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## *Acetes* (Sergestidae) from the Malay Peninsula

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### INTRODUCTION

Although a minor crustacean group represented by a few species, the genus *Acetes* Milne-Edwards supports a subsistence fishery of some considerable importance in the Malay Peninsula (Tham, 1950: 9). It appears in very large swarms in the shallow inshore coastal waters, which is brackish with a salinity of 30 parts per thousand or less, during certain seasons of the year. It is taken by the push-net, beach-seine, small purse-seine and stake-traps. Only a very small proportion of the catch is disposed off as fresh shrimp but the greater part is dried and sold as dried shrimp or processed into a paste known locally as 'Belachan' or pickled whole to give a product known as 'Chinchalok'.

### INDO-MALAYSIAN SPECIES OF *ACETES*

Eleven species are recorded for the Indo-Malaysian Region by Kemp (1917), Hansen (1919), Nataraj (1947), Tham (1950, 1954), and Wickstead (1961). These records, however, contain synonymous species which have been dealt with by Burkenroad (1934), and the valid species are now reduced to seven:

Valid species	Synonyms
<i>A. erythraeus</i> Nobili	<i>A. sp.</i> Hansen
<i>A. indicus</i> Milne-Edwards	<i>A. spiniger</i> Hansen
<i>A. japonicus</i> Kishinouye	<i>A. dispar</i> Hansen
<i>A. serrulatus</i> Kroyer	<i>A. insularis</i> Kemp
<i>A. serrulatus</i> var. <i>johni</i> Nataraj	.....
<i>A. sibogae</i> Hansen	<i>A. erythraeus</i> (part) Kemp &
	<i>A. australis</i> Colefax
<i>A. vulgaris</i> Hansen	.....

Tham (1950, 1954) records and describes the four species, *A. dispar*, *A. erythraeus*, *A. serrulatus* and *A. vulgaris* for Singapore waters but Wickstead (1961) states that only the last two and *A. spiniger* occur there. Johnson (1965) records only *A. vulgaris* but later states (personal communication) that *A. spiniger* should also be included. The present record shows five species from that area.

### MALAYAN SPECIES OF *ACETES*

Altogether six species are represented in the present collections taken from the waters of the Malay Peninsula and Singapore. Types of a male and female *A. dispar* were loaned to me by the Zoology Museum, University of Copenhagen, through

the courtesy of Dr. T. Wolff; a sample of *A. japonicus* from Japan and a collection of *Acetes* from Singapore through the kindness of Drs. W. Ikematsu and Tham Ah Kow respectively.

#### *Acetes erythraeus* Nobili

*A. erythraeus* Kemp 1917; Menon 1933.

*Sample locality:* Kuala Trengganu on the East Coast of the Malay Peninsula; a single sample containing a few hundred specimens of almost uniform size, April, 1961. Singapore, included amongst other species of *Acetes*.

*Remarks:* The Malayan species agree with the descriptions and figures of Kemp (1917) and Menon (1933). *Acetes* sp. Hansen (1919) is obviously this species. As his description is based on only one specimen the points of differences mentioned by Menon to distinguish it from *A. erythraeus* lie within the variations exhibited by this species as observed in the present collection, and indicated by Kemp and Menon.

#### *Acetes indicus* Milne-Edwards

*A. indicus* Kemp 1917.

*A. spiniger* Hansen 1919.

*Sample locality:* Pantai Tanah Merah and Banda Hilir, Malacca, October, 1962. Several hundred specimens exclusively of this species; Perak, November, 1964.

*Remarks:* Both Kemp (1917) and Hansen (1919) considered the description and figures of *A. indicus* by Milne-Edwards inadequate to determine the specific identity of the species described by him.

Kemp on the basis of locality describes and figures his specimen as *A. indicus*, stating that the only identifying character which distinguishes it from *A. japonicus* is the presence of a tooth, on the external margin of the exopod of the uropod, separating the ciliated and non-ciliated parts.

If the descriptions and figures of *A. indicus* by Kemp and *A. spiniger* by Hansen are compared they are seen to refer to the same species, and specimens of the present collection are identified as *A. indicus* following Kemp.

#### *Acetes japonicus* Kishinouye

*A. japonicus* Kishinouye 1905; Kemp 1917.

*A. dispar* Hansen 1919.

*Sample locality:* Glugor and Batu Maung, Penang Island, most months of the year. Kuala Tanjong Dawai, Kedah, September, 1963. The collections from both Penang and Kedah contained *A. japonicus* and *A. sibogae*, but while the former was the dominant form in the Penang collections, it was the reverse with the Kedah collections. It is the smallest of the *Acetes* recorded in the Malay Peninsula, Singapore, amongst other species of *Acetes*.

*Remarks:* I have examined and compared *A. japonicus* from Japan with types of *A. dispar* of Hansen and the Malayan species and find them to be remarkably similar. The Japanese sample contained specimens showing greater variation due to the two types of generations shown by this species in Japanese waters (Ikematsu, 1953). The obvious differences are in size, one generation being larger than the other, and in the relative lengths of the processus ventralis of the petasma of the male, and in the shape of the female genital plate. The last is also observed in the Malayan species.

**Acetes serrulatus** Kroyer*A. insularis* Kemp 1917.*A. serrulatus* Hansen 1919.

*Sample locality:* Singapore waters, amongst other species of *Acetes*; not recorded elsewhere in the Malay Peninsula.

*Remarks:* Kemp's *A. insularis* is without doubt *A. serrulatus* Kroyer (1859). A comparison of his figures with those of Hansen's based on Kroyer's specimen in the University of Copenhagen show them to be identical.

**Acetes sibogae** Hansen*A. sibogae* Hansen 1919.*A. erythraeus* (part) Kemp 1917.*A. australis* Colefax 1940.

*Sample locality:* Port Weld, Perak, August, 1961; Glugor and Batu Maung, Penang, most months of the year; Kuala Tanjong Dawai, Kedah, September, 1963; South of Kuala Perlis, Perlis, September, 1963. Large collections from these areas but those from Port Weld contained only this species while those from Penang, Kedah and Perlis included *A. japonicus*. The specimens taken at Kedah and Perlis were much larger than those taken in the other localities.

*Remarks:* The specimens in the present collection differ from the description and figures of *A. sibogae* Hansen in that not only the female but also the male possesses a tooth on the coxa (as in the males of this genus). Except for this difference the specimens otherwise agree very well in the more important characters. The presence of a 'tooth' which is not strictly comparable to that in *A. indicus* on the inner margin of the basis is quite conspicuous in both large adult males and females and may be used as a diagnostic character to distinguish it from the other species.

I am of the opinion that *A. australis* Colefax is *A. sibogae* or only a variety of this species. In describing the species Colefax compares it with *A. erythraeus* and *A. indicus* and not with *A. sibogae*. The characters mentioned by Colefax to distinguish *A. australis* from *A. erythraeus* and *A. indicus* agree very closely with those of *A. sibogae*. However, in the antennule, 'the angular projection on the segment following the one which carries the clasping spine', described by him is absent in *A. sibogae*. In describing the petasma Hansen states that there are two falcate spines of equal size on the capitulum, while Colefax records only one falcate spine. I have observed the capitulum to have one or two spines, the distal one may be so small that it is obscured by the larger proximal one. The distal spine is not as large as the proximal one as described by Hansen. I would agree with Burkenroad (1934) that the dimorphic male of *A. erythraeus* described by Kemp (1917) is none other than *A. sibogae*. Kemp states that the males from Penang differed from all other males of *A. erythraeus* from other localities in that the third antennular peduncle is greatly elongated, his 'high form', and that they were of smaller size, 14 mm. Although intensive collections have been made around Penang Island and off the coasts of Kedah and Perlis, *A. erythraeus* has so far not been recorded.

**Acetes vulgaris** Hansen*A. vulgaris* Hansen 1919.

*Sample locality:* Singapore, together with other species of *Acetes*.

*Remarks:* This species has not been recorded elsewhere in the Malay Peninsula; found in brackish water in or near prawn ponds, in mangrove areas.

## KEY TO THE MALAYAN SPECIES

An artificial key for the identification of the adult male and female is given below. For detailed descriptions and figures, reference should be made to Kemp (1917), Hansen (1919), Menon (1933) and Colefax (1940).

## MALES

- A. Procurved spine between 1st pair of pleopods.
- a. Trochanter (basis) with tooth on inner free margin ..... *A. indicus*  
 b. Trochanter (basis) without tooth ..... *A. erythraeus*
- B. No procurved spine between 1st pair of pleopods.
- a. External antennular flagellum with two clasping spines.
- i. Segment preceding the one bearing the clasping spines with angular process pointing backwards ..... *A. serrulatus*  
 ii. Segment preceding the one bearing the clasping spine without any process ..... *A. japonicus*
- b. Distal margin of the trochanter (basis) of the third leg ends in a blunt outward projection. (Third segment of antennular peduncle not less than twice the length of the 2nd segment) ..... *A. sibogae*
- c. Distal margin of the trochanter (basis) of the third leg does not end in a blunt outward projection. (Third segment of antennular peduncle not more than one and three-quarter times the length of the 2nd segment) ..... *A. vulgaris*

## FEMALES

- A. Procurved spine between 1st pair of pleopods.
- a. Trochanter (basis) with tooth on inner free margin ..... *A. indicus*  
 b. Trochanter (basis) without tooth ..... *A. erythraeus*
- B. No procurved spine between 1st pair of pleopods.
- a. Apex of telson rounded or truncated.
- i. Apex of telson truncated and with a tooth at each corner ..... *A. serrulatus*  
 (also juveniles of *A. dispar* but ciliated and non-ciliated parts of outer margin of exopod of uropod not separated by tooth in both juveniles and adults as in *A. serrulatus*).
- ii. Apex of telson rounded and third thoracic sternite produced posteriorly as large plate ..... *A. japonicus*
- b. Apex of telson triangular.
- i. Distal margin of trochanter (basis) of third leg ends in a blunt outward projection ..... *A. sibogae*  
 (ect)
- ii. Not so ..... *A. vulgaris*

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