

Occurrence of *Acetes sibogae* Hansen (Crustacea: Decapoda: Sergestidae) in Western Australia, with notes on the northern Australian population

Yukio Hanamura

National Research Institute of Fisheries and Environment of Inland Sea
Ohno-cho, Hiroshima 739-0452, Japan

Shrimps of the sergestid genus *Acetes* (Decapoda, Sergestidae) are distributed mainly in estuaries and coastal waters of the tropical and subtropical regions of the world (Omori 1975, 1977; Xiao and Greenwood 1993). Nevertheless, no record has been obtained from the subtropical eastern Indian Ocean.

Recently, many specimens of *Acetes* were collected at a site in the Swan River near Perth, Western Australia. They resemble to the Australian form of *A. sibogae* Hansen, 1919, described originally as *A. australis* by Colefax (1940) from the east coast. Further analysis of these specimens and comparison with northern Australian specimens indicated that the Western Australian population belongs to *A. sibogae*.

This record is the new addition to the Western Australian fauna and is a range extension of the genus.

In the synonymy, only the important and relevant literature has been listed. Abbreviations used in the text are: cl, carapace length in millimetres; NTM, Northern Territory Museum, Darwin; WAM, Western Australian Museum, Perth.

Acetes sibogae Hansen, 1919

Figures 1, 2

Acetes sibogae Hansen, 1919: 38, pl. 3, figure 4a-h; Pathansali, 1966: 61; Omori, 1975: 61, figures 27, 28; Ravindranath, 1980: 266, figures 8, 9; Xiao & Greenwood, 1993: 292, 293 (in text).

Acetes australis Colefax, 1940: 345, figures 1-19a.

Acetes orientalis Achuthankutty & Nair, 1976: 233, figures 1-19.

?*Acetes sibogalis* Achuthankutty & George, 1973: 139-144, figures 1-20.

Material Examined

Australia: Western Australia: 61 males (2.5-4.6 mm cl), 29 females (2.5-5.8 mm cl), 3 inds (damaged), Coode Street Jetty, Swan River, Perth, WA, 4 Feb 1998, coll. D. Bloch (WAM C 23430).

Northern Territory: numerous males and females (2.1-4.5 mm cl), Caimen Creek, Port Essington, NT,

low water, 4 May 1982, coll. and det. A. J. Bruce (NTM Cr. 004936).

Remarks

The taxonomic status of *A. sibogae* s.l. has been subject to considerable debate owing to wide morphological variation within its geographical range (Omori 1975; Ravindranath 1980; Xiao and Greenwood 1993). The species has been occasionally reported under the following names: *S. australis* Colefax, 1940; *A. sibogalis* Achuthankutty and George, 1973; *A. orientalis* Achuthankutty and Nair, 1976.

Omori (1975), in a comprehensive study of this group, relegated the species to subspecies rank within *A. sibogae*, based primarily on the number of falcate hooks (or spines) on the capitulum of the petasma: *A. s. sibogae* represented in south Asian waters, from India to Philippine-Indonesia; *A. s. australis* in eastern Australia; *A. s. sibogalis* in Cochin, India (see also Pérez-Farfante and Kensley 1997). Later, Omori (1977) suggested that the eastern Australian population to be returned to species rank, though a detailed account for this action was not presented formally. Holthuis (1980) accepted Omori's specific concept.

On the contrary, Ravindranath (1980), after reviewing the data available to him, concluded *A. sibogae* to be a morphologically variable, widely distributed species, having priority over the above species and/or subspecies. Xiao and Greenwood (1993) followed Ravindranath.

In general features, Western Australian specimens (Figure 1) show the greatest affinity to the eastern Australian form, though some minor differences were noticed. To clarify their identity, they were compared with specimens from northern Australia (Figure 2). No morphological data for the latter population are heretofore presented.

The lower antennular flagellum of males normally consists of 12 segments in the specimens from the western and northern coasts of Australia (Figures 1d, 2b). This is consistent with all the *A. sibogae* complex (Omori 1975; Ravindranath 1980).

The structure of the coxa and basis of the third

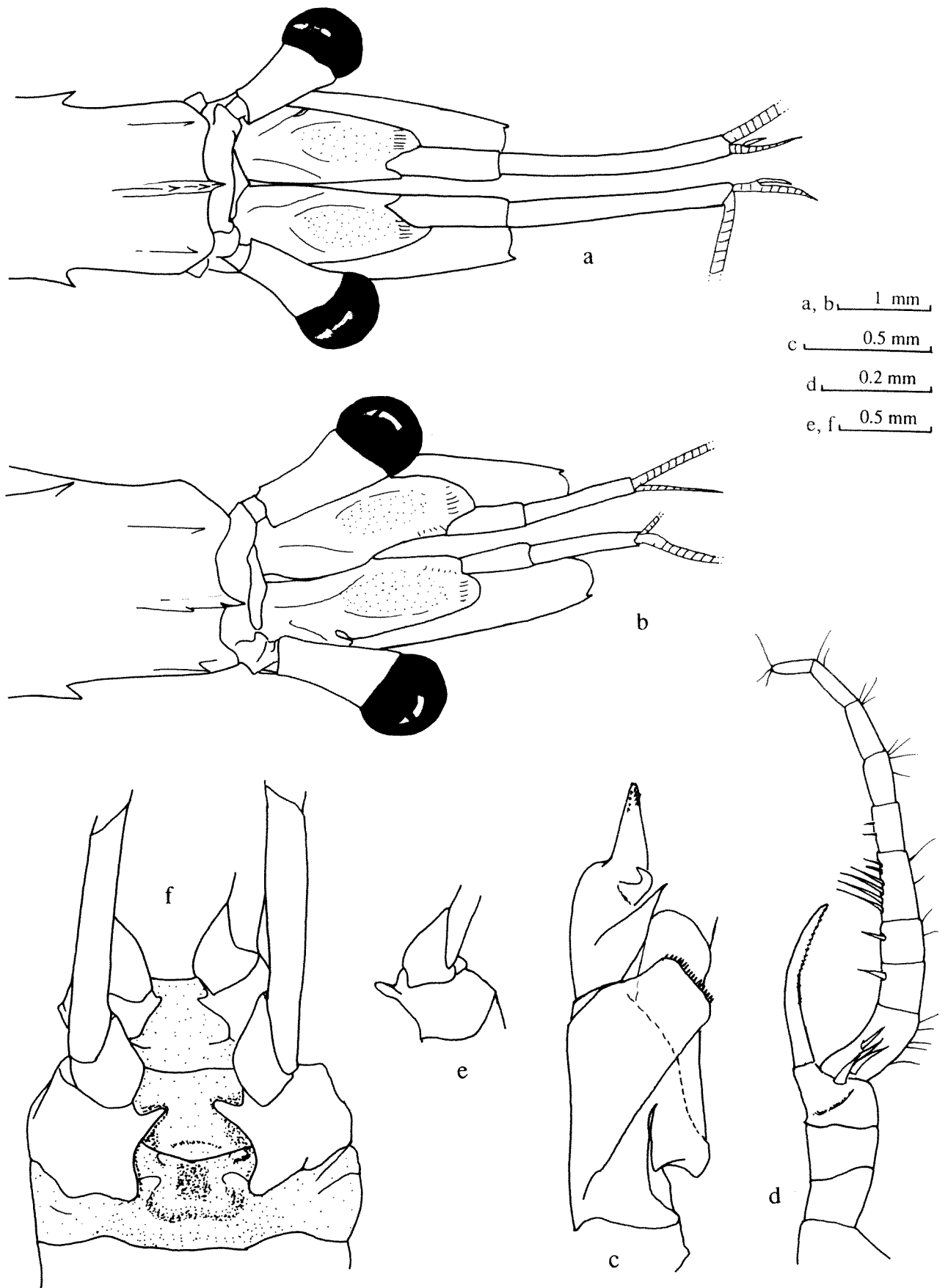


Figure 1 *Acetes sibogae* Hansen, 1919, male 4.8 mm (a, c-e) and female 5.8 mm (b, f) from Perth, Western Australia: a, anterior part of body, male; b, same, female; c, petasma; d, male lower antennular flagellum; e, male basis and coxa of third pereopod; f, thelycum.

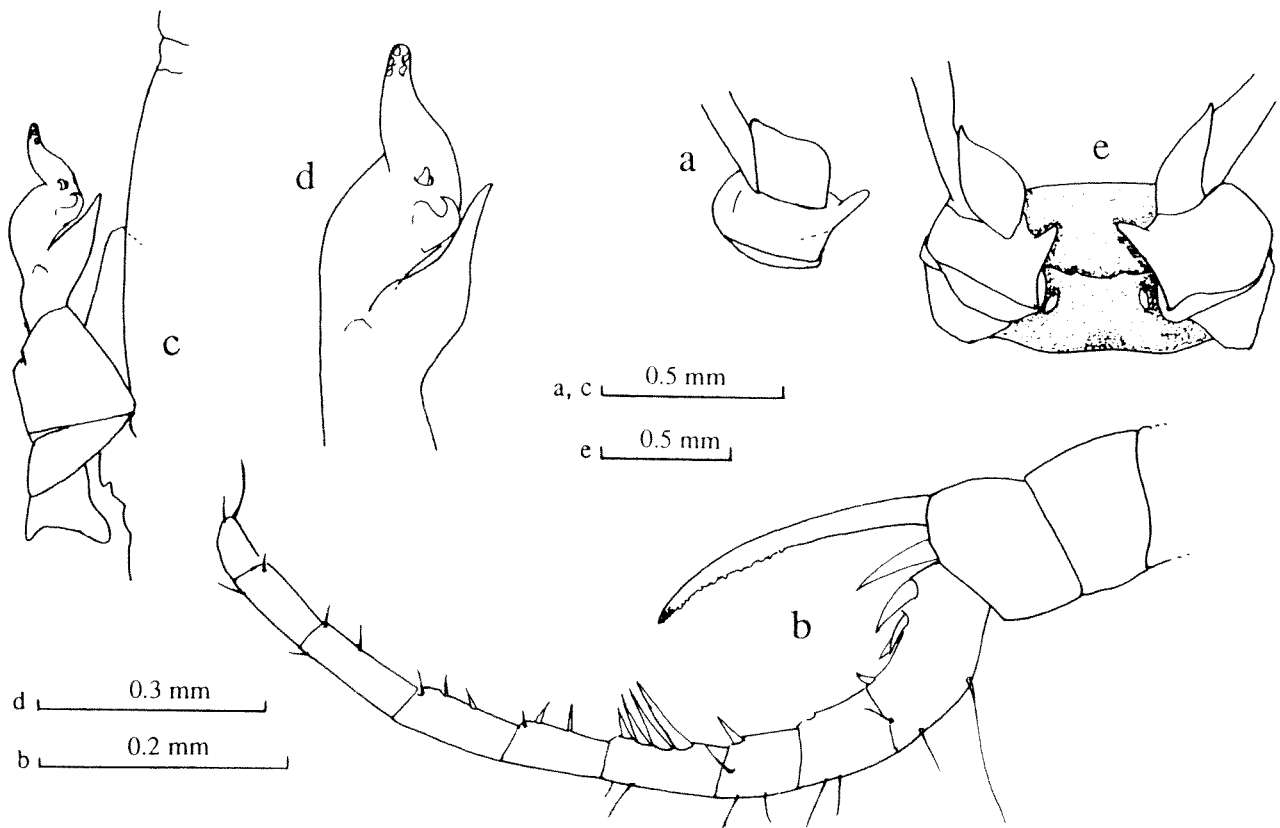


Figure 2 *Acetes sibogae* Hansen, 1919, male 3.6 mm cl (a-d) and female 4.5 mm cl (e) from Port Essington, Northern Territory, Australia: a, male basis and coxa of third pereopod; b, male lower antennular flagellum; c, petasma; d, same, distal part enlarged; e, thelycum.

pereopod shows some variation among local populations. In Western and northern Australian specimens, the coxa possesses a well-developed inner projection in males and females (Figures 1e, f, 2a, e), as also noted in the eastern Australian and some other populations. The Philippines population, on the contrary, has the coxa with a less-pronounced mesial tooth, particularly in males (e.g. Hansen 1919; Omori 1975).

The northern Australian specimens have a well developed basal projection (Figure 2a, e), projecting most in larger specimens. The toothed basis is common in other populations, but at best forms only an obtuse angle in Western Australian specimens (Figure 1e, f).

The petasma in Western Australian specimens consistently bears a single falcate spine on the capitulum (Figure 1c) as in the eastern Australian population (Colefax 1940; Omori 1975). However, specimens from Malayan waters (Pathansali 1966; Omori 1975) and those from northern Australia show an intermediate form, having a minute secondary spine in addition to the large spine (Figure 2c, d). Males from Philippines and Indian waters have one large and one moderately large falcate spines on the capitulum (Hansen 1919;

Omori 1975; Ravindranath 1980). There is a general tendency of the falcate spine to decrease in number towards the south of the distributional range.

Although several populations in different geographical areas can be recognized by a combination of features, the extent of their variation and the limit of their distribution is not precisely defined. Hence, I have considered all forms to belong to *A. sibogae*. The identity of *A. s. sibogalis* still remains tentative, and further study is required.

Distribution

Acetes sibogae is known to occur from the southwest India to the east and west coasts of Australia, throughout the Philippine-Indonesian region.

Ecological note

Acetes sibogae has occurred in the Swan River near Perth, at least in summer-early autumn, for the last three years, forming surface swarms during both day and night (A. Sampey pers. comm.; data source D. Block).

The sex ratio is biased toward males, 56 and 68% males in Northern Territory and Western Australian specimens, respectively.

ACKNOWLEDGEMENTS

I thank Diana Jones and Alison Sampey of the Western Australian Museum for giving me an opportunity to report the interesting specimens from Western Australia, Perth, and Karen Coombes of the Northern Territory Museum, Darwin, for providing *A. sibogae* from northern Australia. I am grateful to Vicki Wadley of the CSIRO Marine Research, Hobart, for reading the manuscript. Thanks are also extended to referees of the journal for their help to improve the paper.

REFERENCES

- Achuthankutty, C. T. and Nair, S. A. (1976). A new species of sergestid shrimp, *Acetes orientalis* (Crustacea: Decapoda, Sergestidae) from Goa, central west coast of India. *Hydrobiologia* **48**: 233–239.
- Achuthankutty, C. T. and George, M. J. (1973). *Acetes sibogalis* sp. nov. (Crustacea: Decapoda, Sergestidae) from Cochin backwaters with a note on its impregnation. *Indian Journal of Marine Sciences* **2**: 139–144.
- Colefax, A. N. (1940). An Australian species of *Acetes* (Crustacea Macrura, Sergestidae), with remarks on the distribution and literature of the genus. *Records of the Australian Museum* **20**: 341–353.
- Hansen, H. J. (1919). The Sergestidae of the Siboga Expedition. *Siboga-Expeditie* **38**: 1–65, pls 1–5.
- Holthuis, L. B. (1980). FAO species catalogue, vol. 1. Shrimps and prawns of the world. An annotated catalogue of species of interest to fisheries. FAO Fisheries Synopsis **125**: 1–271.
- Omori, M. (1975). The systematics, biogeography, and fishery of epipelagic shrimps of the genus *Acetes* (Crustacea, Decapoda, Sergestidae). *Bulletin of the Ocean Research Institute, University of Tokyo* **7**: 1–89.
- Omori, M. (1977). Distribution of warm water epipelagic shrimps of the genera *Lucifer* and *Acetes* (Macrura, Penaeidea, Sergestidae). *Proceedings of the Symposium on Warm Water Zooplankton, NIO Special Publication*: 1–12.
- Pathansali, D. (1966). *Acetes* (Sergestidae) from the Malay Peninsula. *Bulletin of the National Museum Singapore* **33**: 59–63.
- Pérez-Farfante, I. and Kensley, B. (1997). Penaeoid and sergestoid shrimps and prawns of the World. Keys and diagnoses for the families and genera. *Mémoires du Muséum National d'Histoire Naturelle* **175**: 1–233.
- Ravindranath, K. (1980). Shrimps of the genus *Acetes* H. Milne Edwards (Crustacea, Decapoda, Sergestidae) from the estuarine system of river Krishna. *Proceedings of the Indian Academy of Sciences (Animal Sciences)* **89**: 253–273.
- Xiao, Y. and Greenwood, J. G. (1993). The biology of *Acetes* (Crustacea; Sergestidae). In: Ansell, A. D. et al. (eds), *Oceanography and Marine Biology. An Annual Review*. Vol. **31**. UCL Press **31**: 259–444.

Manuscript received 13 November 1998; accepted 30 March 1999.