1. INTRODUCTION

This catalogue intends to include all those species of marine lobsters that are of interest to fisheries, according to the following three criteria: (i) all species known to be used for food, (ii) species known to be sold for bait and as subproducts, (iii) species not exploited at present but considered by experts to be of potential commercial value. The last category includes deep-sea forms which during exploratory fishing cruises were found to be sufficiently abundant, large enough in size, and sufficiently accessible to fishing gear so that a fishery for them might be profitable.Edible species found in markets as an admixture to the main catch are included, even if they only make up a negligible percentage of the catch.

The classification adopted here is a traditional one. The marine lobsters are considered to form part of the suborder Macrura Reptantia Bouvier, 1917, which is recognized here as one of the four suborders of the order Decapoda Latreille, 1802. The Decapoda form one of the many orders of the Class Crustacea, Brunnich, 1772*. Aside from the Macrura Reptantia, there are the following three suborders in the Decapoda: Macrura Natantia (shrimps), Anomura (hermit crabs, etc.) and Brachyura (crabs). In several modern handbooks (e.g. Bowman & Abele, 1982, in Bliss, Biology of Crustacea,1:21-25) the Decapoda are divided into two suborders, the Dendrobranchiata (containing the Penaeidea) and the Pleocyemata (containing all the other Decapoda). The suborder Macrura Reptantia is discarded in this modern classification, but the infraorders Astacidea, Palinuridea and Thalassinidea are kept as such;the former suborders Anomura and Brachyura are demoted to infraorders and are on the same level as the Astacidea, Palinuridea and Thalassinidea. The closer link between these last 3 infraorders as indicated in the traditional classification is ignored in the modern classification. From the infraorders down, the classification of the Macrura Reptantia is the same in the two systems.

The present catalogue is largely based on data obtained from the literature and often it is difficult to evaluate the reliability of published data. Sometimes authors working far from adequate library facilities have difficulty in correctly identifying the species they encounter in the field. Moreover, the discovery of new species, the more correct delimitation of known species, or even the introduction of nomenclatural changes, may cause confusion and lead to the use of scientific names that are incorrect by modern standards, or apply to more than one species. For instance, recent taxonomic investigations showed that the name ***Panulirus japonicus*** had long been used for specimens which now prove to belong to five distinct species ***(P. japonicus, P. marginatus, P. pascuensis, P. cygnus*** and ***P. longipes),*** and the subspecies ***P. longipes femoristriga.*** Some authors used the name ***longipes*** for what is now recognized as ***P. cygnus*** and ***P. longipes,*** considering them distinct from ***P. japonicus.*** Therefore old records of ***P. japonicus*** and ***P. longipes*** have to be treated with some reserve, although several of these species have a quite restricted distribution, and their provenance may give a clue to their true identity. A similar situation involves the species of the subgenus ***Jasus (Jasus),*** which in the older literature were considered to be a single species, or at the most two, but which now are recognized as six distinct species ***(J. lalandii, J. frontalis, J. edwardsii, J. paulensis, J. tristani, and J. novaehollandiae).*** Quite recently all but one of the species of ***Nephrops*** were transferred to the genus ***Metanephrops,*** with the result that the names of those species had to be changed accordingly. All such name changes, due to changing taxonomic views, are unavoidable and will also occur in the future. Name changes due to purely nomenclatural reasons have become quite rare in Macrura Reptantia.

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* It proved not very easy to establish who has to be cited as the author of the name Crustacea. This name actually dates from the earliest published books dealing wrth these animals. Belon (1553. De aquatilibus Libri duo: 343) used the name Crustata for lobsters, shrimps and crabs One year later G Rondelet (1554, Libri de Piscibus Marinis: 534) used the actual spelling Crustacea for the group ("De Piscibus Liber XVIII. Quae drcantur Crustacea") Many subsequent authors adopted this name However, Linnaeus (1758, Systema Naturae (ed. 10)1) Ignored the term Crustacea and placed the crustaceous animals together with the spiders, millepeds, etc. in his "Insecta Aptera". The name Crustacea can be found in some early post-Irnnean non-brnomrnal works like those by Roesel von Rosenhof (1755-1759. Monatlrche Insektenbelustrgungen, 3:305; and its 1764-1768 Dutch translation, De Natuurlijke Historie der Insecten, 3 (2):267), and the one by Brisson (1762, Regnum Animale rn Classes IX:6) The first nomenclaturally available work to use the term Crustacea IS. to my knowledge, that by Brünnich (1772, Zoolograe Fundamenta Prdelectronrbus Academicis Accomodata. Grunde I Dyrelaeren: 174, 184). who separated the Crustacea (in which he included Chelicerata and Crustacea in the modern sense) from the Insecta Aptera (in which he left true insects like ***Lepisma, Podura, Termes, Pediculus*** and ***Pulex***) Pennant (1777, British Zoology (ed.4)4) listed the groups dealt wrth in this fourth volume as "Crustacea Mollusca Testacea",and carried the term again on the title page preceding p. 1 of the text of Class V "Crustacea Crustaceous Animals" In the same year also Scopoli In his 1777 book "Introductio ad Historiam Naturalem" on p 404 used the term Crustacea namely for his Gens I of Tribus IV "Crustacea Brunnich".

The question whether the generic name of the common lobster should be ***Homarus*** or ***Astacus*** was a controversial topic in the end of last century, but has since been definitely decided. Some well known specific names have been changed for reasons of priority, e.g., ***Palinurus vulgaris*** Latreille, 1804, to ***Palinurus elephas*** (Fabricius, 1787), and ***Homarus vulgaris*** H. Milne Edwards, 1837, to ***Homarus gammarus*** (Linnaeus, 1758), but most of these problems have been straightened out long ago and no longer cause any difficulties.

In the nomenclature of the spiny lobsters, there is a curious source of considerable confusion. This is the similarity of the two generic names ***Palinurus*** Fabricius, 1798, and ***Panulirus*** White, 1847, for two closely related genera. White (1847), when splitting the genus ***Palinurus*** into three genera, chose two new taxa names that are anagrams of ***Palinurus,*** viz., ***Panulirus*** and ***Linuparus. Linuparus*** is sufficiently different from either of the other names that it caused no difficulties, but ***Panulirus*** and ***Palinurus*** were frequently confused. Pfeffer (1881) tried to solve the problem by replacing ***Panulirus*** by a new generic name ***Senex,*** but this action is against the rules of nomenclature and ***Senex*** lapsed. ***Panulirus,*** being the valid name, has to be used, and at present it is generally accepted and has become firmly entrenched in carcinological nomenclature.

In taxonomic literature (with which I am best acquainted) information on the economic importance of species is rather scarce and of a very general nature. Relevant fisheries literature, being less familiar to me, was often difficult to locate. Notwithstanding the great help that I received in obtaining literature and information from Dr W. Fischer, FAO, Rome and from fishery authorities all over the world, I may have overlooked important sources.

ACKNOWLEDGEMENTS

Thanks are due to Dr Walter Fischer, Fishery Resources and Environment Division, FAO, Rome, for his enormous help with the composition of this catalogue.It was through his insistence that keys and illustrations were added, against my strong objections; the result shows how right he was. Ms M. D'Antoni and Mr P. Lastrico had the thankless task of supervising and producing the illustrative work, often an almost impossible undertaking when they had to work from published photographs in which details could hardly or not at all be discerned;it is due to their capability and patience that most of the figures came out so well. The outlay, editing and word processing of the catalogue was done by Dr Luca Garibaldi and Ms Giulia Sciarappa-Demuro and I am most indebted to their expertise and for their patience with me.

A serious attempt has been made in this catalogue to ascertain the location and condition of the type specimens of the species treated, including those of their synonyms. For this project I received the most valuable help from the following persons, whose names are followed by the abbreviations used for the names of their institutes (see p. 4): Dr Maya Deb (ZSI), Prof. Jacques Forest (MP), Dr D.J.G. Griffin (AMS), Dr H.-E. Gruner (ZMB), Dr J.M.C. Holmes (NMI), Dr R.W. Ingle (BM), Mme E. Lang (MZS), Dr E.A. Lazo-Wasem (YPM), Dr Raymond B. Manning (USNM), Mrs M.G. van der Merwe (SAM), Mr D. Platvoet (ZMA), Dr Earle E. Spamer (ANSP), Dr R.J. Symonds (ZMC), Dr Ludwig Tiefenbacher (ZSM), Dr Michael Türkay (SMF), Dr Torben Wolff (UZM), Dr John C. Yaldwyn (DWM); I am very grateful to all for giving so much of their time to find the required information.

From various persons I received information about lobsters, both oral and written, published and unpublished, which I have used in this catalogue. I am most grateful to all, and should like to mention especially Mr J.D. Booth, Fisheries Research Centre, Wellington, New Zealand (information on ***Jasus*** and ***Projasus***), Prof. Phaibul Naiyanetr, Chulalongkorn University, Bangkok, Thailand (occurrence, use and vernacular names of Thai lobsters), Mr T.J. Ward, CSIRO, Hobart, Tasmania, Australia (unpublished information on ***Linuparus***) and Dr Takao Yamaguchi, Aitsu Marine Biological Station, Kumamoto University, Japan (Japanese names of the Japanese lobsters).

1.1 Plan of the Catalogue

The presentation of each systematic category always includes the valid scientific name, reference to the original 'description, synonyms, and keys to, or lists of, the lower categories concerned. A brief diagnosis is given for Infraorders. The information by species is arranged under the following paragraphs:

(1) **Scientific Name :** The heading for each species gives the valid name followed by the reference to its original description.

(2) **Synonyms :** All known synonyms of the valid name are listed, as well as the new combinations made with the valid and synonymous specific names. In the new combinations, the scientific name and the name of the author who first used the combination are separated by a dash (-) while in the synonyms no such interpunction is present.incorrect identifications of the species are not listed as a rule, but, in cases where the incorrect name has frequently been used for the species, it is briefly discussed.

(3) **FAO Names :** English, French and Spanish names for each species, to be used primarily within FAO, were selected on the basis of the following criteria: (i) each name must apply to one species only, in a worldwide context; (ii) the name must conform to FAO spelling nomenclature; (iii) the name should not lead to confusion with crustaceans other than lobsters; e.g., the word langostino is not used for Spanish FAO names, although in some Spanish speaking countries it is employed for some lobster species; the reason for this is that in Spain and Venezuela the word langostino is used for some species of shrimp. Wherever possible, the denominations selected were based on vernacular names (or parts of names) already in existence within the areas where the species is fished. FAO names are of course not intended to replace local species names, but they are considered by FAO necessary to overcome the considerable confusion caused by the use of a single name for many different species, or several names for one species.

In some cases previous FAO names have been changed in this catalogue. In most instances this was done to obtain more consistency at the generic level. In the present catalogue, all species of one genus have the same name provided with an appropriate prefix for each: e.g., all species of the genus ***Jasus*** are named "rock lobster", ***Jasus edwardsii*** having the name red rock lobster. These "generic" FAO names as used in this catalogue are the following (in systematic sequence): pincer lobster (the genera of Thaumastochelidae: ***Thaumastocheles*** and ***Thaumastochelopsis***), deep-sea lobster (***Acanthacaris***), lobsterette (all genera of Thymopinae: ***Nephropides, Nephropsis, Thymops, Thymopsis***), lobster (all genera of Nephropinae: Eunephrops, Homarus, ***Metanephrops, Nephrops, Thymopides***), fenix lobster (***Neoglyphea***), rock lobster (***Jasus***), furrow lobster (***Justitia***), spear lobster (***Linuparus***), spiny lobster (***Palinurus*** and ***Panulirus***), blunthorn lobster (***Palinustus***), jagged lobster (***Projasus***), whip lobster (***Puerulus***), furry lobster (the genera of Synaxidae: ***Palibythus*** and ***Palinurellus***), Spanish lobster (***Arctides***), slipper lobster (***Scyllarides***), fan lobster (***Evibacus*** and ***ibacus***), mitten lobster (***Parribacus***), locust lobster (***Scyllarus***), flat lobster (***Thenus***), mud lobster (***Thalassina***), mud shrimp (***Upogebia***), ghost shrimp (***Callianassa***).

(4) **Type :** The type locality of the species (and of its synonyms) is provided. As a rule the indication of the type locality as given in the original publication is verbally quoted; if necessary, to this quotation explanatory or corrective details are added. The depository of the primary types is listed;if possible the present depository is given, but if that is unknown the depository at the time of the original description is indicated.

(5) **Diagnostic Features :** This topic is omitted for almost all the species presented in this catalogue because the key is considered sufficient for identification. For species of the genus ***Scyllarus, Thalassina, Upogebia,*** and ***Callianassa*** however, where no key is included, diagnostic features are included to aid in Identification.

(6) **Geographical Distribution :** The entire known geographic range of the species is given, including areas where it is not of commercial importance. Of each species, the known range is illustrated on a map. These maps are only meant to give a general impression of the distribution of the species.

(7) **Habitat and Biology :** The known depth range of the species, and information on types of substrate and salinity of its habitat are given here. In most instances this information is rather incomplete. Also, if available, the most important data on the biology of thisspecies are mentioned.

(8) Size : The known total length (tl.), as well as the known carapace length (cl.) of both males and females, are provided where possible. Total length is measured from the tip of the rostrum to the extremity of the telson, but due to the curvature of the body this measurement usually is not very accurate. The carapace length generally includes the rostrum, but very often the actual extent of this length (whether measured from the tip of the rostrum, or from the posterior margin of the orbit to the posterior margin of ,the carapace) is not indicated in the literature. Where total and carapace lengths are both given, the respective figures do not necessarily pertain to the same specimens but may have been obtained from different sources. As often the available information on the size attained by some species is very meagre, the figure cited here may be well below the actual maximum size, or may be a size rarely attained.

(9) **Interest to Fisheries :** This paragraph gives an account of the areas where the species is fished and of the nature of the fishery; its importance is either estimated (minor, moderate, major, or potential) or actual figures of annual landings are provided. Data on utilization (fresh, dried, cooked, frozen, canned, etc.) are also given where available.Here too, the quality and quantity of the available information vary considerably with the species.

(10) **Local Names :** These are the names used locally for the various species. The local species denomination is preceded by the name of the country concerned (in capital letters), and, where necessary, followed (in parentheses) by the geographical specification or by the language of the transcribed vernacular names. When known, the most commonly used vernacular name is listed first after each country, otherwise the names are in alphabetical order. The catalogue was compiled from many sources, but where vernacular names are concerned it doubtlessly is incomplete. Where a large number of local names are used for one species in a restricted area, only the most common are included.

(11) **Literature :** Reference is made to those papers giving good descriptions and illustrations of the species or treating it extensively (e.g., Species Synopses published by FAO and CSIRO, FAO Species Identification Sheets, etc.), or giving a helpful account of it.

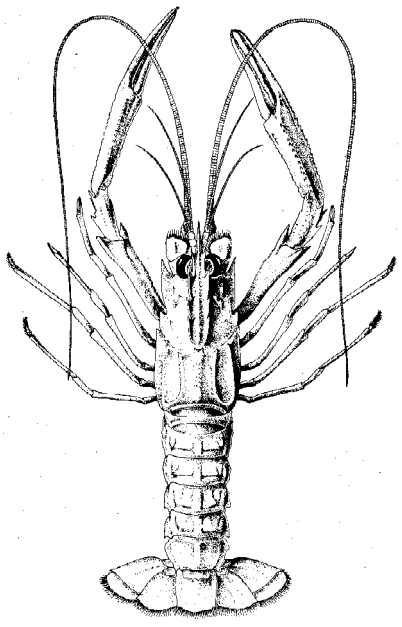
(12) **Remarks :** Important information concerning the species and not fitting in any of the previous paragraphs is given here.

Abbreviations used : The following abbreviations are used to indicate the depositories of type material: **AMS:** The Australian Museum, Sydney, Australia. **ANSP:** The Academy of Natural Sciences of Philadelphia, Philadelphia, Pennsylvania, USA. **BM:** British Museum (Natural History) (now: The Natural History Museum), London, England, UK. **DMW:** Dominion Museum (now: National Museum), Wellington, New Zealand. **MCZ:** Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA. **MNRJ:** Museu Nacional, Rio de Janeiro, Brazil. **MOM:** Institut Oceanographique, Monaco. **MP:** Museum National d'Histoire Naturelle, Paris, France **MT:** Det Kongelige Norske Videnskabers Selskabs Museum, Trondheim, Norway. **MZS:** Musée Zoologique de l'Université, Strasbourg, France. **MZT:** Museo ed Istituto di Zoologia Sistematica dell'Universitá di Torino, Italy. **NMI:** National Museum of Ireland, Natural History Division, Dublin, Ireland. **NMW:** Naturhistorisches Museum (formerly K.u.K. Naturhistorisches Hofmuseum), Wien, Austria. **NTOU:** National Taiwan Ocean University, Keelung, Taiwan **QM:** Queensland Museum, South Brisbane, Qld, Australia. **RMNH:** Rijksmuseum van Natuurlijke Historie (now: Nationaal Natuurhistorisch Museum), Leiden, The Netherlands. **SAM:** South African Museum, Capetown, South Africa. **SMF:** Natur-Museum Senckenberg, Frankfurt, Germany. **TFRI:** Taiwan Fisheries Research Institute, Keelung, Taiwan. **UMML:** University of Miami Marine Laboratory (now: Institute of Marine and Atmospheric Science, University of Miami), Miami, Florida, USA. USNM: United States National Museum (now: National Museum of Natural History), Smithsonian Institution, Washington, DC, USA. **UZM:** Universitetets Zoologiske Museum, Copenhagen, Denmark. **WAM:** Western Australian Museum, Perth, Western Australia, Australia. **YPM:** Peabody Museum of Natural History, Yale University, New Haven, Connecticut, USA. **ZMA:** Zoologisch Museum, Universiteit van Amsterdam, Amsterdam, The Netherlands. **ZMB:** Zoologisches Museum der Humboldt-Universitat, Berlin, Germany. **ZMC:** University Museum of Zoology, Cambridge, England, UK. ZMH: Zoologisches.Museum und Institut, Hamburg, Germany. ZML: Zoologisches Museum, Lübeck, Germany. ZMUG: Zoologisches Museum der Universität, Gottingen, Germany, at present on permanent loan to Natur-Museum Senckenberg, Frankfurt am Main, Germany. **ZSI:** Zoological Survey of India, Calcutta, India. **ZSM:** Zoologische Staatssammlung, München, Bavaria, Germany.

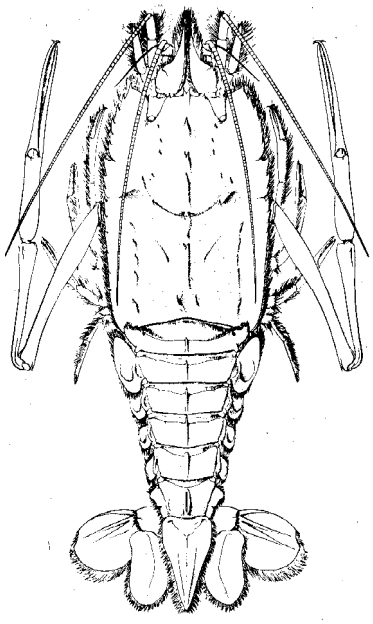
1.2 General Remarks on Lobsters

1.2.1 Morphology

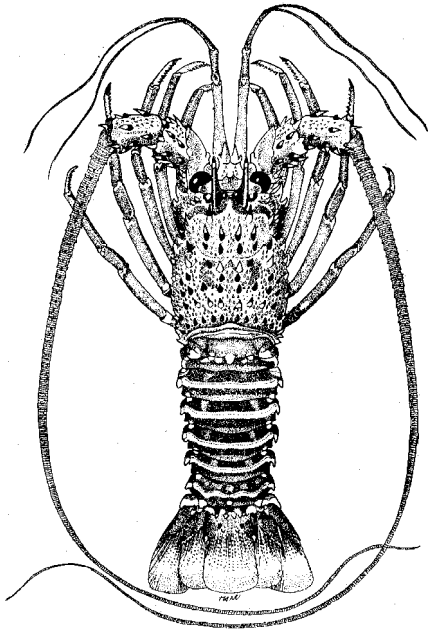
Even though the various major groups of lobsters show obvious differences in general appearance (see Fig. 1), their basic morphology is essentially the same



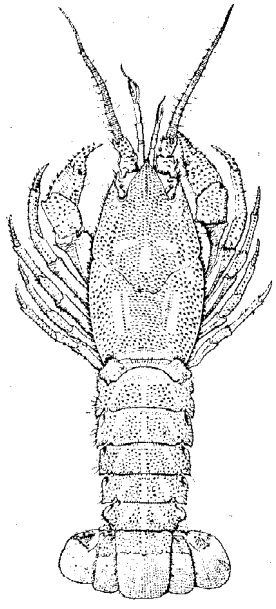
Nephropoidea
Nephropidae
Metanephrops andamanicus



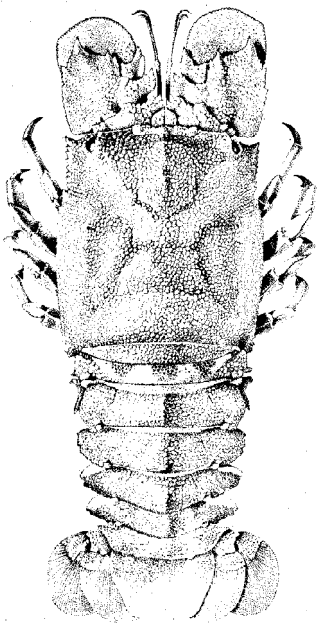
Eryonoidea
Polychelidae
Stereomastis sculpta



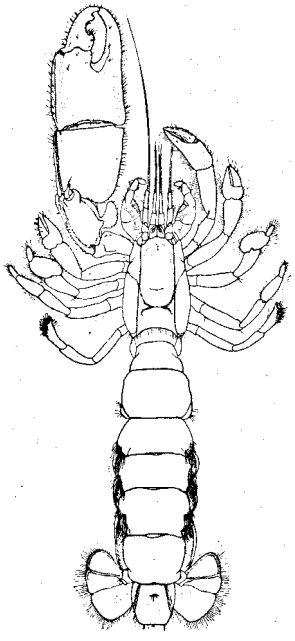
Palinuroidea
Palinuridae
Panulirus marginatus



Palinuroidea
Synaxidae
Palinurellus wieneckii



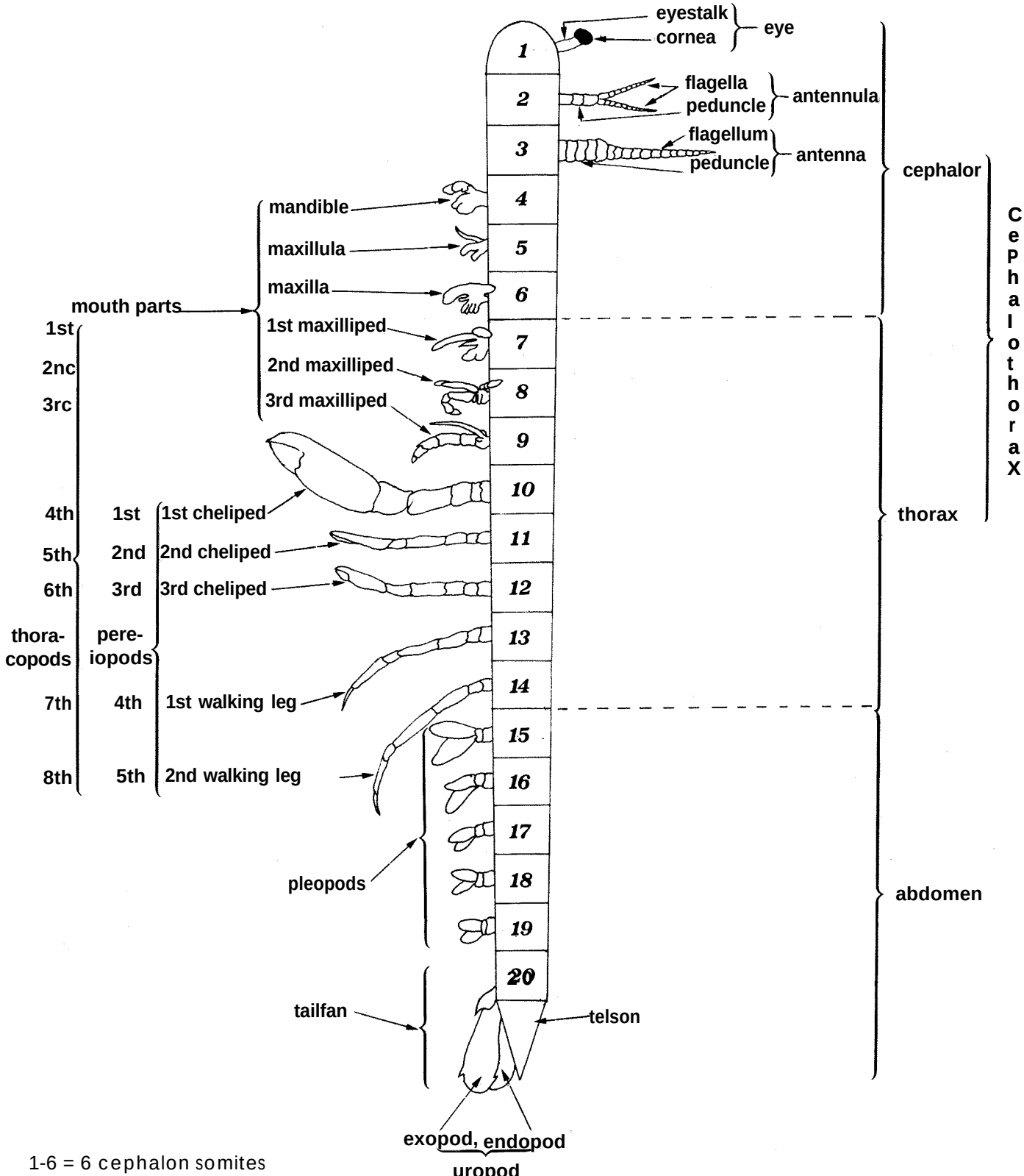
Palinuroidea
Scyllaridae
Scyllarides herklotsii



Thalassinidea
Callianassidae
Callianassa japonica

Fig. 1. Major types of lobsters, showing differences in shape

The body of a lobster consists of two recognizable parts: the cephalothorax (= the entity formed by the fusion of cephalon, or head, with the thorax) with its appendages, and the abdomen (= tail) with its appendages (Fig. 2).



1-6 = 6 cephalon somites
7-14 = 8 thorax somites
15-20 = 6 abdominal somites

Fig. 2 Schematic illustration of the body and appendages of a lobster (Nephropoidea)

The 14 somites (or body-segments) of the cephalothorax (the first 6 forming the cephalon, the last 8 the thorax) are fused and only in a few places there are visible indications of the lines between the somites. Each somite carries one pair of appendages. These appendages are the following: Somite 1 (= ophthalmic somite) carries the eyes, that are usually movable and consist of a stalk, formed by one or two segments, the distal of which carries the pigmented cornea with visual elements;the eyes sometimes are reduced, viz., the cornea may lack pigment or visual elements; such a reduced functionless eye may even be immovably fused with the body or be altogether absent. Somite 2 (= antennular somite) carries the antennulae, each of these consisting of a three-segmented peduncle carrying two flagella, the length of the flagella often is of taxonomic importance; the antennulae sometimes are called “first antenna”,like the antennae or second antennae they are tactile organs. Somite 3 (= antennal somite) carries the antennae (or second antennae), which consist of a peduncle of 5 segments and a single flagellum. Through fusion of the segments with one another or with the body, the number of actually visible peduncular segments is smaller than 5. The flagellum may be supple or whip-like, or (e.g., in Palinuridae) may be very stiff and strong;in the Scyllaridae the flagellum is transformed to a single plate-like segment, which makes the antennae six-segmented. In some species there is a scaphocerite or antennal scale attached to the second segment of the peduncle. Somites 4 to 9 (i.e., the last 3 cephalon somites and the first 3 of the thorax) carry the mouth parts, appendages which have a function with the dissection and ingestion of food. Somite 4 carries the mandibles, strongly calcified, often molar-like organs that are used for breaking up the more solid food particles, and for chewing. Somites 5 and 6 carry the maxillulae (or first maxillae) and maxillae (or second maxillae) respectively, both are flat leaf-like organs. Somites 7 to 9 (= thoracic somites 1 to 3) carry the first to third maxillipeds, the first is leaf-like like the maxilla, the second and third are more leg-like, especially the third. Somites 10 to 14 (= thoracic somites 4 to 8) carry the five pairs of pereiopods or true legs. The first pereiopod, and sometimes also the second and the third, often (but not always) ends in a chela or pincer. The first leg usually is the largest of the true legs. The legs that do not have pincers are indicated as walking legs as they are mainly used for locomotion.

Dorsally the cephalothorax is encased by the carapace, a single shield-like cover, which extends all the way from the eyes to the last thoracic somite, and sometimes projects beyond the eyes as a narrow median rostrum. Laterally, the carapace extends to the bases of the legs, enclosing the branchial chamber which is a space between the body and the carapace housing the branchia or gills, and situated above the bases of all legs. In some groups, part of the antennular somite is visible dorsally as a triangular plate in front of the anterior margin of the carapace. In the Palinuridae, this so-called antennular plate may carry spines, the number and arrangement of which is of taxonomic importance. In some genera of Palinuridae, the lateral margins of the antennular plate are ridge-like, and swollen, forming a stridulating organ with a process on the inner margin of the antennal peduncle, which rubs over this ridge; when the animal moves its antennae in a certain way, a rasping sound is produced by this organ.

Ventrally, the cephalothorax shows, between the basal parts of the appendages, a central plate, the thoracic sternum, on which the lines between the thoracic somites are usually indicated as grooves. In the females, the sexual openings are visible on the basis (the sixth segment of the leg counting from the tip) of the third pereiopods, in the males these openings are on the basis of the fifth pereiopods. This difference usually is the character that most easily distinguishes male and female lobsters.

The abdomen consists of six separate somites (numbers 15 to 20 on Fig. 2), which are not fused, but movably connected with each other. Each somite is surrounded by a chitinous armour: the dorsal part is called tergite, the ventral part, sternite, and the two lateral parts, pleura (sing. pleuron). The combined abdominal sternites form the abdominal sternum, the combined abdominal tergites, the abdominal tergum. The pleura usually are downward-directed lateral plates, covering externally the pleopods. The shape and ornamentation of the pleura is of taxonomic interest. The appendages of the first 5 abdominal somites (numbers 15 to 19) are the pleopods or swimmerets; they are implanted on the borderline between the sternite and the pleuron. In the male, the first and second pair of pleopods may be transformed into copulation organs, the so-called copulatory stylets, which are often stiff and of characteristic shape. The other pleopods usually consist of a single-segmented peduncle carrying two leaf-like appendages at the top. The pleopods may be reduced or even entirely lacking on some somites. The sixth abdominal somite (= somite 20, being the last body segment) bears the tail fan, which consists of a pair of uropods and the unpaired telson. The uropods actually are the sixth pair of pleopods; they are rather wide and well calcified and usually about as long as the telson. The telson is a plate-like median appendage of the sixth abdominal somite, and sometimes it is considered to represent the seventh abdominal somite. The tail fan, when spread out, can be used for propulsion.

Important taxonomic characters are provided by the carapace (shape, surface sculpturation, spinatibn), eyes (absent, reduced or well developed, position of the orbits), antennulae (length of flagella), antennae (size, shape, dentition, and shape, length and structure of the flagellum), antennular plate (number and arrangement of spines, presence or absence of a stridulating organ), pereiopods (whether or not chelate, size and structure of chelae), thoracic sternum (general shape, shape of anterior margin, presence or absence of tubercles or spines), and abdomen (dorsal sculpturation, shape of the pleura, shape of the tail fan, number of pleopods). Also the colour, and especially the colour pattern of the species may be of great help in rapid identification in the field.

1.2.2 Size

The largest Crustaceans are found among the lobsters. The American lobster (***Homarus americanus***) has been reported to attain a total body length of 64 cm, while the Green rock lobster (***Jasus verreauxi***) may reach a total body length of 60 cm. Several other species of Palinuridae reach sizes between 40 and 50 cm. The smallest lobsters are found among the Scyllaridae: e.g., adult specimens of ***Scyllarus martensii,*** reach a total body length of 2.5 cm.

1.2.3 Habitat and Biology

Apart from the freshwater crayfishes (superfamilies Astacoidea and Parastacoidea, which are not treated in this catalogue), all lobsters are marine animals, only a few species enter brackish water. Marine lobsters are found in practically all temperate and tropical seas (between about 65ºN and 60ºS), being most numerous in the tropics. They occur from the intertidal zone all the way to the deep sea (the deepest record being from almost 3 000 m depth). Many species prefer a rocky substrate with cavities for shelter, but others are found on muddy or sandy bottoms in which they may dig their own burrows.Eelgrass meadows also form a habitat for some species.

The sexes in lobsters are mostly separate, although cases of hermaphroditism (both natural and abnormal) are known. The males impregnate the females (sometimes with the help of the copulatory stylets of the first abdominal somites), and in some species, spermatophores, visible as black or transparent flat masses, are deposited on the female's thoracic sternum. The females produce eggs, which are carried on the pleopods and which usually form a conspicuous mass under the abdomen. After hatching, the larvae pass through several, usually pelagic stages, before molting to the postlarva which is most often benthic. The larvae often bear very little resemblance to the adults, e.g., in the Palinuridea, where the larvae (phyllosoma) are small, flat and perfectly transparent. Larvae are sometimes found far offshore, but the importance of ocean currents in the zoogeography of the lobsters has often been grossly exaggerated.

The greater part of the lobsters seem to be omnivores and scavengers, but few detailed observations are available on feeding habits. Some species are attracted by dead fish put as bait in lobster traps, but others are hardly ever caught in such traps. The Thalassinidea are mostly detritus feeders. Some lobsters also eat live animals; e.g., ***Scyllarides tridacnophaga*** has been observed to attack, open and eat specimens of the giant clam ***Tridacna.***

1.2.4 Interest to Fisheries

Lobsters are among the most highly esteemed seafood delicacies. The world catch of lobsters recorded in 1988 (FAO Yearbook of Fishery Statistics, 1990) exceeded 205 000 tons, of which about 127 000 tons corresponded to true lobsters (Family Nephropidae), about 78 000 tons to spiny lobsters (Family Palinuridae) and about 2 100 tons to slipper lobsters (Family Scyllaridae). Although the greatest number of commercial species occurs in tropical waters, the largest lobster catches come from cold-temperate regions like the northwestern Atlantic (Fishing Area 21) with 62 000 tons, and the northeastern Atlantic (Fishing Area 27) with 58 000 tons. Species of genera like ***Homarus*** (about 64 000 tons in 1988), ***Jasus*** (about 14 000 tons) and ***Panulirus*** (about 56 000 tons) form the subject of specialized fisheries and are the basis for important industries. Other species (like ***Nephrops , Metanephrops*** and ***Palinurus***) often form an important part of mixed catches (e.g. with shrimps), and are sold separately on markets. Many species cannot be obtained in great quantities, but the size of the specimens makes the capture and sale of single individuals profitable locally; in tourist areas such specimens are often sold directly to restaurants, hotels, etc. Several of the deep-sea species need specially equipped ships for their capture, and at present most are not commercially exploitable because of the high operating costs, but better knowledge of their biology and ecology might make them of commercial interest in the future. The species occurring on flat (muddy or sandy) bottom can be obtained by trawls] but a high percentage of lobsters is taken with lobster pots or other traps. Diving and spearing of shallow-water species is mostly done for local consumption or as a sport; spearfishing of lobsters at night with the light of torches, is a traditional way of fishing throughout the tropics. Species burrowing in sand or mud of the intertidal zone can often be captured by digging, or with yabbie pumps or slurp guns (see p. 242).

Since in all lobsters the tail is well developed, the abdominal muscles form the main edible part of the animal. In some Nephropids, the large claws provide enough meat to justify the rather laborious job of cracking the usually very heavy shell of these appendages. The Nephropoid and Palinuroid lobsters are considered a delicacy almost everywhere. They are used almost exclusively for human consumption, seldom as bait. The Thalassinoidea, on the other hand, are only rarely used as food, but far more often as bait.

1.3 Illustrated Glossary of Technical Terms

Abdomen - The posterior part of the body (tail) of a lobster consisting of 6 well discernable somites with their appendages, and including the tail fan (Figs 2,3).

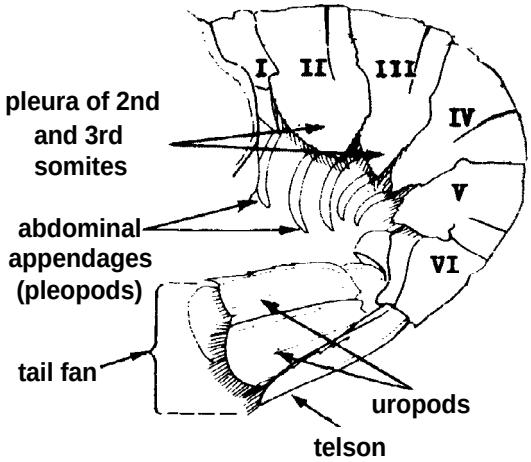


Fig. 3 Abdomen (tail) in lateral view

Antenna (pl. antennae) -The appendage of the third cephalon somite, consisting of a five-segmented peduncle and a flagellum (Figs 2,4,6,9,11,14). Through fusion of the segments with the body or with each other, the peduncle may seem to consist of fewer segments. The flagellum is usually multi-articulated, it may be supple or very stiff; in the Scyllaridae the flagellum is transformed into a single plate-like segment, similar to the peduncular segments. The antenna sometimes is named"second antenna",and the antennula, "first antenna". Both, the antenna and the antennula are tactile organs (feelers).

Antennal angle - An angular curve on the anterior margin of the carapace just below the orbit. On this place, the antennal spine (q.v.*), if present, is implanted.

Antennl flagellum, see antenna

Antennalplate - Sometimes used for antennular plate (q.v.).

Antennalsomite - The third somite of the body (Fig. 2) (at the same time the third cephalon somite). It carries the antennae.

Antennal spine - A spine on the anterior margin of the carapace just below the orbit (Fig. 5).

Antennula (pl. antennulae). - The appendage of the second cephalon somite, consisting of a three-segmented peduncle and two flagella (Figs 2,4,6,9, 11,14). The length of the flagella in some groups is of taxonomic importance. The antennula also is called first antenna; the antenna then is named second antenna.

Antennular plate, see antennular somite.

Antennular somite - The second somite of the body (Fig. 2) (at the same time the second cephalon somite). It carries the antennulae (Figs 4,6). Sometimes the dorsal surface of the antennular somite is visible in front of the carapace and between the bases of the antennae as a triangular plate, the so-called antennular plate, which in Palinuridae may be armed with dorsal spines or spinules, and which in some genera has the lateral margins swollen and forming part of a stridulating organ (q.v.) (Fig 4). The antennular plate sometimes is referred to as antennal plate or inter-antennal plate.

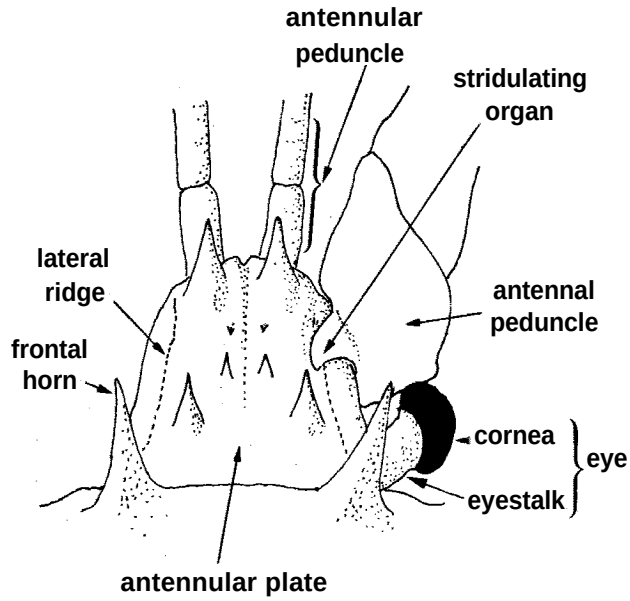


Fig. 4 Antennular somite of a palinurid lobster (left antenna and eye omitted)

Anterolateral teeth - In Scyllaridae, the teeth of the lateral margin of the carapace, in front of the cervical incision (Pig. 6).

Arthrobranch, see branchium.

Basis - The sixth segment of a pereiopod, counted from the tip of the leg; it is situated between the ischium and the coxa (Fig 7,12). See pereiopod.

Branchial carina - A longitudinal carina over each lateral half of the carapace, in Scyllaridae extending from the orbit backward and bisected by the cervical groove into an anterior and a posterior part (Fig. 6,29).

Branchial chamber - The space between the thorax and the lateral part of the carapace above the bases of the legs. The respiratory water current is pumped through the full length of the branchial chamber by action of some of the mouth parts.

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* The abbreviation q.v. (for "quod vide"= which see), placed after a term is a cross reference to that term in the glossary

Branchiostegal spine - A spine on the anterior margin of the carapace below the antennal spine (Fig. 5).

Branchium (pl. branchia) - Gill. The gills are found on and near the bases of the thoracopods in the branchial chamber. They are whitish, plumiform organs that are placed on the epipods (the podobranchia), at the articulation of the leg with the body (arthrobranchia), or on the body itself (pleurobranchia) (Fig. 12). Water is pumped through the branchial chamber and gas exchange takes place through the thin wall of the gill filaments.

Carapace, or dorsal shield (Figs 5,6) - A shield-like lateral extension of the thoracic somites, which covers the cephalothorax dorsally and extends from the eyes to the posterior margin of the last thoracic somite. It is cylindrical or angular, and laterally fits snugly against the bases of the pereiopods, enclosing the branchial chamber above the bases of the pereiopods. The carapace may end anterodorsally in a rostrum which is placed between the eyes. The structure, pubescence, sculpturation (grooves and spines) of the carapace are of taxonomic importance.

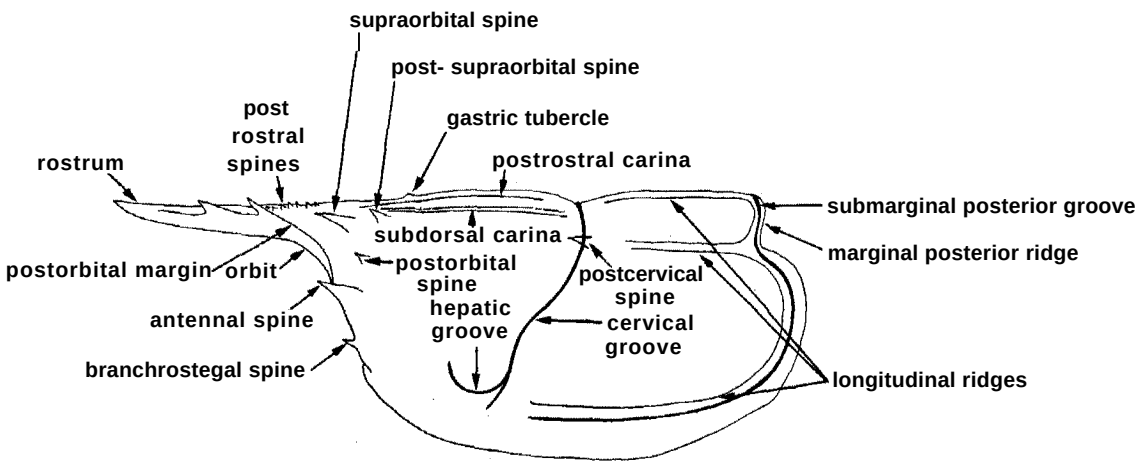

Fig. 5 Lateral view of a nephropid carapace

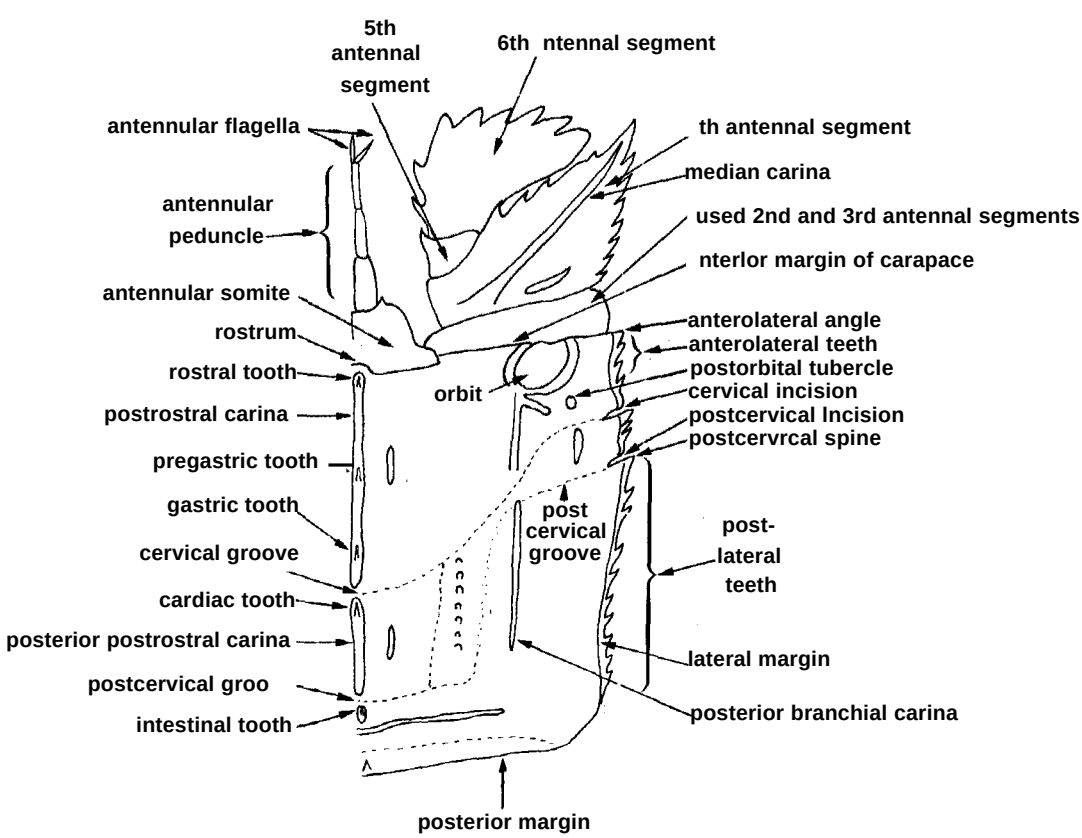

Fig. 6 Schematic dorsal view of right half of scyllarid carapace and cephalic appendages showing various regions, spines, grooves, teeth, etc.

Cardiac tooth - In Scyllaridae, the median tooth on the dorsal surface of the carapace immediately behind the cervical groove (Fig. 6). Sometimes the tooth is low and knob-like, and then may be indicated as cardiac knob.

Carina (pl. carinae) - Ridge or crest.

Carpus - The third segment of a pereiopod counted from the tip of the leg; it is situated between the propodus and merus (Figs 7,12). See pereiopod.

Cephalic - Belonging to the cephalon (q.v.)

Cephalon, or head - In the Decapoda, the cephalon is formed by the first 6 somites of the body, and is fused with the 8 thoracic somites to the cephalothorax. The first cephalic somite (= the ophthalmic somite) carries the eyes, the second (= antennular somite), the antennulae, the third (= antennal somite), the antennae, the fourth, the mandibles, the fifth, the maxillulae, and the sixth, the maxillae (Fig. 2).

Cephalothorax - The anterior 14 somites of the Decapod body, consisting of the 6 cephalon somites and the 8 thoracic somites (Figs 2,9,11,14). These 14 somites are fused to a single entity and the division between them can only rarely be observed (e.g., on the thoracic sternum). As each of the somites bears a single pair of appendages, the position of the fused somites can be ascertained by the position of these appendages. See also cephalon and thorax. Sometimes, but incorrectly so, the term cephalothorax is used instead of carapace.

Cervical groove - An often deep, transverse groove over the middle of the carapace, the lateral parts of which are usually curved forward (Figs 5,6).

Cervical incision - An incision on the lateral margin of the carapace in Scyllaridae at the point where the cervical groove would meet that margin (Fig. 6).

Chela (pl. chelae), or pincer (Figs 7,9) - A scissor-like organ carried by many lobsters on the first pereiopods, sometimes also found on some or all of the other pereiopods, sometimes entirely lacking. The chela is formed by the last two segments of the leg, viz., propodus and dactylus, and consists of a palm and two fingers. The upper or movable finger is formed by the dactylus, which articulates with the propodus at the end of the palm; it opposes the fixed finger, which is immovably connected with the palm and forms with it the propodus. The opposing edges of the two fingers, the cutting edges, may carry teeth. The presence or absence of chelae, as well as their shape, size and ornamentation, can be of great taxonomic value. The Nephropoidea have chelae on the first three pairs of pereiopods, the first of which usually is very large. In the Palinuroidea the first 4 legs have no true chelae, but the females of most species have a small chela on the fifth pereiopod. The Thalassinidea sometimes have a true chela on the first and second pereiopods, but often they only have a subchela (q.v.).

Chelate - Carrying a chela or pincer.

Cheliped - A leg carrying a pincer or chela (Figs 2,7); e.g., the first three pereiopods in Nephropidae are chelipeds.

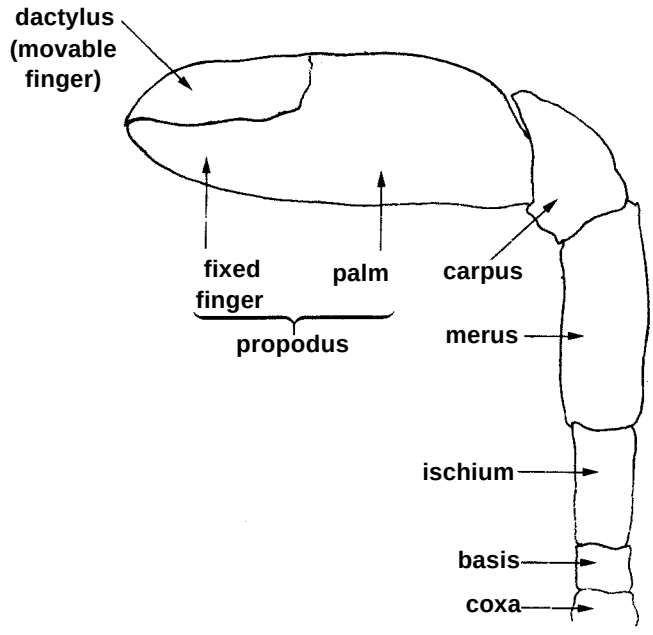

Fig. 7 Schematic illustration of a cheliped

Copulatory stylets - The first pleopod of the male in several Nephropoidea, which has been transformed into an often slender, rigid organ that plays a role in the copulation (Fig. 8).

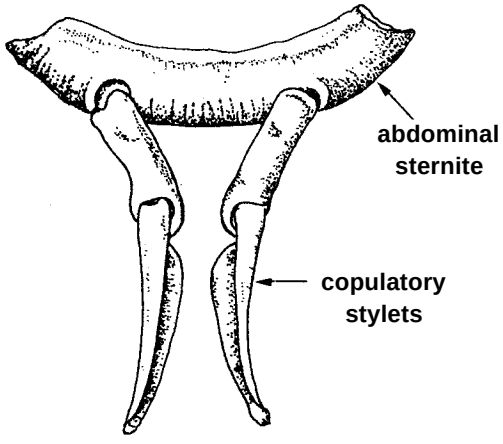

Fig. 8 First pair of pleopods of *Homarus* transformed into copulatory stylets

Cornea - The distal part of the eye that carries the visual elements and is usually pigmented (Figs 2,4).

Coxa -The basal segment of a pereiopod, the seventh counted from the tip of the leg; it is followed by the basis (Figs 7,12).

Crushing claw - The larger first chela of some Nephropidae, in which the teeth on the cutting edge are wide and molar-like (Fig. 9). The crushing claw is used to crack molluscs and other hard objects.

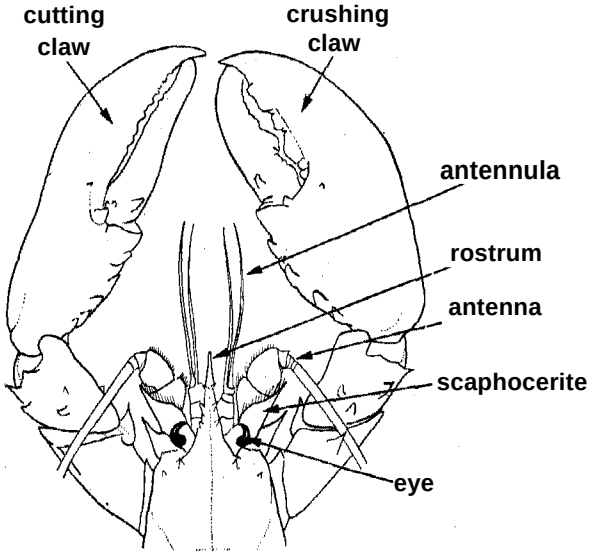

Fig. 9 Anterior part of cephalothorax of *Homarus* (dorsal view)

Cutting claw - The smaller first chela of some Nephropidae, in which the cutting edges are serrated, having a single row of narrow sharp teeth (Fig. 9). This claw is used for cutting and breaking. It usually forms a pair with the crushing claw (q.v.).

Dactylus - The ultimate segment of a pereiopod; in a chela the dactylus is the movable finger (Figs 7,10,12, 16).

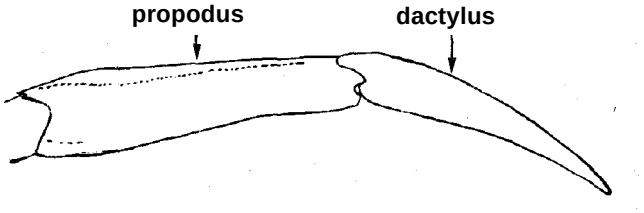

Fig. 10 Dactylus and propodus of a walking leg

Diaeresis - A transverse articulation in the distal part of the exopod of a uropod. The diaeresis is visible as a complete or incomplete line, sometimes with a row of small spinules along its anterior margin; the outer margin of the exopod of the uropod may have a spine or tooth at the spot where the'diaeresis joins it (Fig. 17). The presence or absence of a diaeresis is of taxonomic importance.

Distal - Farther away from the body (or centre of the body). The distal part of an appendage is its tip, i.e. the part farthest away from the articulation of the appendage with the body. The distal part of the abdomen is the tail fan, i.e. the part farthest away from centre of the body. Opposite term: proximal.

Endopod, or endopodite - The inner branch of a biramous leg (Figs 2,12,15,17). Most, or all appendages can be derived from a biramous leg, which consists of a peduncle of 2 or 3 segments, carrying two appendages, the endopod and the exopod. In the thoracic appendages of the lobsters, the exopod has disappeared or is present as a reduced flagellum-bearing organ, while the distal 5 segments of the pereiopods represent the endopod. In most pleopods and in the uropod the biramous construction of the appendage is still clearly apparent, and here the exo- and the endopod can be of about the same size. Opposite term: exopod.

Epipod - A usually small, oval or elongate leaf-like appendage on the outer margin of the first segment (coxa) of a thoracopod (Fig. 12). Sometimes the epipod carries a gill, the so-called podobranch.

Epistome - The median area on the ventral surface of the cephalothorax situated between the anterior margin of the oral field and the bases of the antennae and antennulae (Fig. 11).

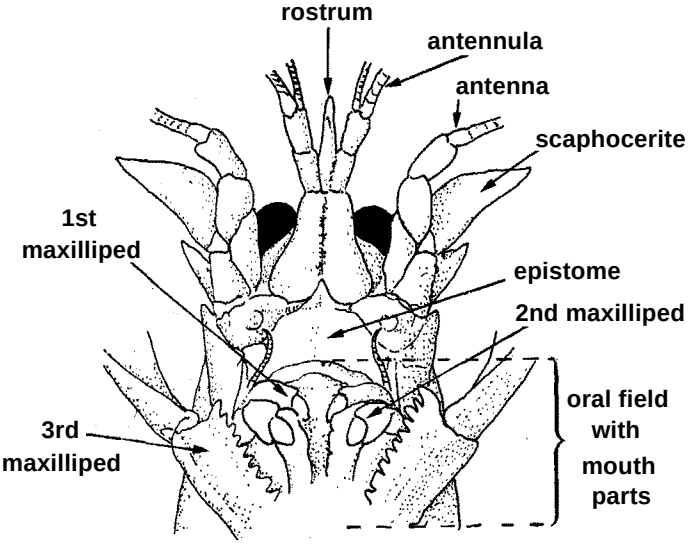

Fig. 11 Anterior part of cephalothorax of *Nephrops* (ventral view)

Exopod, or exopodite - The outer branch of a biramous appendage (see under endopod) (Figs 2,12,15,17). In the lobsters, the exopod is absent from the pereiopods, but still present in the maxillipeds where it forms an often flagellum-carrying appendage of the endopod. In most pleopods and the uropods the exopod is about as large as, or sometimes even larger than, the endopod. Opposite term: endopod.

Eye - Organ of vision. A pair of eyes is placed on the first somite (= first cephalon somite). In most cases the eye is movably connected with the body and consists of a stalk of one or two segments, the distal of which carries the cornea (Figs 2,4,9,1 1). The cornea (q.v.) consists of the optical elements and usually is pigmented. In some species the eye is reduced, the optical elements may be few or entirely absent, and also the pigment can be absent; the eye then usually becomes small and bullet-shaped and may even become immovably fused to the body.

Fixed finger, see chela.

Flagellum (pl. flagella) - A usually whip-like, multiarticulated appendage of the antennula or the antenna, implanted at the top of the peduncle (Figs 2,6). The antenriula carries two flagella, the antenna one. In most .Nephropoidea the antennal flagellum is flexible and whip-like, in most Palinuridae it is rather rigid and may be spinulate. In the Scyllaridae, the flagellum is reduced to a single large plate, which looks as if it were the 6th segment of the antenna (Fig. 6). Flagella are also found on some of the exopods of the mouth parts (Fig. 12).

Frontal horn - In Palinuridae, a large, and broad, often curved tooth, that is placed on the anterior margin of the carapace just behind and above the eyes. The frontal horns usually are the largest teeth on the carapace and are directed over the orbit (Figs 4,14).

Gastric tooth - In Scyllaridae, a tooth in the median line of the carapace before the cervical groove. It usually is placed rather close to the cervical groove and may be preceded by the pre-gastric tooth (q.v.) (Fig. 6).

Gastric tubercle - A tubercle on the dorso-median line of the carapace of some Nephropidae, situated between the base of the rostrum and the cervical groove (Fig. 5).

Gill, see branchium.

Head, see cephalon.

Hepatic groove - A groove in the anterolateral part of the carapace branching off from the lateral part of the cervical groove and directed forward (Fig. 5).

Interantennal plate, see antennular somite

Intermediate carina- A longitudinal carina over the posterior part of the carapace behind the cervical groove, placed between the median carina and the branchial carina (Fig. 29)

Intestinal teeth or tubercles - The median row of teeth (or tubercles) on the carapace between the post-cervical groove and the posterior margin of the carapace (Figs 6,14).

Ischium - The fifth segment of a pereiopod counted from the tip of the leg; it is situated between merus and basis (Figs 7,12). See pereiopod.

Lateral carina - A longitudinal carina over the posterior part of the carapace behind the cervical groove. The lateral carina is situated between the, branchial carina and the lateral margin of the carapace (Fig. 29).

Mandible - The first of of the mouth parts, located on the fourth somite (= cephalon somite 4), near the opening of the mouth (Fig. 2). It is a sturdy, heavily chitinized organ consisting of one piece that ends in a row of teeth and has a tubercular, molar-like area; it carries a usually three-segmented palp. It is used for breaking up and chewing the food.

Marginal posterior ridge of the carapace - The ridge that forms the extreme posterior margin of the carapace, often becoming lessdistinct laterally (Figs 5.14).

Maxilla, or second maxilla - The third of the mouth parts, placed on the sixth somite (this is the sixth, and last, cephalon somite) (Fig. 2): Like the maxillula, and in contrast to the mandible, the maxilla is a flat and flexible organ.

Maxilliped - The three maxillipeds (first, second, and third) are appendages of somites 7 to 9 (= thoracic somites 1 to 3) (Fig. 2) and are considered to belong to the mouth parts because of their role with the ingestion of food. The first maxilliped is flat and leaf-like, somewhat similar to the maxilla; the second and the third, especially the latter, are more leg-like in shape (Fig. 11).

Maxillula, or first maxilla - The second of the mouth parts, being the appendage of the fifth somite (= fifth cephalon somite) (Fig. 2). It is small, flat and flexible and placed close to the mandible.

Median carina - In Nephropidae the longitudinal dorso-median carina of the carapace behind the cervical groove (Fig. 29)

Merus - The middle segment of a pereiopod, the fourth counted from either end (see pereiopod) (Figs 7,12).

Mouth parts - A general term for the appendages of somites 4 to 9 (= cephalon somites 4 to 6 and thoracic somites 1 to 3) (Fig. 2). They are the, often small, appendages preceding the often large first pereiopods, and are placed around and behind the mouth opening on the ventral side of the body (Fig. 11). They include in backward sequence: the mandible, maxillula, maxilla and the first, second and third maxillipeds. They all play a role in the dissection and ingestion of food.

Ophthalmic somite - The first somite (= first cephalon somite) (Fig. 2). It carried the eyes.

Oral field - The usually sunken, median area on the anterior part of the ventral surface of the cephalothorax, containing the mouth parts (= oral parts) (Fig. 11).

Orbit - The cavity in which the eyes are implanted. In many species, the orbit is only defined by the postorbital margin, which forms part of the anterior margin of the carapace; in those cases, the orbit is open anteriorly (Fig. 5). In some Scyllaridae the anterior margin of the carapace practically surrounds the eye and the orbit is then closed or almost closed (Fig. 6).

Palm - The part of the chela, or pincer, that bears the fingers. It is part of the propodus, the rest of the propodus forms the fixed finger (Fig. 7).

Peduncle, see antenna, antennula, pleopod and'uropod.

Pereiopod, also written pereopod or peraeopod - The thoracic appendages behind the mouth parts, i.e. the appendages of somites 10 to 14 (= thoracic somites 4 to 8) (Figs 2,12). The pereiopods consist of seven segments, these are, from proximal to distal: coxa, basis, ischium, merus, carpus, propodus, and dactylus (Fig. 12). The pereiopods can be divided into chelipeds (those that carry a chela, Figs 2,7) and walking legs (those that do not, Figs 2,10).

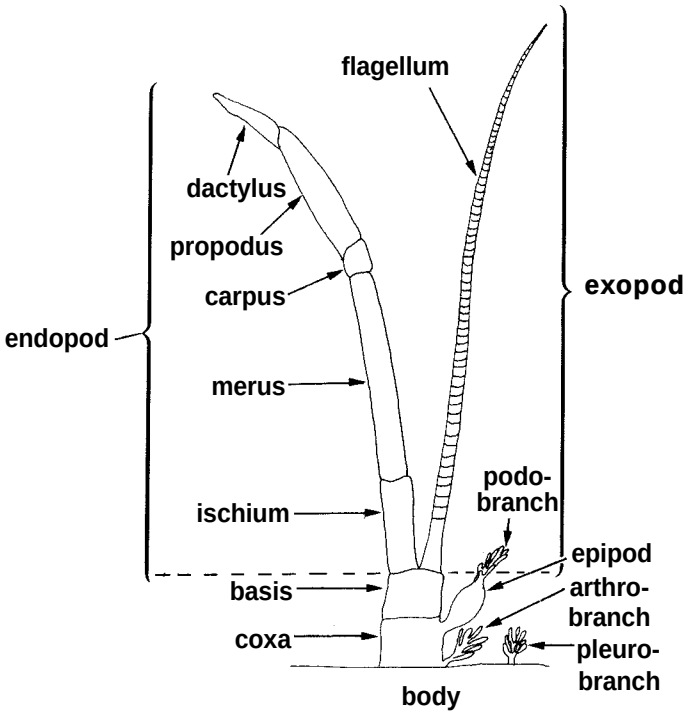

Fig. 12 Schematic illustration of a thoracopod

Phyllosoma or phyllosome - The pelagic larva of Palinuroidea, in which both the cephalothorax and the abdomen appear as glassy transparent, nearly circular, very thin and flat discs (Fig. 13). These larvae are so different from the adults that they originally were described under a separate genus without any connection with the Palinuroidea.

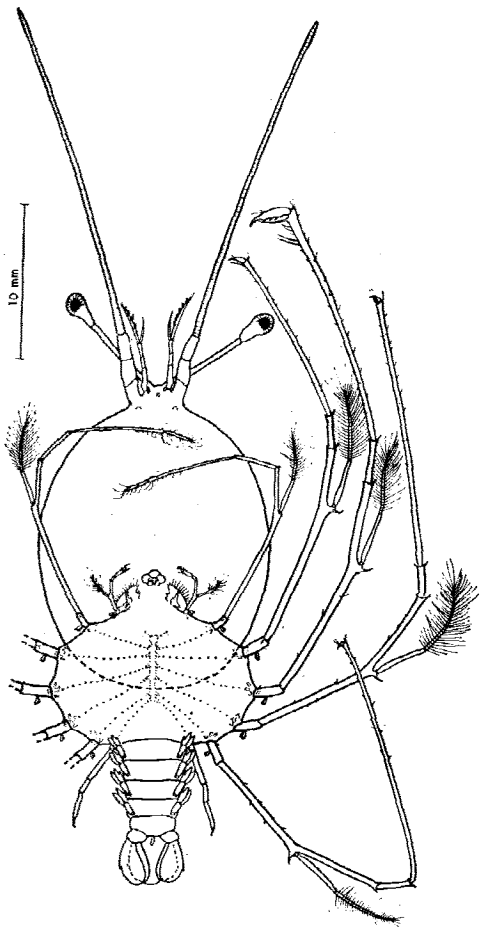

Fig. 13 Phyllosoma larva (*Panulirus gracilis*) (from Johnson, 1971)

Pleopod - Appendage of any of the first 5 abdominal somites, usually formed by ah unsegmented peduncle which carries two branches usually formed of a single flat, leaf-like and oval segment (Figs 2,3,15). The outer of these branches is the exopod, the inner the endopod. The pleopodr may be reduced or entirely absent from some somites, the endopod may have an appendix. In some species, the pleopods of the first or first two abdominal somites may be transformed into rigid copulatory stylets (Fig. 8), which play a role during copulation. In females the pleopods may be larger and wider than in males, especially when the females carry eggs. The eggs are fastened to the pleopods and are carried as a conspicuous mass under the abdomen, the mass being protected on the outer side by the pleopods.

Pleurobranch, see branchium.

Pleuron (pl. pleura)- The lateral part of the chitinous ring that surrounds each somite, the dorsal part being the tergite, the ventral the sternite (Figs 3,15). The pleura of the abdominal somites aie often well developed and show as lateral plates that are directed downward and protect the pleopods; together with the sternites they may form a gutter-like cavity on the lower surface of the abdomen, which holds the pleopods and the eggs. The pleura may be either large, rounded or triangular, or small and short. Their sculpturation, shape and spination are important taxonomic characters.

Podobranch, see branchium.

Postcervical groove - A roughly transverse groove on the carapace in Scyllaridae, some distance behind and roughly parallel to the cervical groove (Fig. 6).

Postcervical incision - An incision on the lateral margin of the carapace in Scyllaridae, behind the cervical incision and usually slightly closer to it than to the posterior end of the carapace (Fig. 6). The cervical and postcervical incisions may divide the lateral margin into 3 parts.

Postcervical spine -A spine on the dorsal surface of the carapace, placed immediately behind the cervical groove (Figs 5,6).

Postcervical teeth or tubercles - In ***Puerulus***,. the median row of teeth or tubercles on the carapace between the cervical and intestinal grooves (Fig. 14).

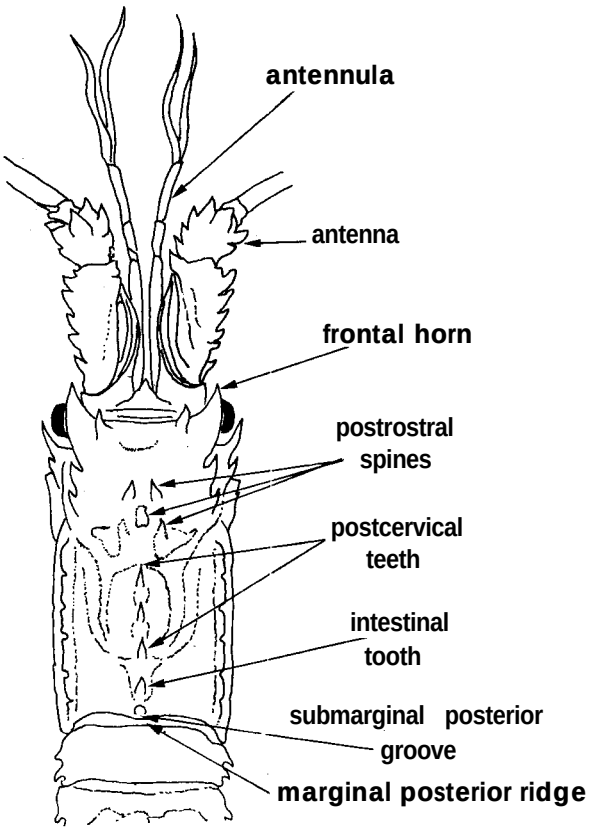

Fig. 14 Cephalothorax of *Puerulus* (dorsal view, pereiopods omitted)

Posterolateral teeth - In Scyllaridae, the teeth of the lateral margin of the carapace placed behind the postcervical incision (Fig. 6).

Postorbital margin - Part of the anterior carapace margin which defines the orbit (Fig. 5).

Postorbital spine - A spine on the carapace placed at some distance behind the orbital margin (Fig. 5).

Postrostral carina - A median ridge on the dorsal part of the carapace, which extends from the base of the rostrum backward, often to the posterior margin of the carapace (Figs 5,6).

Postrostral spines - Spines in the dorsomedian part of the carapace placed immediately behind the base of the rostrum, either in the median line or submedially (Figs 5,14).

Post-supraorbital spine - A spine placed at a short distance behind the supraorbital spine on the carapace (Fig. 5).

Pregastric tooth - In Scyllaridae, a tooth in the median line of the anterior part of the carapace (before the cervical groove). It is placed before the gastric tooth and behind the rostral tooth (Fig. 6).

Propodus - The one but last segment of a pereiopod (q.v.), situated between the dactylus and the carpus (Figs 7,10, 12,16). In a chela the propodus forms the palm and the fixed finger.

Proximal - Closer to the body (or centre of the body). The proximal part of an appendage is its base, i.e. the part closest to the body. The terms proximal and distal can be used regardless of the position in which the appendage is directed, while terms like ventral, dorsal, anterior and posterior in such a movable organ may be confusing.

Puerulus stage - The first postlarval stage of Palinurid lobsters. So named before the postlarval development of the Palinuridae was known; these animals were incorrectly considered to belong to the genus ***Puerulus.***

Rostral tooth, see rostrum.

Rostrum - A prolongation of the median part of the anterior carapace margin, which projects forward between and often beyond the eyes (Figs 5,6,9,11). The rostrum can be of various shapes; in lobsters it is usually dorsoventrally depressed and often bears teeth. In many species the rostrum is absent or reduced to a single spine or angle (e.g., in Palinuroidea); in most Nephropoidea it is well developed. In Scyllaridae it is hardly noticeable, but for the presence of a tooth (rostral tooth) or tubercle (Fig. 6).

Scaphocerite - A scale-like appendage of the antennal peduncle, which is inserted on the outer part of the distal margin of the second peduncular segment (Figs 9,11). The scaphocerite is generally considered to be the exopodite of the antenna. It usually is small and may be armed with teeth. In some species it lacks altogether.

Sculpturation - The presence of grooves, ridges, spines, teeth, tubercles or granules on the exposed parts of the body.

Segment - A single part of an articulated unit. In the present catalogue, the term "segment" is only used for the segments of the appendages, the body segments are always indicated as "somites" (q.v.). A pereiopod (q.v.) has seven segments.

Somite or body segment -Any of the 20 segments into which the body is divided (Fig. 2). Each somite is surrounded by a chitinous cover, the dorsal part of which is termed tergite (q.v.), the ventral part sternite (q.v.) and the lateral parts, pleura (singular: pleuron, q.v.) (Figs 3,15).

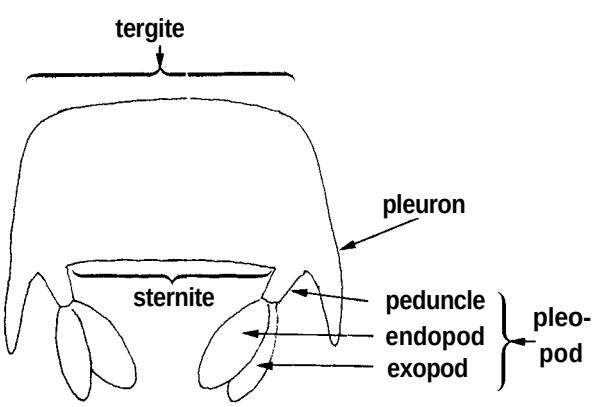

Fig. 15 Schematic cross-section through an abdominal somite

Spermatophore - A viscous mass, containing the spermatozoa embedded in a secretion from the sperm duct,'which during copulation is deposited by the male on the thoracic sternum of the female in some lobsters. In the Palinuroidea the spermatophores may be visible as black, tar-like or transparent gelatinous deposits covering the posterior part of the female sternum.

Stalk, or peduncle (q-v.), see eye.

Sternite - The ventral part of the chitinous ring that surrounds each somite (the other parts are the dorsal tergite and the two lateral pleura) (Figs 8,15). Together, the various sternites form the sternum, e.g., the thoracic sternum is the sum of the thoracic sternites.

Sternum, see sternite.

Stridulating organ - An organ formed by two parts of the body that produce a sound rubbing against each other (Fig. 4). In some Palinurid genera, the lateral margins of the antennular plate are ridge-like and thickened; a projection of the antennal peduncle rubs over this ridge when the antenna is moved in a special way,thereby producing a rasping sound, which evidently is a means of communication.

Stylet, copulatory, see copulatory stylet.

Subchela - An incomplete chela, in which the dactylus does not oppose a fixed finger, but, when the chela is closed, strikes against a broadened part of the propodus (Fig. 16).

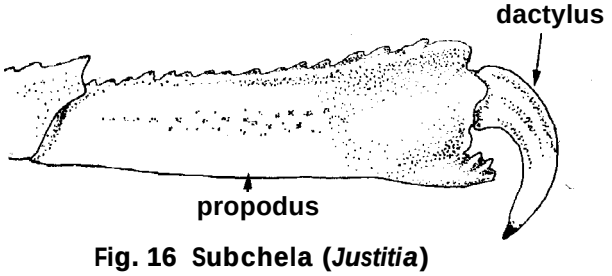

Fig. 16 Subchela (*Justitia*)

Subdorsal carina - A ridge at either side of the mid-dorsal line of the carapace, placed close to it and running parallel with it (Fig. 5). The subdorsal carinae are always paired.

Submarginal posterior groove of the carapace - An often deep groove parallel to the posterior margin of the carapace and separated from it by the marginal posterior ridge (Figs 5, 14).

Supraorbital spine - A spine on the carapace placed obliquely above and somewhat behind the orbit (Fig. 5).

Swimmeret, see pleopod.

Tail, see abdomen.

Tail fan - A fan-like organ at the end of the abdomen, consisting of the telson, flanked on either side by the uropods (Figs 3,17).

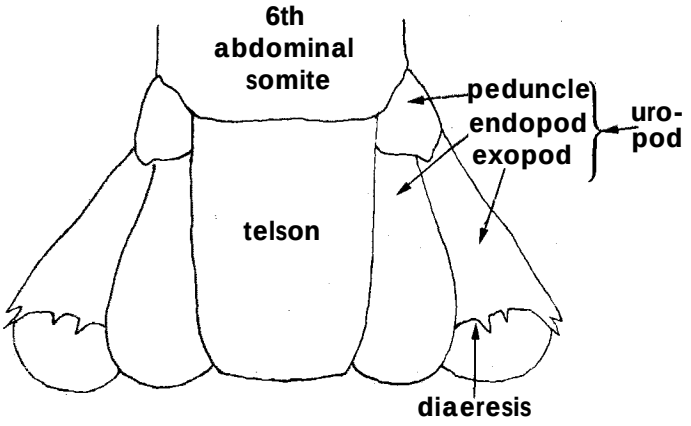

Fig. 17 Schematic illustration of tail fan

Telson - A median appendage at the end of the sixth abdominal somite, usually longer, at least not much shorter than the somite itself, and sometimes considered to be the seventh abdominal somite. The telson has no appendages (Figs 2,3,17).

Tergite - The dorsal part of the chitinous ring that surrounds each somite (the other parts are the ventral sternite and the two lateral pleura) (Fig. 15). Together the various tergites form the tergum, e.g., the abdominal tergum is the sum of the six abdominal tergites.

Tergum, see tergite.

Thoracic somite, see thorax.

Thoracopod - Any of the 8 appendages of the thorax. The thoracopods consist of 3 pairs of maxillipeds (appendages of thoracic somites 1 to 3) and 5 pairs of pereiopods (appendages of thoracic somites 4 to 8) (Figs 2,12).

Thorax - The middle of the three main parts of the body (cephalon, thorax, and abdomen). It is formed by the 7th to 14th somites (= thoracic somites 1 to 8) and bears the thoracopods (q.v.) (Fig. 2). The somites of the thorax are fused with those of the cephalon and so form the cephalothorax (q.v.). Dorsally and laterally, the lines between the thoracic somites are not noticeable; ventrally, however, they may show as transverse grooves on the sternum.

Uropod - One of the pair of pleopods of the sixth abdominal somite (Fig. 2). In contrast to the pleopods of the preceding somites, the uropods are stiff and heavily chitinized; they are well developed and form, together with the telson, the tail fan. They consist of an unsegmented peduncle, which bears at its distal end the usually blade-shaped exo- and endopods, these can be folded against each other and sometimes under the telson (hence the name tail fan) (Figs 3,17).

Walking leg - A pereiopod that does not carry a chela. In the Nephropidae, the first three pereiopods are chelipeds, the last two are walking legs (Figs 2,10). The main function of the walking legs is locomotion, while that of the chelipeds is feeding.

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