- Andersen, N.M. and W.A. Foster, 1992. Sea skaters of India, Sri Lanka, and the Maldives, with a new species and a revised key to Indian Ocean species of *Halobates* and *Asclepios* (Hemiptera, Gerridae). *Journal of Natural History*, **26** : 533-553.
- Andersen, N.M. and Tom, A. Weir, 2003. A New Species of Sea Skaters, *Halobates* Eschscholtz, from Robinson River, Western Australia (Hemiptera-Heteroptera: Gerridae). *Aquatic Insects*, **25**(1) : 9-18.
- Bull, K.R., Murton, R.K., Osborn, D., Ward, P. and Cheng, L. 1977. High levels of cadmium in Atlantic seabirds and sea-skaters. *Nature*, **269** : 507-509.
- Cheng, L. and Shulenberger, E. 1980. Distribution and abundance of *Halobates* species (Insecta: Heteroptera) in the Eastern tropical Pacific. *Fishery Bulletin*, **78**(3) : 579-591.
- Cheng, L. and Holdway, P. 1995. Populations of *Halobates* (Hemiptera: Gerridae) across two oceans. *The Raffles Bulletin of Zoology*, **43**(2) : 313-327.
- Cheng, L., 1982. Insects. In Schwartz, M.L. (Ed.). The encyclopaedia of beaches and coastal environments. *Strandburg*: Hutchinson Ron Publ. Company, 940.
- Cheng, L., 1985. Biology of *Halobates* (Heteroptera Gerridae). *Annual Reviews Entomology*, **30** : 111-135.
- Cheng, L., Baars, M.A. and Oosterhuis, S.S. 1990. *Halobates* in the Banda Sea (Indonesia): monsoonal differences in abundance and species composition. *Bulletin of Marine Science*, **47**(2) : 421-430.
- Cheng, L., Schulz-Baldes, M. and Harrison, C.S. 1984. Cadmium in ocean-skaters, *Halobates sericeus* (Insecta), and their seabird predators. *Marine Biology*, **79**(3) : 321-324.
- China, W.E. and Usinger, R.L. 1949. Classification of the Veliidae (Hemiptera) with a new genus from South Africa. *Ann. Mag. Natural History*, **12**(2) : 343-357.
- Herring, J.L., 1961. The genus *Halobates* (Hemiptera: Gerridae). *Pac Insects*, **3**(2-3) : 223- 305.
- Pathak, S.C., Vandanna, K., Arunkumar, C. and Parulekar, A.H. 1988. Distribution of *Halobates* (Hemiptera: Gerridae: Halobatinae) in Indian Ocean, *Insect Environment*, **4**(3) : 94.

- Radhakrishnan, S. and Thirumalai, G. 2004. A report on the occurrence of the sea skater, *Halobates galatea* Herring (Insecta: Hemiptera: Gerridae) in a mangrove habitat at Dharmdam, Kannur district, Kerala, India. *Rec. zool. Surv. India*, **102**(Part 1-2) : 7-10.
- Schulz-Baldes, M., 1989. The sea-skater *Halobates micans*: an open ocean bioindicator for cadmium distribution in Atlantic surface waters. *Marine Biology*, **102**(2) : 211-215.
- Senta, T., Kimura, M. and Kanbara, T. 1993. Predation of fishes on open-ocean species of sea-skaters (*Halobates* spp.). *Japanese Journal of Ichthyology*, **40**(2) : 193-198.
- Thirumalai, G., 2002. A checklist of Gerromorpha (Hemiptera) from India. *Rec. zool. Surv. India*, **100**(1-2) : 55-97.
- Witherington, B.E., 2002. Ecology of neonate loggerhead turtles inhabiting lines of downwelling near a Gulf Stream front. *Marine Biology*, **140**(4) : 843-853.
- Zaitsev, Y.P., 1971. Marine neustonology. Traduzido por A. Mercado. Jerusalem: *Israel Program for Scientific Translations*, 207.