

SHRIMPS/ PRAWNS

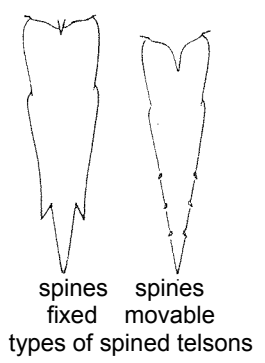
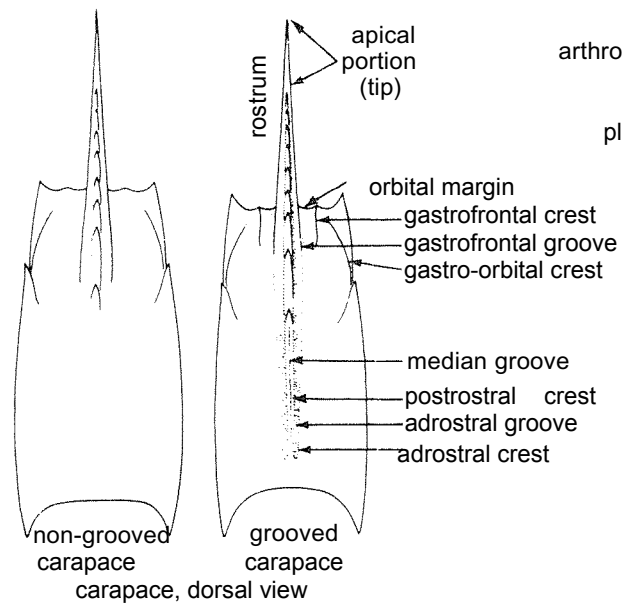
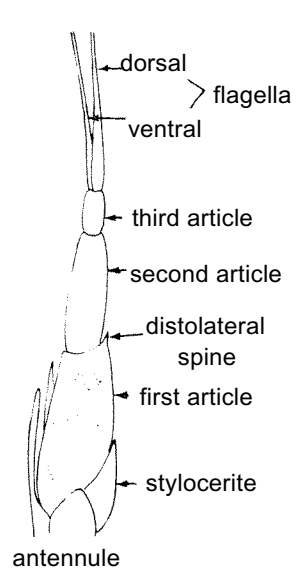
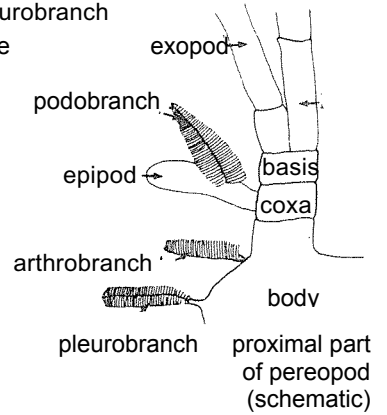
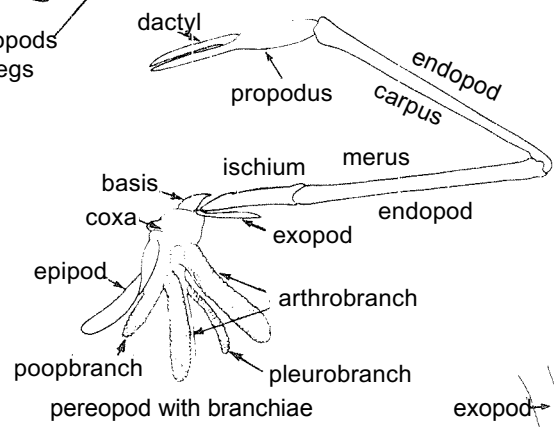
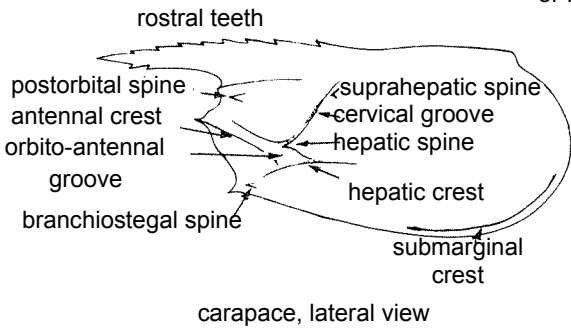
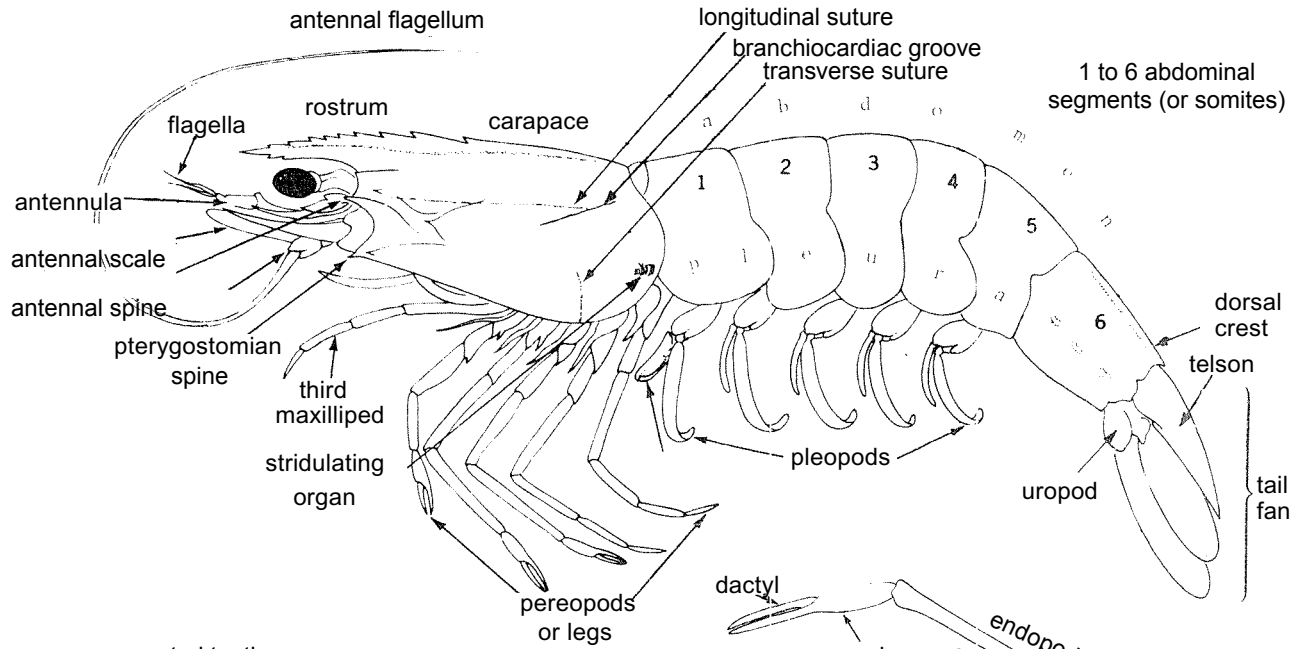
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IMPORTANT NOTE FOR USERS

These identification sheets may appear rather technical for users not familiar with shrimp taxonomy. It should be borne in mind, however, that many of the shrimp species occurring in Fishing Area 51 cannot be reliably identified by general appearance or easily apparent morphological characters and misidentifications will undoubtedly result from such practice. The user is herewith encouraged to learn the basic terminology and anatomical features used in the family and species accounts presented in this volume, by studying carefully the sections on technical terms and general remarks, and locate the various crests, spines, grooves, appendages, etc. on shrimp specimens. Examination of shrimp specimens for identification purposes often requires magnification (a hand lens of 10 X is usually sufficient), in particular for inspection of the thelycum in females and the petasma in males. Please do not get discouraged by the amount of technical terms and seemingly complicated descriptions. They can be mastered in a relatively short time and they are applied similarly to all species within a family. The present identification sheets, when properly used, should in all cases lead to correct identification of the species in question. Should you have nonetheless doubts we recommend you to preserve the specimen in alcohol, wrap it in a damp cloth, pack and seal it carefully in a plastic bag, and send it for identification to the Division of Crustacea, Rijksmuseum van Natuurlijke Historie, Postbus 9517, 2300 RA Leiden, the Netherlands.

TECHNICAL TERMS AND PRINCIPAL MEASUREMENTS USED

TECHNICAL TERMS



GENERAL REMARKS

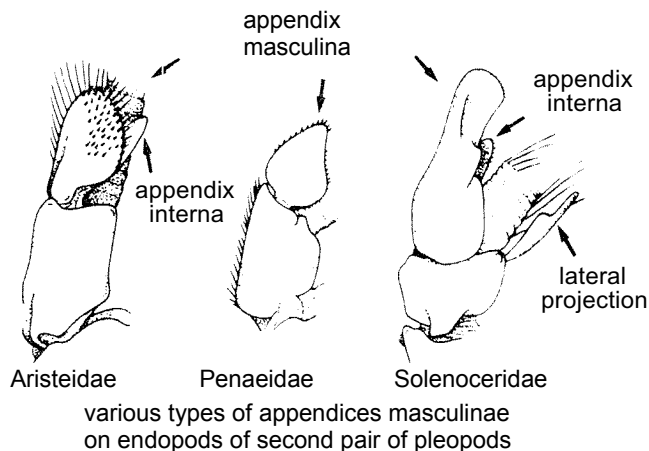
The shrimps constitute a large group of crustaceans varying in size from microscopic to about 35 cm long. Although nearly 2 500 species are known, only slightly less than 300 are of economic interest, and of these about 100 comprise most of the annual world shrimp catches (about 1 600 000 tons, 1978-79-80). The body of the shrimps is almost always laterally compressed, the rostrum usually compressed and toothed, and the abdomen long, longer than the carapace or head. The antennules, or first pair of feelers, in most species bear a small scale or spine, the stylocerite, at their bases, and the antennal scales of the second pair of feelers, the antennae, are generally large and plate-like. The pereopods or legs are usually slender, but in some a single leg or pair of legs may be stout and some pereopods (the chelipeds) end in pincers or chelae. The pleopods or abdominal appendages used for swimming, are well developed and, except in a few species, are present on all five anterior abdominal segments.

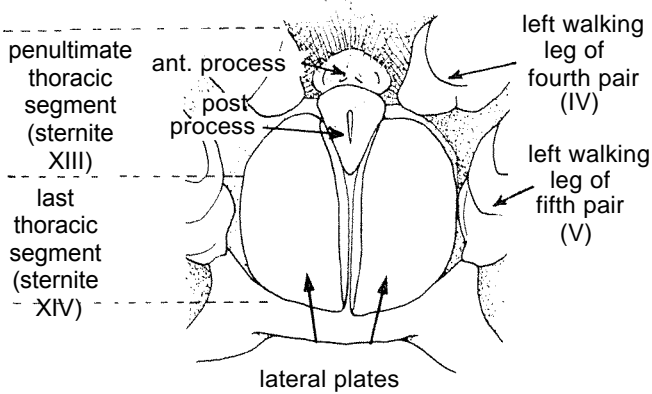
Shrimps are widely distributed, occurring in marine, brackish, and freshwaters from the equator to the polar regions. Although the majority of the marine species occupy shallow or moderately deep water, some are found at depths of nearly 5 700 m; however, most of the commercial shrimps are taken on the continental shelves at depths of less than 100 m. In the Western Indian Ocean, only 2 deep-water shrimp, Haliporoides triarthrus and Heterocarpus woodmasoni, are exploited commercially at present but several other deep-water species are of potential interest.

Many shrimps are pelagic but the majority by far are benthic, living on a large variety of bottoms such as rock, mud, peat, sand, fragments of shells or mixtures of these materials. In addition, some frequent coral reefs, and a few species live in sponges and other invertebrates.

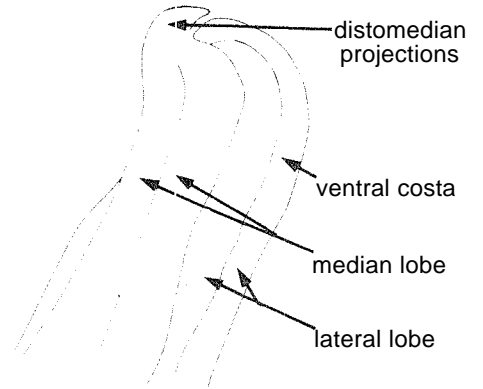
In most shrimps, the sexes are separate but certain species such as some Pandalus, commonly first undergo a male phase and later are transformed into females. The paired reproductive organs are situated on each side and just below the heart: in the females the ovaries (which may extend posteriorly along the entire length of the abdomen) are connected by oviducts to openings on the basal article of the third pair of pereopods. In the male, the sperm ducts lead from the testes to terminal ampoules which open on, or adjacent to, the basal article (coxa) of the last pair of pereopods.

In some penaeidean shrimps the females possess sperm receptacles on the ventral side of the last thoracic segments (between the last pairs of pereopods), where the males deposit the sacs carrying the sperm, whereas in others the females exhibit protuberances and grooves for the attachment of such sacs. Either genital modification is called the thelycum, and there the sperm remain until the eggs are released. In the males there is a petasma formed by the longitudinally folded endopods of the first pair of pleopods. Most male shrimps bear an appendix masculina, a lappet borne on the endopod of the second pair of pleopods, the presence or absence of which constitutes a ready means for distinguishing males from females. In many shrimps an appendix interna (slender rod or blade) occurs adjacent to the appendix masculina; among carideans such a structure is also present on the third through the fifth pleopods of both sexes.

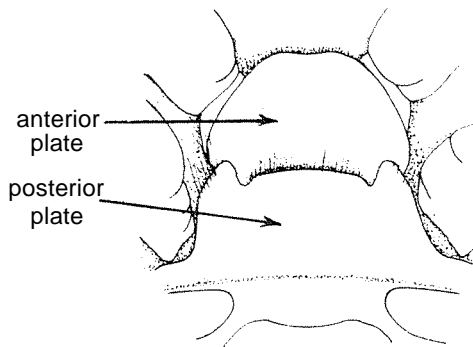




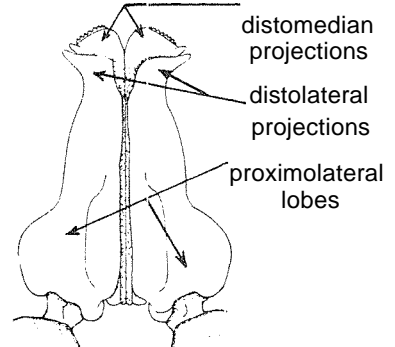
Penaeus



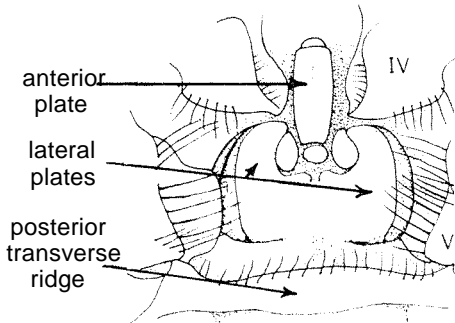
lateral view
Penaeus



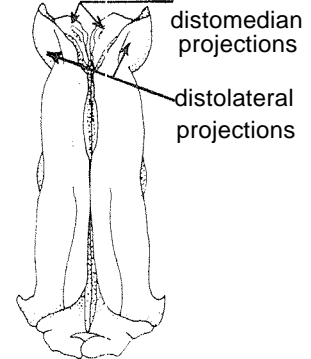
Parapenaeopsis



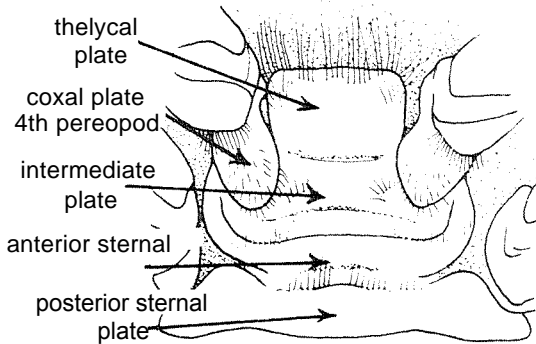
Parapenaeopsis



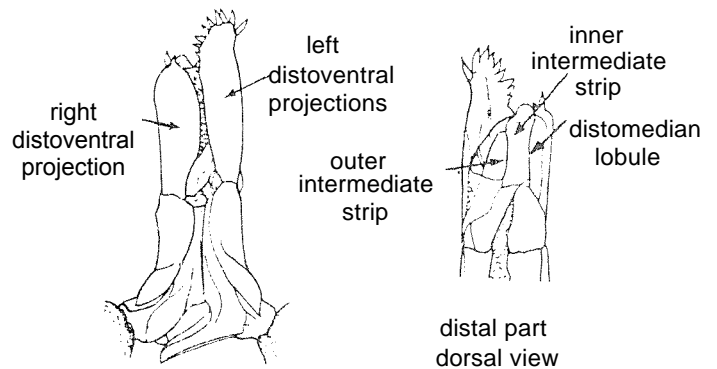
Metapenaeus



Metapenaeus

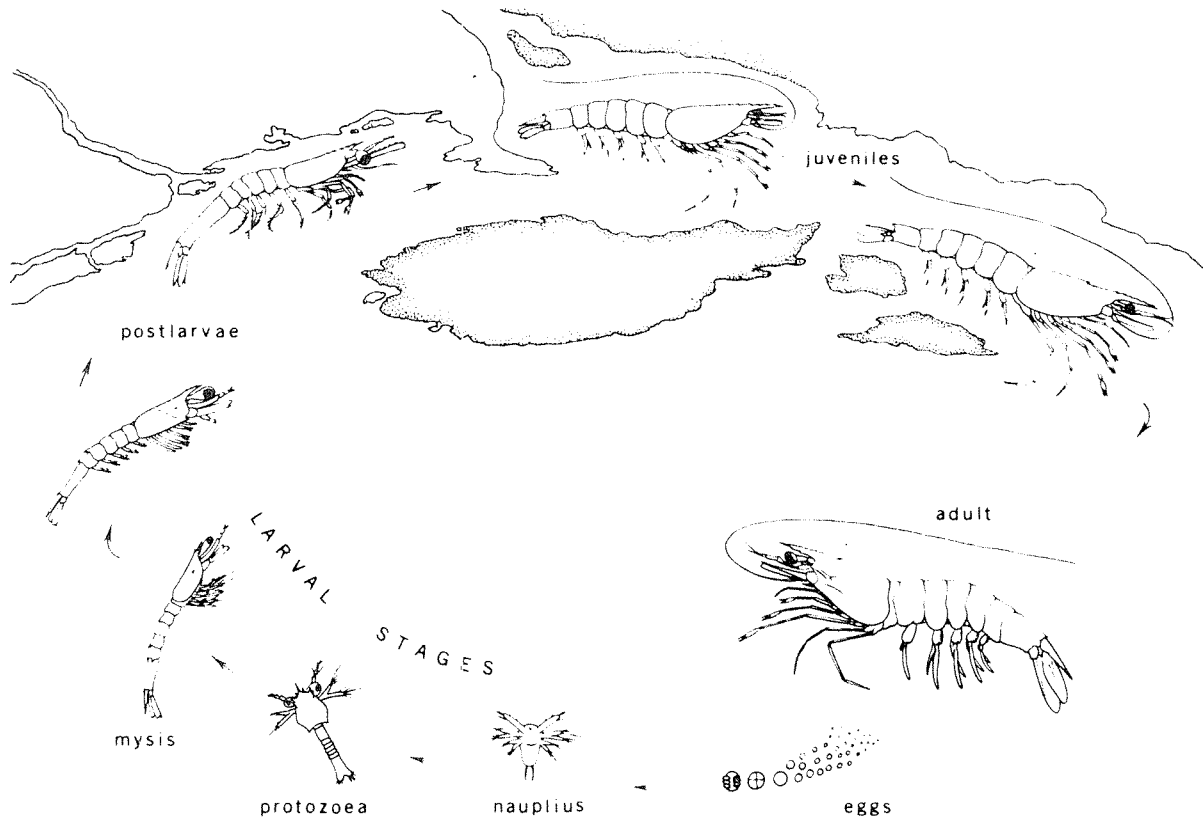


Metapenaeopsis
principal types of thelycum
of female penaeid shrimps,
ventral view



Metapenaeopsis
principal types of petasma
(joined endopods of first pair
of pleopods) of male penaeid shrimps,
ventral view - except: otherwise stated

In the stenopodidean and caridean shrimps the female carries the eggs after extrusion, masses of them being fastened to the pleopod where they remain until they hatch at a relatively advanced larval stage or as juveniles. In contrast, in the penaeideans the eggs are not retained by the female, but released directly into the water, and the larvae undergo an extensive metamorphosis, the first part of a complex life cycle, which may require both oceanic and brackish waters. For example, the members of the genus Penaeus, the most valuable commercial shrimps, spawn offshore at depths of about 10 to 80 m.



Life-cycle: of shrimps of the genus Penaeus

Eggs hatch within a few hours, releasing very small, simple larvae, the nauplii, the first of usually 11 larval stages, which include 5 nauplii, 3 protozoae and 3 mysis. The larvae are planktonic and are carried by currents toward shore where they arrive as postlarvae; this occurs about 3 weeks after hatching when the animals are about 6 to 14 mm long, and shrimp-like in appearance. The postlarvae invade inshore, brackish waters, abandon their planktonic way of life, and become bottom dwellers living in shallow littoral areas. In these rich nursery grounds they grow rapidly, develop into juveniles and, as size increases, move gradually back toward the mouths of bays or estuaries, where they become subadults. Soon the shrimp migrate offshore, continue growing, and finally, as adults, reach the spawning grounds, where the mature females spawn and the cycle is repeated; most shrimps in these grounds are less than a year old. Penaeidean shrimps are very prolific, for example, a single female of Penaeus may produce as many as 500 000 eggs. Carideans, in contrast, produce a much smaller number -correlated with the fact that the females carry their eggs until hatching.

Most of the commercial shrimp species belong to the 5 penaeidean families Solenoceridae, Aristeidae, Penaeidae, Sicyoniidae and Sergestidae - and 3 caridean ones - Pandalidae, Crangonidae and Palaemonidae. The penaeideans are exploited mainly in tropical and subtropical waters, the members of Pandalidae and Crangonidae in temperate seas, and those of Palaemonidae in brackish waters from the tropic to the temperate zones. Another 2 caridean families, Hippolytidae and Alpheidae, contain species of some economic interest in the Western Indian Ocean. The shrimp fauna of the latter area is grouped into 27 families, only 9 of which include species fished commercially or of potential interest. The shrimp catch reported from Fishing Area 51 in 1980 totalled nearly 260 000 tons (heads-on).

LIST OF FAMILIES OCCURRING IN THE AREA:

Code numbers are given for those families for which Identification Sheets are included

Phylum Arthropoda			Infraorder Caridea	
Class Crustacea			Family Oplophoridae	
Subclass Malacostraca			Family Nematocarciridae	
Series Eumalacostraca			Family Atyidae	
Superorder Eucarida			Family Stylodactylidae	
Order Decapoda			Family Pasiphaeidae	
Suborder Dendrobranchiata			Family Disciidae	
Infraorder Penaeidea			Family Eugonatonotidae	
Superfamily Penaeoidea			Family Rhynchocinetidae	
Family Solenoceridae	SOLENO		Family Campylonotidae	
Family Aristeidae	ARIST		Family Palaemonidae	PALAE
Family Penaeidae	PEN		Family Gnathophyllidae	
Family Sicyoniidae	SICYON		Family Psalidopodidae	
Superfamily Sergestoidea			Family Alpheidae	ALPH
Family Sergestidae	SERG		Family Ogyrididae	
Family Luciferidae			Family Hippolytidae	HIPPOL
Suborder Pleocyemata			Family Processidae	
Infraorder Stenopodidea			Family Pandalidae	PANDL
Family Stenopodidae			Family Thalassocarididae	
			Family Glyphocrangonidae	
			Family Crangonidae	

Prepared by J.C. Miguel, temporary address: Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands.

Technical Terms and General Remarks are based on similar sections of FAO Species Identification Sheets for the W.C. Atlantic, prepared by I. Pérez-Farfante.