

## WORLD LIST OF THE ANTHURIDEAN ISOPODS (CRUSTACEA, ISOPODA, ANTHURIDEA)

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On présente la liste des espèces de Crustacés Isopodes du sous-ordre des Anthuridea, liste qui réunit à présent 57 genres avec 321 espèces appartenant à 3 familles: Anthuridae, Hysanuridae et Paranthuridae. Des données relatives à la répartition géographique, la profondeur et l'habitat ainsi que des références bibliographiques complètent la liste des espèces pour lesquelles on indique aussi les synonymies.

### INTRODUCTION

The Anthuridea have found increased interest during the last few years and the number of known species is growing fast. These crustaceans are obviously present all over the world in the marine benthos and in some brackish and freshwater habitats. In the course of expeditions and benthic surveys of the last decades many new species were discovered, often with the help of diving techniques and by careful sorting of the samples. At present 57 genera and 321 species are known. In table 1, one can see how many species were described only in the past 10 years.

For someone who is not constantly following the taxonomic publications it is difficult to find out which names are valid today, what synonyms exist, how many species are known and from which part of the world. The present paper will help those who are not familiar with this group of Isopoda to get the necessary information.

It is not possible for us to revise those genera which are still in an unsatisfactory condition, as the material for the necessary redescriptions was not available. Critical points are mentioned in a special chapter and will emphasize, where further investigations will be necessary. Some obvious synonyms which are not mentioned in other publications will be presented.

Naturally a "world list" cannot be complete at present. We must expect that the number of species will be doubled in the future, but the number of genera will not increase too much, while the number of families seems to be stable. We hope that the "world list" will contribute to the elucidation of anthuridean isopods taxonomy and phylogeny and will stimulate future authors to describe species accurately and scrutinize the correct systematic position.

Besides the mere taxonomic data we present a synopsis of the geographic distribution and, as far as possible, of the colonized habitats. The bibliography is somewhat selective and contains all important publications.

### CHARACTERIZATION OF THE SUBORDER ANTHURIDEA

In order to describe the characteristic features of a taxonomic group it is necessary to know the morphological and biological peculiarities and the differences as compared to other closely related groups. For the taxonomists it is especially important to know how the archetype of a group can be described, because the features of a specialized, modern species cannot be used to define the whole group. The reconstruction of the common ancestor with the methods of phylogenetic systematics led to the following picture W ä g e l é (192):

The body is long and slender, the pleon is composed of 5 free pleonites, the sixth pleonite is fused with the telson. The antennae have 3(A 1) or 5(A 2) peduncular articles and long, multiarticulated flagella. The mouthparts are specialized, the mandible has no *lacinia mobilis* and instead of the spine row we find a dentated *lamina*. Maxilla 1 has a long, stylet-like lateral endite with distal teeth, the medial endite is short and small. Pereopods 1-3 have a short, triangular carpus and they are possibly not subchelate. Pereopods 4-7 have long, cylindrical articles. The pleopods 1-5 are all of similar form and size. The exopod of the uropods inserts dorsally on the short sympod, the telson has no statocysts.

The Anthuridea can be immediately identified among other Isopoda by shape of body, of the tailfan and of the mouthparts M o n o d (114).

The family Hyssuridae has most features in common with the archetype. Anthuridae and Paranthuridae have a "gill chamber" with an operculiform exopod of pleopod 1 and telsonic statocysts. The family Anthuridae has 2 statocysts, the mouthparts are of a biting/stinging type, the maxilliped has the tendency to form a broad operculum on the ventral cephalothorax. Within the family Paranthuridae we observe a stepwise evolution of the stinging/sucking mouthparts, the statocysts are always melted to one, the single statocyst is sometimes reduced. The correlation between morphology, biology and evolution has been described by W ä g e l é (192).

Those places on the dendrogram which are close to the ramifications of the families are the most problematic, as for the genera in question the anatomy (of the telson) and the morphology have not been studied in detail. Consequently, the assignment of some primitive genera to one family or another is not always definitive, as discussed in chapter concerning synonymies. Such want of clearness cannot be put aside by speculation but only by thorough comparative studies.

In general, the morphology of the Anthuridea greatly varies and there exist interesting evolutionary series, as for example the line leading from primitive Hyssuridae to the specialized *Eisothistos*, a genus completely adapted to life within the tubes of serpulid worms (192, fig. 29). Naturally

morphological series are correlated with a stepwise evolution of the way of living and of autecology. Unfortunately, only few observations on biology and ecology exist. Nevertheless, it seems that all Anthuridea are predators, the common food being polychaets and other invertebrates with soft integument. The Paranthuridae evolve to animals which are able to sting through harder integuments, and the genera with acute mouthparts which had been observed alive feed principally on amphipods.

The colonized habitats greatly vary, though the single species normally occur on the same type of substratum. We find Anthuridea from the soft bottom of the deep sea to the rocky shores and vegetation of the upper sublittoral. Some species even live in caves and hypogean interstices in brackish or freshwater, as for the example the members of the genera *Cyathura* and *Cruregens*. The Anthurideans observed in aquaria burrow in the sediment (sand, mud) using their statocysts for orientation *Langenbuch* (94), paranthurids with reduced statocysts have been found climbing on vegetation.

The zoogeography of the suborder cannot be analyzed at present. Too few records are known for many species and genera. Most species only appear in a limited area. Species that have been found in different localities, as *Calathura brachiata* (cold water of northern hemisphere), *Cyathura carinata* (brackish water of the European boreal and Mediterranean-Lusitanian region), *Mesanthura pulchra* (upper littoral of the Caribbean Sea), seem to be restricted to single seas or parts of oceans. Typical for the bottom of the deep sea are the species belonging to genera *Anthelura*, *Hyssura*, *Leptanthura*, *Pseudanthura*, *Quantanthura*, *Valoranthura* and typical for the photic zone of the warmer seas are species of genera *Colanthura*, *Haliophasma*, *Mesanthura*, *Paranthura*, though single species exist in colder or deeper water.

It is not possible to establish which of the known genera are endemic for a certain region; generally too few localities are known and for many monotypic genera with only one record (i.e. *Austranthura*, *Cetanthura*, *Exallanthura* etc.) further discoveries are to be expected. *Cruregens* is without doubt endemic for the phreatic waters of New Zealand.

An exact zoogeographic analysis is only possible, when the true composition of a genus is known and, even better, when the relationship between the species has been clarified. These requirements are not fulfilled for the Anthuridea.

#### SAMPLING METHODS, PREPARATION, CONSERVATION

Some short observations on these subjects. The anthuridean isopods are relatively small animals which can only be discovered by careful sorting. Benthic samples are collected with dredges or bottomtrawls (Agassiz trawl); in the upper sublittoral zone the best samples from algae, epilithion, seagrass etc. are gathered by divers who can enclose the substratum in fine nets.

For the sorting it is recommendable to wash the sediment and decant the water through a fine sieve, the content of which must be controlled under the binocular. Vegetation, sponges, corals, stones etc. can be washed before fixation to obtain living specimens or, more effective, after fixation with

4% formaldehyde. Specimens should not be kept in formaldehyde as the cuticle remains harder when the animals are transferred into 70% alcohol.

For the description and preparation of the specimens it is best to count first the number of animals and to measure their total length, and then to draw the most beautiful animals in total view, comparing male and female (if available) to show sexual dimorphism. Only then we can dissect them, embedding all appendages including antennae, mouthparts and tailfan on microscope slides. Thus, exact drawings can be made at high magnification with the help of a camera lucida. It is important not to describe only those features, which are prominent and characteristic for a species, as has been done (too) often (see problems of synonymies in the special chapter). These selected features are too dependent on subjective factors. It is those descriptions which record the whole animal and leave to the posterity more than just a few legs or an incomplete antenna that are valuable: "Sans bonnes figures, plus d'histoire naturelle descriptive, ou bien l'on retombera dans le chaos" ROUX (162).

### WORLD LIST OF ANTHURIDEAN ISOPODS

#### Comment for the table 1

The list of species is presented as a table with the following columns: taxa (genus, species, family); depth (in metres, for subterranean species in centimetres); geographical distribution; habitat; bibliography.

Genera, written in Aldines, are presented in alphabetical order; the species of a genus are presented in alphabetical order, too. For the species the synonyms are given (in italic letters) and the type species is mentioned. After the name of the genus, the family to which the genus belongs is suggested by a letter put in brackets. In the column of geographical distribution the ocean, continent, island, country or locality are indicated. For the habitat the biotop or substratum is indicated, with special references to the brackish, freshwater and subterranean species. The bibliographical titles from the list which ends this paper are numbered; the numbers are represented in the last column. The bibliography is selective, concerning especially the descriptions and redescrptions of species.

#### Abbreviations used in table 1:

a.	= and	G.	= gulf	Pen.	= peninsula
A	= Anthuridae	H	= Hyssoridae	S	= south
B.	= bay	Is.	= island	Str.	= strait
C.	= cape	N	= north	W	= west
Cn.	= canyon	Oc.	= ocean	*	= species needs redescription
E	= east	P	= Paranthuridae	=	= possible synonymy
				?	= unknown data

### REMARKS ON SOME SYNONYMIES

In table 1 we propose a few new synonymies which require some comments. The assignment of the genera to the families has been done according to the criteria of W ä g g e l e (192).

As already mentioned, because of the lack of information, problems arise with the primitive genera, which must be placed close to the Anthuridae/Paranthuridae ramification. The genera *Anthelura*, *Anthomuda*, *Austranthura*, *Bathura*, *Diaphoranthura* and *Valoranthura* belong to this group. Because of the primitive structure of their mouthparts, these genera were considered as Anthuridae for a long time. Only recently it has been discovered that the Paranthuridae evolved slowly from a more primitive type (192). Therefore all the above mentioned genera have been included in the family Paranthuridae, though for many species only few features were known (192, 195). It became evident that the genus *Anthelura* also belongs to this group when Kensley (71) synonymized *Bathura* and *Ananthura* with *Anthelura* and later, one of us (J. W. Wägele) had the chance to examine the type species *Anthelura elongata*. The genus, as defined by the type species, has no statocysts, the pereopods bear several long "sensory spines", pereopods 1-3 are subchelate. Nevertheless the taxonomic situation remains unsatisfactory. The following problems appear: "*Ananthura rigida*" has a maxilliped similar to that of *Valoranthura*, but further comparison is not possible for lack of data; no details about antennae and tailfan of *Valoranthura* are known; *A. rigida* needs a redescription. *Bathura* and *Austranthura* have a maxilliped like *Anthelura*, but they also have different features (mandible with reduced *pars molaris*, large tailfan with distally acute uropodal exopod). Accordingly it is not at all clear which features are the apomorphies that characterize the genus *Anthelura* and which species really belong to it.

*Diaphoranthura* and *Anthomuda* seem to be very similar, but for further comparisons redescriptions are necessary.

We regret that in these cases and in some other ones no better solution can be offered now than to leave the species with their presently valid names, hoping that in near future better descriptions will be available.

*Anthelura fresii* superficially resembles the type species *A. elongata*, but the similarities are merely plesiomorphies (maxilliped, carpi of pereopods). *A. fresii* really has 2 statocysts, one sensory spine on carpi and propodi and belongs to the genus *Malaconthura* in its present definition Kensley (79).

The description of *Minyanthura* is very brief. The genus is similar to *Apanthuroides*, but it is not clear whether 2 statocysts are present or whether they have been confused with cuticular dimples (which are also present in *Apanthuroides*) or muscular insertions. Therefore we left a question mark behind the "P" (P for Paranthuridae).

*Pendantura* superficially resembles *Minyanthura* but has different mouthparts of the Anthuridae-type with broad maxilliped, probably 2 statocysts are present.

The following new synonyms are proposed in table 1: *Malaconthura cantabrica* Kensley, 1982 = *M. fresii* (Wägele, 1980), *Apanthura pallida* Wägele, 1981 = *A. motasi* Negoescu, 1980, *Natalanthura spathulicauda* Wägele, 1981 and *N. mediterranea* Negoescu, 1981 = *Apanthuroides spathulicauda* (Wägele, 1981), *Delixanthura* Kensley, 1982 = *Kupellonura* Barnard, 1925, *Heteranthura* Kensley, 1980 = *Fisathistas* Haswell, 1884, *Corulanthura ardea* Poore & Kensley, 1981 = *Expanthura ardea* (Poore & Kensley, 1981).

TABLE 1

## World list of anthuridean isopods

Genus, species, family	Depth (m)	Geographical distribution	Habitat	Bibliography
1	2	3	4	5
ACCALATHURA Barnard, 1925 [P]				
— <i>A. barnardi</i> (Nierstrasz, 1941) <i>Katandura barnardi</i> Nierstrasz, 1941	113	Pacific Oc., Indonesia, Sular Str.	?	128, 151
— <i>A. buszi</i> Poore, 1901	4—19	Pacific Oc., Australia (Victoria)	sand	152
— <i>A. burrudaii</i> (Stebbing, 1904) <i>Calathura burrudaii</i> Stebbing, 1904	0.5—42	Indian Oc., Africa (Kenya, Tanzania, Zanzibar, Madagascar), India (Quilon, Chilka Lake), Maldive Is.; Pacific Oc., Thailand	reefs, atolls; sand	8, 42, 120, 121, 128, 146, 151, 152, 177
— <i>A. crassa</i> Barnard, 1925*	?	Caribbean Sea, Barbados Is., St. John Is., St. James Is.	?	8, 110, 128, 167
— <i>A. crenulata</i> (Richardson, 1901) — type species <i>Calathura crenulata</i> Richardson, 1901	1—131	Atlantic Oc., Bahamas, Capu Verde Is.; Mexico C.; Caribbean Sea (Belize, Puerto Rico); Brazil	reefs, mangroves (algal mat); coarse sediments, calcareous algal, mud; stomach of parrotfish <i>Carapus bermudensis</i> .	8, 70, 84, 105, 107, 110, 155, 156, 167, 169
— <i>A. gigantissima</i> Kussakin, 1967	133—655	Antarctica; off George V Land, off Adelle Land, Lars Christensen Coast, off Shackleton Ice Shelf, Weddell S.	mud	90, 152
— <i>A. gigas</i> (Whitelegge, 1901) <i>Calathura gigas</i> Whitelegge, 1901	8—2337	Indian Oc., Seychelles Is., W. a. S Australia; Pacific Oc., S Australia (New South Wales, Victoria), Tasmania; Antarctica (George V Land, Adelle Land, Shackleton Ice Shelf)	mud	8, 53, 120, 128, 152, 185, 205

1	2	3	4	5
— <i>A. indica</i> (Nierstrasz, 1941) <i>Metanthura indica</i> Nierstrasz, 1941	17— 110	Indian Oc., S Africa (Natal), Mozambique, Djawa Sea (Flores)	?	66, 80, 128, 151
— <i>A. laevitelson</i> (Kensley, 1975) <i>Kaunthura laevitelson</i> Kensley, 1975 <i>Zulanthura laevitelson</i> (Kensley, 1975)	30	Indian Oc., S Africa (Still B.)	coarse sand, shells	63, 60, 80, 151
— <i>A. normani</i> (Nierstrasz, 1941) <i>Metanthura normani</i> Nierstrasz, 1941	16—23	Pacific Oc., Indonesia, Sulu Sea	?	123
— <i>A. ochotensis</i> Nunomura, 1976	390	Pacific Oc., Okhotsk Sea	sand, mud	92, 134
— <i>A. sladeni</i> (Stebbing, 1910) <i>Calathura sladeni</i> Stebbing, 1910 □ <i>Accalathura orientalis</i> (Stebbing, 1904) (?)	1—90	Indian Oc.: Mozambique, Madagascar, Somalia, Mauritius Is., Cargados Carajus Is., Saya de Moya Bank, Andaman Sea; Pacific Oc.; S Australia, Thailand, Sumatra	?	8, 53, 76, 120, 151, 152, 179, 185
— <i>A. sp.</i> — Miller, 1968*	15	Atlantic Oc., Bahamas	anchor of buoys	110
— <i>A. sp.</i> — Poore, 1931*	21	Pacific Oc., Australia (New South Wales)	epifauna, with sponges	152
— <i>Accalathura?</i> — Menzies & Frankenberg, 1966*	?	Atlantic Oc., off Georgia	?	105, 151
AENICMATHURA Thomson, 1951 [P]				
— <i>A. lactuca</i> Thomson, 1951 — type species —	0—24	Indian Oc., W of S Australia (Rottnest Is., Victoria)	?	152, 185
AGULANTHURA Kensley, 1975: see MALACANTHURA				
ALLOANTHURA Kensley, 1980 [A] □ INDANTHURA Pillai & Eapen, 1966 (?)				63, 68
— <i>A. larwoodi</i> Wägele, 1981 <i>Exanthura filiformis</i> sensu Larwood, 1940	109	Mediterranean, Israel, Egypt	?	8, 95, 194
— <i>A. sculpta</i> Kensley, 1980 — type species —	135	Indian Oc., Mozambique	?	76

1	2	3	4	5
AMAKUSANTHURA Nunomura, 1977 [A]				
— <i>A. longianterata</i> Nunomura, 1977* — type species —	3—4	Pacific Oc., Japan (Tomiooka B.)	<i>Zostera marina</i> bed	136
ANANTHURA Barnard, 1925: see ANTHELURA and VALORANTHURA				8, 71, 192
— <i>Ananthura flexibilis</i> Paeterik, 1932*	2890	Mediterranean, E Balearic Is.	?	142
ANTHELURA Norman & Stebbing, 1886 [P]				
— <i>A. abyssorum</i> Norman & Stebbing 1886: see VALORANTHURA				130
— <i>A. affinis</i> Richardson, 1902* <i>Apanthura affinis</i> sensu Stebbing, 1909	?	Atlantic Oc., Bermudas	?	8, 156, 157, 167
— <i>A. elongata</i> Norman & Stebbing, 1886 — type species —	1160—1590	Atlantic Oc., off Portugal; Mediterranean, SE Punta Campanella	?	8, 180
— <i>A. fiesii</i> Wägele, 1980: see MALACANTHURA				191
— <i>A. hamilei</i> (Munro, 1925): see MONODANTHURA				115
— <i>A. luna</i> (Schultz, 1966)* <i>Bathura luna</i> Schultz, 1966	783—1296	Pacific Oc., California (Jolla Co., Coronado Co., Tanner Co.)	rock	166, 167
— <i>A. ovalis</i> (Barnard, 1925)* <i>Ananthura ovalis</i> Barnard, 1925	10—150	Mediterranean, E Sicily, Libya, Egypt	stone- with algae, coarse bioclastic sand, mud	8, 95
— <i>A. remipes</i> Barnard, 1914: see QUANTANTHURA				6
— <i>A. rigida</i> (Nunomura, 1976)* <i>Ananthura rigida</i> Nunomura, 1976	1000—1050	Pacific Oc., Japan Sea, Japan (Suruga B.)	?	135
— <i>A. sulcatiscuda</i> (Barnard, 1925)* <i>Ananthura sulcatiscuda</i> Barnard, 1925	560—800	N Atlantic Oc.	?	8, 167



1	2	3	4	5
— <i>A. truncata</i> (Hansen, 1916); see MALACANTHURA				54, 92, 103
— <i>A. sp.</i> — Petrónio & Kennig, 1972* —	?	Atlantic Oc., N s. NE Brazil (Rio de Janeiro)	?	
— <i>A. sp.</i> — Lo Bianco, 1903*	1100	Mediterranean, Naples C.	?	96
ANTHOMUDA Schultz, 1979 [P]	90	Atlantic Oc., S Bermudas	sand, rocks	170
— <i>A. steenotelson</i> Schultz, 1979*				
— type species —				
ANTHURA Leach, 1814 [A]				39
— <i>A. affinis</i> Chilton, 1882; see MESANTHURA				
— <i>A. arctica</i> Heller, 1876; see CALATHURA				61
— <i>A. brachiata</i> Stimpson, 1854; see CALATHURA				100
— <i>A. brunea</i> Harger, 1873; see CYATHURA				
— <i>A. carinata</i> Kroyer, 1847; see CYATHURA				86
— <i>A. catenula</i> Stimpson, 1855; see MESANTHURA				
— <i>A. bifurcata</i> Lucas, 1849; see EXANTHURA and NEMANTHURA				99
— <i>A. flagellata</i> Chilton, 1882; see PARANTHURA				37
— <i>A. gracilis</i> (Montagu, 1808) — type species — <i>Oniscus gracilis</i> Montagu, 1808	2-73	Atlantic Oc., W Ireland, S a.E. England, English Channel, N France, Biscay G., Baltic Sea, North Sea., Morocco: Mediterranean, Sicily, Napoli G., Adriatic Sea	vegetation, polychaets' tubes, sand, rocks (marine and brackish waters)	7, 8, 16, 92, 113, 122, 130, 171, 174, 183, 191
— <i>A. gracilis</i> sensu De Kay 1844; see CYATHURA				
— <i>A. laevigata</i> Stimpson, 1855; see LEPTANTHURA				
— <i>A. linguicauda</i> Burard, 1920; see <i>Haliophasma</i>				7
— <i>A. nigropunctata</i> Lucas, 1849; see PARANTHURA				99

1	2	3	4	5
— <i>A. pulita</i> Stimpson, 1855 see CYATHURA				
— <i>A. punctata</i> Stimpson, 1855; see PARANTHURA				55
— <i>A. tenuis</i> (Harger, 1876): see PTILANTHURA				
APANTHURA Stebbing, 1900 [A]				
— <i>A. addui</i> Wägele, 1981	0.7—4	Indian Oc., Maldive Is.	reef, lagoon: sand	194 156
— <i>A. affinis</i> (Richardson, 1902); see ANTHELURA				
— <i>A. africana</i> Barnard, 1914	11—200	Atlantic Oc. s. Indian Oc., S Africa (Luderitz to Jeffreys B.)	sand, shells, rocks	6, 68
— <i>A. californiensis</i> Schultz, 1964	30	Pacific Oc., S Cali- fornia	sand	165, 167
— <i>A. coppingeri</i> Barnard, 1925 ≡ <i>Paranthura nuxtomis</i> sensu Miers, 1884 (?)	27—31	Indian Oc., SW Ma- dagascar, N Austr- lia (Darwin Str.)	?	8, 38, 128
— <i>A. corsica</i> Anar, 1952 ≡ <i>Apantura sandulensis</i> sensu Larwood, 1949 (?)	0—30	Mediterranean, Cor- sica Is., Naples G., Israel, Egypt (?), Morocco (?)	rhizomes of <i>Posidonia</i> <i>oceanica</i>	1, 191
— <i>A. dubia</i> Barnard, 1914	0—200	Atlantic Oc. s. In- dian Oc., S Africa (Saldanha B. to Transkei)	stones	6, 80
— <i>A. excavata</i> Mezhev, 1976	30	Pacific Oc., Kurile Is.	stones, <i>Litho- othamnion</i>	92, 169
— <i>A. geminata</i> Kensley, 1982 ≡ <i>A. harringtonensis</i> Wägele, 1981	0.2—1.5	Caribbean Sea, Hon- duras G., Belize (Carrizow Cay)	mangroves coral rubble, coarse sedi- ments	78
— <i>A. harringtonensis</i> Wä- gele, 1981	?	Atlantic Oc., Ber- mudas (Harrington Sound)	?	192
— <i>A. hoashuensis</i> Wägele	inter- tidal	Pacific Oc., Japan, Hochu Is. (Sagami B.)	rocky tide pool	211
— <i>A. inornata</i> Miller & Mezies, 1952	?	Pacific Oc., Hawaii Is.	reef	112
— <i>A. insignifica</i> Kensley, 1978	90—650	Indian Oc., S Africa (S East London to Zululand)	?	67, 80
— <i>A. lbyana</i> Negulescu, 1980	26—100	Mediterranean, Libya	sand, muddy sand, maerl, sponges	125

1	2	3	4	5
— <i>A. magnifica</i> Menzies & Frankenberg, 1966 <i>Apanthuretz magnifica</i> (Menzies & Frankenberg, 1966)	2—154	Atlantic Oc., off Georgia, Florida, Bermudas, Cuba	?	74, 80, 106, 167, 170
— <i>A. mana</i> Kensley, 1979	1	Pacific Oc., Fiji Is.	reef; coral rubble	73
— <i>A. microps</i> Kensley, 1980	42—93	Indian Oc., E Arabian Sea, Mozambique (off Inhambane), off Somalia	?	76
— <i>A. motasi</i> Nergosen, 1980 <i>Apanthura pallida</i> Wägele, 1981	24—45	Indian Oc., Aden G.; Red Sea, Eilat G. (off Taba)	sand, silt	126, 194
— <i>A. pallida</i> Wägele, 1981: see <i>Apanthura motasi</i> Nergosen, 1980				
— <i>A. robertiana</i> (Monod, 1925) <i>Cyathura robertiana</i> Monod, 1925	?	Atlantic Oc., N a. W Africa, Morocco	?	116
— <i>A. sandalensis</i> Stebbing, 1900 — type species —	0—27(?)	Red Sea: Indian Oc., Mozambique, SW Madagascar, Mauritius Is., off Sumatra, India (Travancore, Chilka Lake?); Pacific Oc., Loyalty Is.	sand	3, 42, 68, 76, 93, 146, 175
— <i>A. senegalensis</i> Barnard, 1925*	9	Atlantic Oc., Dakar	?	7, 8
— <i>A. serricauda</i> Barnard, 1920: see PANATHURA				7
— <i>A. signata</i> Menzies & Glynn, 1968 <i>Apanthuretz signata</i> (Menzies & Glynn, 1968)	0—24	Caribbean Sea, Puerto Rico, Hololurus G. (Belize — Carrie Bow Cay)	reef; <i>Porites</i> and <i>Millepora</i> clumps, coral rubble covered with algae, coarse sediments	107, 194
— <i>A. stanjeki</i> Wägele, 1981	0.5—11	Red Sea, Suez G. (Sinai), Eilat G. (Sinai)	lagoon; sand, silt	194
— <i>A. tyrrhenica</i> Wägele, 1980	33—330	Tyrrhenian Sea, Naples G., Sorrent Pen., E a. W Capri Is.	?	191
— <i>A. xenocheir</i> Stebbing, 1916*	?	Indian Oc., Seychelles Is.	reef; rocks	179

1	2	3	4	5
— <i>A. xerwykiae</i> Kensley & Ponce, 1982	1.3	Indian Oc., W Australia (Houtman Abrolhos Is.)	reef crest, coral rubble	82
— <i>A. sp.</i> — Nunomura, 1975*	?	Pacific Oc., Japan (Osaka G.)	<i>Undaria pinnatifida</i>	133
— <i>A. sp.</i> — Monod, 1925*	?	Atlantic Oc., N a. W Africa	?	116
<b>APANTHURETTA</b> Wägele, 1981 [A]				
— <i>A. lathrida</i> Wägele, 1982	?	Caribbean Sea, Cuba (Santiago de Cuba)	interstitial water, beach of coarse sand	198
— <i>A. pari</i> Wägele, 1981 — type species —	215—620	Red Sea, Elat G.	?	194
— <i>A. signifera</i> (Paul & Menzies, 1971) <i>Apantura signifera</i> Paul & Menzies, 1971	95	Caribbean Sea, Venezuela	?	143, 192
<b>APANTHUIROIDES</b> Menzies & Glynn, 1960 [P]				
— <i>A. lijienensis</i> (Kensley, 1979) <i>Natalanthurus fijianus</i> Kensley, 1979	1	Pacific Oc., Fiji Is. (Viti Levu)	reef, lagoon; coral rubble	75
— <i>A. foveolata</i> (Kensley, 1978) <i>Natalanthurus foveolata</i> Kensley, 1978 <i>Natalanthurus natalensis</i> Kensley, 1978	62—850	Indian Oc., Mozambique (S Beira), S Africa (Zululand to Transkei)	coarse sediments	67, 73, 80
— <i>A. millae</i> Menzies & Glynn, 1960 — type species —	6—21	Caribbean Sea, Puerto Rico, Honduras G. (Belize-Carrie Bow Cay)	reef; corals, algae, coarse sediments	78, 107
— <i>A. spathulicanda</i> (Wägele, 1981) <i>Natalanthurus spathulicanda</i> Wägele, 1981 <i>Natalanthurus mediterraneus</i> Negescu, 1981	70—183	Mediterranean, Tyrrhenian Sea, between Capri Is. a. Sorrent Pen., Cyprus, Libya	sand, algae	127, 195
<b>AUSTRANTHURA</b> Kussakin, 1967 [P]				
— <i>A. elegans</i> Kussakin, 1967 — type species —	100—198	S Indian Oc., Mc. Donald Is., Kerguelen Is.	stones, pebbles, sand	90
<b>BATHURA</b> Schultz, 1966: see <b>ANTHELURA</b>				166
<b>BELIZANTHURA</b> Kensley, 1982: see <b>KUPELLONURA</b>				78

1	2	3	4	5
BULLOWANTHURA Poore, 1978 [P]				
— <i>B. aquitanica</i> Kensley, 1982	641—860	Atlantic Oc., Biscay G.	?	79
— <i>B. pambota</i> Poore, 1978 — type species —	0—69	Pacific Oc., S Australia (New South Wales, Victoria)	sand	150
CAENANTHURA Kensley, 1970 [A]				
— <i>C. indica</i> Negulescu, 1978	2—110	NW Indian Oc., Djibouti, Pakistan, Oman G., Ormuz Str.	<i>Possidonia</i> , mud	126
— <i>C. siamensis</i> (Barnard, 1925) — type species — <i>Cyathura siamensis</i> Barnard, 1925	5—10	Pacific Oc., Siam C.	?	8
CALAMURA Bonne, 1920: see PARANTHURA				20
CALATHURA Norman & Stebbing, 1886 [P]				
— <i>C. affinis</i> Bonnier, 1896: see LEPTANTHURA				19
— <i>C. borradalei</i> Stebbing, 1904: see ACCALATHURA				177
— <i>C. brachiata</i> (Stimpson, 1854) — type species — <i>Anthura arctica</i> Heller, 1878 <i>Anthura brachiata</i> Stimpson, 1854 <i>Calathura brachiata</i> sensu Richardson, 1905 <i>Calathura norvegica</i> (Sars, 1873) <i>Paranthura arctica</i> (Heller, 1870) <i>Paranthura brachiata</i> (Stimpson, 1854) <i>Paranthura norvegica</i> Sars, 1873	5—2500	N Atlantic Oc., Canada, Greenland, Ireland, N England, Biscay G., North Sea, Norway Sea, Barents Sea, Kara Sea; Pacific Oc., Bering Sea, Okhotsk Sea	rocks, stones, gravel, sand, mud, clay	3, 54, 61, 92, 130, 157, 163, 164, 167, 173, 174, 180, 192
— <i>C. crenulata</i> Richardson, 1901: see ACCALATHURA				155
— <i>C. gigas</i> Whitelegge, 1901: see ACCALATHURA				306
— <i>C. sladeni</i> Stebbing, 1910: see ACCALATHURA				179
— <i>C. sp.</i> — Lo Bianco, 1903*	100	Mediterranean, Tyrrhenian Sea, Naples G., off Cape Sorrent)	?	98

1	2	3	4	5
— <i>C. sp.</i> — Stebbing, 1905* ? <i>Paranthura crassicornis</i> Harwell, 1881	20	Indian Oc., Ceylon Is.	vegetation on oysters	178
CALIFANTHURA Thomson, 1944: see COLANTHURA				
CENTRANTHURA Wägele, 1981 [A]				
— <i>C. eneus</i> (Kensley, 1975) <i>Haliopanus eneus</i> Kens- ley, 1975 — type species —	2—68	Atlantic Oc. & In- dian Oc., S Africa (Lambert's B. to Mossel B.)	fine sand, mud	64, 68, 80, 192
CETANTHURA Kensley, 1982 [A]				
— <i>C. leuconerua</i> Kensley, 1982 — type species —	620	SE Atlantic Oc., SW Africa (Walvis B., Walvis Ridge)	?	79
COLANTHURA Richardson, 1962 [P]				
— <i>C. anophthalma</i> Kussakin & Vasina, 1982	3—15	Indian Oc., off Ker- guelen Is.	vertical rock	93
— <i>C. caeca</i> Mezhev, 1976	15—30	Pacific Oc., Kurile Is.	rocks, stones, Lithotham- nion	92, 109
— <i>C. furcaxi</i> Poore, 1981	2—6	Pacific Oc., Tasma- nia	algae ( <i>Cau- locystis</i> , <i>Cau- terpa</i> )	152
— <i>C. latimana</i> Kussakin & Vasina, 1982	268	Indian Oc., off Ker- guelen Is.	?	93
— <i>C. nigra</i> Nunomura, 1975	2—15	Pacific Oc., Japan	rocks, sand, algae	133
— <i>C. ornata</i> Carvacho, 1977	2	Caribbean Sea, Gua- delupa Is.	mangroves; sand, <i>Phala- ssia</i>	34
— <i>C. peroni</i> Poore, 1981	0—20	Pacific Oc., Austr- alia (New South Wal- es, Victoria)	estuaries	152
— <i>C. pigmentata</i> Kensley, 1980	1.5	Indian Oc., N Ma- dagascar (Nosi Bé)	?	76
— <i>C. pinguin</i> Kensley, 1980	155—187	Indian Oc., Crozet Is. (Pingouin Is.)	?	75
— <i>C. rima</i> Poore, 1981	1—22	Pacific Oc., New Zealand (Snarua Is.)	crevices with brachiopods and sponges	153
— <i>C. simplicia</i> (Thomson, 1946) <i>Cracanthura simplicia</i> Thomson, 1946	?	Indian Oc., W Aus- tralia (Swan River Estuary)	algae	184

1	2	3	4	5
— <i>C. squamosissima</i> Menzies, 1951 <i>Califanthura squamosissima</i> (Menzies, 1951)	18—91	Pacific Oc., California	algae ( <i>Monocystis</i> )	92, 100, 100, 137, 167, 168
— <i>C. tenuis</i> Richardson, 1902 — type species —	?	Atlantic Oc., Bermuda Is.	?	156, 157, 167
— <i>C. uncinata</i> Kensley, 1973	159—775	Indian Oc., S Africa (N Natal to Transkei)	?	67, 80
— <i>C. sp.</i> — Kensley, 1982*	493	Atlantic Oc., N America, off New Jersey	?	79
CORALANTHURA Poore & Kensley, 1981 [P]				
— <i>C. arden</i> Poore & Kensley, 1981: see EXPANATHURA				151
— <i>C. endeavourae</i> Poore & Kensley, 1981 — type species —	1—13	Pacific Oc., NE Australia, Coral Sea	reefs	82, 154
CORTEZURA Schultz, 1977 [A]				
— <i>C. penascoensis</i> Schultz, 1977 — type species —	?	Pacific Oc., California C. (Sanora)	?	168
CRURANTHURA Thomson, 1944: see COLANTHURA				
CRUREGENS Chilton, 1902 [P]				
— <i>C. fontanus</i> Chilton, 1882 — type species —	40 cm— 95 cm	New Zealand (South Island, North Island)	subterranean, fresh-water, wells; gravel	38, 40, 174, 199
CURASSANTHURA Kensley, 1981 [P]				
— <i>C. canariensis</i> Wägele	intertidal	Atlantic Oc., Canary Is. (Lanzarote Is.)	gravel	202
— <i>C. hulma</i> Kensley, 1981 — type species —	1.5 above tide line	Caribbean Sea, Curaçao Is.	hypersaline intertidal water; coral rubble, gravel, rocks, interstices	77, 199
CYATHURA Norman & Stebbing, 1906 [A]				
— <i>C. beroni</i> Andreev		Pacific Oc., New Guinea		212

1	2	3	4	5
— <i>C. burbancki</i> Frankenberg, 1965	16—77	Atlantic Oc., N America (off Georgia, C. Cod to C. Hatteras)	brackish water (estuaries); sand	49, 92, 105, 141, 167,
— <i>C. carinata</i> (Krüyer, 1843) — type species — <i>Ankura bransa</i> Harger, 1875 <i>Ankura carinata</i> Krüyer, 1847 <i>Ankura gracilis</i> De Kay, 1844	0—36	NE Atlantic Oc., Baltic Sea (Sweden, Poland, Germany, Denmark), Kiel Canal, North Sea, Holland, SE England, English Channel, Ireland, N a. W France; Mediterranean (Morocco, Algeria, Egypt, Israel, Turkey, Adriatic Sea); S Africa. Asia are doubtful localities	freshwater and brackish water — rivers, estuaries, lagoons; marine: burrows into grounds; interstices, worms tubes	8, 22, 43, 44, 45, 86, 87, 92, 94, 96, 97, 111, 140, 167, 174, 189, 190, 192, 201, 203
— <i>C. chapmani</i> Andreev, 1962	?	Pacific Oc., South China Sea, N Kalimantan Is. (Borneo Is.)	subterranean freshwater, cave	3, 22
— <i>C. crocis</i> Barnard, 1925*	7	Caribbean Sea, St. Croix, Virgin Is.	?	8, 167
— <i>C. cubana</i> Neguescu, 1979	4	Caribbean Sea, SW Cuba	mangroves	123
— <i>C. cuborientalis</i> Hotosanana & Stock, 1982	?	Caribbean Sea, E Cuba	freshwater, interstitial, alluvia (gravel, sand)	22
— <i>C. curassavica</i> Stork, 1940	?	Caribbean Sea, Curaçao Is.	freshwater, interstitial, wells	22, 23, 167, 181
— <i>C. eremophila</i> Monod, 1925*	?	Atlantic Oc., W Africa, Mauritania	from fishes stomach	115
— <i>C. estuaria</i> Barnard, 1914	?	Atlantic Oc. a. Indian Oc., S Africa (Langebaan Lagoon, Zwartkops River to Zululand)	freshwater and brackish water; mud	6, 28, 68, 80
— <i>C. francispori</i> Neguescu, 1981	0.15	Suez Canal; Indian Oc., Arabian S. (W of Karachi)	?	127
— <i>C. higoensis</i> Nunomura, 1977	?	Pacific Oc., Japan	mouth of river	136
— <i>C. hummelincki</i> Hotosanana & Stock, 1982	0.5—2	Caribbean Sea, Aruba Is.	subterranean, freshwater and brackish water; gravel, sand, mud	22



1	2	3	4	5
— <i>C. indica</i> Barnard, 1925*	1—25	Indian Oc., SW India, Ceylon Is.; Pacific Oc., Thailand, Singapore	?	8
— <i>C. kikuchii</i> Nunomura, 1977	0.3—4	Pacific Oc., Japan	estuaries; sand, mud, <i>Zostera</i> bed	136
— <i>C. fionavillei</i> Monod, 1925; see MONODANTHURA				115
— <i>C. milleti</i> Chappuis, Delamare Duboutteville & Paulian, 1956	?	Indian Oc., Réunion Is.	subterranean, interstitial, freshwater	86
— <i>C. motasi</i> Botosaneanu & Stock, 1902	1	Caribbean Sea, Haiti Is.	subterranean, freshwater, wells	22
— <i>C. munda</i> Menzies, 1951	18—55	Pacific Oc., California	algae	100, 108, 167
— <i>C. naromimensis</i> Nunomura, 1974	0—15	Pacific Oc., Japan Sea, Japan (Sado Is.) N Kyushu Is.)	estuaries; sand, mud	132, 139
— <i>C. nuanneae</i> Wägele, 1982	0.50	Pacific Oc., New Caledonia	subterranean, littoral interstitial, beach; sand, gravel	197
— <i>C. orchidani</i> Negoescu-Vlădescu, 1983	?	Caribbean Sea, W Cuba	subterranean, freshwater, cave, lake; mud	209
— <i>C. parapatamica</i> Botosaneanu & Stock, 1902	?	Caribbean Sea, Jamaica Is.	subterranean, freshwater; aluvia (stones, gravel, sand, mud, detritus)	22
— <i>C. polita</i> (Stimpson, 1855) <i>Anthura polita</i> Stimpson, 1855 <i>Cyathura carinata</i> sensu Richardson, 1905 <i>Cyathura carinata</i> sensu Norman & Stebbing, 1934	0—35	W Atlantic Oc., Canada to Mexico G.	freshwater, brackish water; estuaries, tidal marshes; vegetation; sand, mud, detritus; tubicolous	26, 27, 29, 30, 31, 32, 33, 49, 89, 92, 105, 111, 141, 161, 167, 182
— <i>C. profunda</i> Kensley, 1932	508—2707	Atlantic Oc., Argentine Basin	?	79
— <i>C. pusilla</i> Stebbing, 1904*	18—?	Indian Oc., E Africa (Wasin?), Ceylon Is.	mixture of salt and fresh water, ?	176
— <i>C. robertiana</i> Monod, 1925; see <i>Apanthura</i>				116

1	2	3	4	5
— <i>C. rudolci</i> Kensley, 1980	0—78	Indian Oc., Mozambique; Pacific Oc., Siam G. (Thailand)	?	76
— <i>C. salpicinalis</i> Botosaneanu & Stock, 1982	?	Caribbean Sea, Haiti Is.	subterranean, interstitial, brackish water, shore lakes; alluvia (gravel, sand)	22
— <i>C. shordanti</i> Argano, 1971	?	St. Mexico, S. Cordoba	subterranean, freshwater, cave	4, 5
— <i>C. siamensis</i> Barnard, 1925: see CAENANTHURA				8
— <i>C. specus</i> Bowman, 1965	?	Caribbean Sea, N Cuba	subterranean, freshwater, cave, lake; mud	23, 167
— <i>C. truncata</i> Hansen, 1916: see MALACANTHURA				54
— <i>C. univiam</i> Botosaneanu, 1983	?	S America, Venezuela, Morucuy Pen., Cuevas de Mayorguines	subterranean, o'ighaline, cave	213
— <i>C. sp.</i> — Botosaneanu & Stock, 1982*	2—?	Caribbean Sea, Haiti Is.	subterranean, freshwater, wells; sand, roots	22
— <i>C. sp.</i> — Botosaneanu & Stock, 1982	?	Caribbean Sea, Saint-Martin Is.	subterranean, freshwater, stream	22
— <i>C. sp.</i> — Buchanan, 1958*	6—15	Atlantic Oc., off Ghana	sand	25
— <i>C. sp.</i> — Nunomura, 1977*	(?) 0—15	Pacific Oc., Japan (E Shikoku Is.)	beach, shells	136
— <i>C. sp.</i> — Petráňo & Kocouň, 1972*	?	Atlantic Oc., N. of NE Brazil	?	
<b>DIAPHORANTHURA</b> Kensley, 1980 [P]				
— <i>D. cracens</i> Kensley, 1980 — type species —	42—61	Indian Oc., Mozambique, off Somalia	?	76
— <i>D. hapla</i> Kensley, 1980	1.5—110	Indian Oc., Mozambique, N Madagascar, E St. Mauritius	?	76
<b>EDANTHURA</b> Boone, 1923: nomen nudum				
— <i>E. hesusis</i> Boone, 1923: nomen nudum	.			21

1	2	3	4	5
EISOTHISTOS Haswell, 1884 [H]				
— <i>E. anomala</i> (Kensley, 1980) <i>Heteranthura anomala</i> Kensley, 1980	1—1.5	Indian Oc., N Madagascar (Nosi Bé)	corals, sponges	76
— <i>E. antarcticus</i> Vanhöffen, 1914	252—385	Antarctica (Adelie Land, Wilhem II Land, Ross Sea, Weddell S.)	tubicolous (?)	53, 186
— <i>E. atlanticus</i> Vanhöffen, 1914*	9—10	Atlantic Oc., Cape Verde Is., Caribbean Sea (St. Thomas Is.)	?	167, 186
— <i>E. bataviae</i> Kensley & Pore, 1982	1.3	Indian Oc., W Australia (Houtman Abrolhas Is., Rat Is.)	reef; coral rubble, polychaets tubes	22
— <i>E. crateris</i> Kensley, 1976	2—15	S Indian Oc., St. Paul Is.	rock rubble, sponges, bryozoa	65
— <i>E. macrurus</i> Wägele, 1979	3—35	Mediterranean, Tyrrhenian Sea, Naples G.; Israel	rocks, polychaets tubes (Serpulidae)	187, 196
— <i>E. maledivensis</i> Wägele, 1979	17—35	Indian Oc., Maldive Is.	atoll; corals, polychaets tubes	107
— <i>E. minutus</i> Sivertsen & Holthuis, 1980	0—5	S Atlantic Oc., Tristan da Cunha Is.	algae ( <i>Lithothamnion</i> , <i>Macrocystis</i> )	172
— <i>E. moreirai</i> (Pires, 1981) <i>Heteranthura moreirai</i> Pires, 1981	3	Atlantic Oc., S Brazil (São Paulo)	algae ( <i>Sargassum</i> , <i>Gelaxaura</i> )	143
— <i>E. pumilus</i> Wägele, 1979	0—30	Mediterranean, Naples G.	polychaets tubes (Serpulidae)	187
— <i>E. vermiformis</i> Haswell, 1884* — type species —	0	Pacific Oc., SE Australia (New South Wales-Watson's B.)	polychaets tubes	6, 59, 174 187
EXALLANTHURA Kensley, 1980 [A]				
— <i>E. sexpes</i> Kensley, 1980 — type species —	0—49	Indian Oc., off Somalia, off Singapore	?	76
EXANTHURA Barnard, 1914 [A]				
— <i>E. adinae</i> Negoescu, 1980	24—110	NW Indian Oc., Oman G., Aden G.	mud, sand, calcareous algae, maerl	126
— <i>E. austroafricana</i> (Kensley, 1982) <i>Exanthura filiformis</i> sensu Barnard, 1920, Nierstrasz, 1941, Kensley, 1975	19—620	Atlantic Oc. a. Indian Oc., S Africa (Saldanha B. to Natal)	?	7, 69, 80, 126

1	2	3	4	5
<i>Haliophasma austroafricana</i> Kensley, 1982				
— <i>E. filiformis</i> (Lucas, 1849) sensu Larwood, 1940: see ALLOANTHURA				93, 99
— <i>E. macrura</i> Barnard, 1914 — type species —	?	Atlantic Oc. a. Indian Oc., S Africa (Lüderitz to False B.)	polychaets tubes	6, 8, 63
— <i>E. sp.</i> — Kensley, 1975*	200	Indian Oc. S Africa (Still B.)	rocks, coarse sand	64
<b>EXPANATHURA</b> Wägele, 1981 [P]				
— <i>E. amstelodami</i> (Kensley, 1976) — type species — <i>Panathura amstelodami</i> Kensley, 1976	15—80	Indian Oc., Mozambique, S Madagascar, S Africa (Natal), Amsterdam Is.	rocks crevices, kelp holdfasts, epifauna of bryozoans and sponges	65, 76, 80, 192
— <i>E. ardea</i> (Poore & Kensley, 1981) <i>Coralanthura ardea</i> Poore & Kensley, 1981 <i>Panathura ardea</i> (Poore & Kensley, 1981)	3—5	Indian Oc., W Australia (Houtman Abrolhas Is.); Pacific Oc., E Australia, S Great Barrier Reef	reef; coral rubble, algae	154
— <i>E. collaris</i> (Kensley, 1979) <i>Panathura collaris</i> Kensley, 1979	1—3	Pacific Oc., Fiji Is. (Cook Is.)	reef; coral rubble, algae, coarse sediment	73
— <i>E. haddae</i> (Kensley & Poore, 1982) <i>Panathura haddae</i> Kensley & Poore, 1982	1.3	Indian Oc., W Australia (Houtman Abrolhas Is.)	reef; coral rubble	82
— <i>E. macronesia</i> (Kensley, 1980) <i>Panathura macronesia</i> Kensley, 1980	1—1.5	Indian Oc., N Madagascar, E Mauritius Is.	?	76
<b>FILANTHURA</b> Wägele, 1981; see MALACANTHURA				192
<b>HALIOPHASMA</b> Haswell, 1881 [A]				
— <i>H. alaticauda</i> Amar, 1966	470—500	Mediterranean, S France (Lyon G.-Cassis B.)	mud	2
— <i>H. austroafricana</i> Kensley, 1982: see EXANTHURA				111
— <i>H. barnardi</i> (Monod, 1927): see NOTANTHURA				118
— <i>H. caecus</i> Kensley, 1975: see CENTRANTHURA				64

	2	3	4	5
— <i>H. canale</i> Poore, 1975	3—19	Pacific Oc., SE Australia (Victoria)	clayey-silt to coarse sand sediments	149
— <i>H. caprii</i> Wägele, 1981	711	Mediterranean, Tyr- rhenian Sea (bet- ween Capri Is. a. Sorrent Pen.)	?	194
— <i>H. coronicauda</i> Barnard, 1925: see MALACANTHURA				8
— <i>H. cribensis</i> Poore, 1975	7—15	Pacific Oc., SE Australia (Victoria)	sand	149
— <i>H. curri</i> Paul & Menzies, 1971	0—95	Caribbean Sea, Ve- nezuela (Cariaco Bas- in); Pacific Oc., Pa- nama B.	?	74, 143
— <i>H. cycneum</i> Poore, 1975		Pacific Oc., SE Australia (Victoria)	mud	149
— <i>H. dakarensis</i> Barnard, 1925*	21—26	Atlantic Oc., W Africa (Dakar)	?	8
— <i>H. elongatum</i> Poore, 1975	21—72	Pacific Oc., SE Australia (New South Wales)	muddy sand to gravelly sand	149
— <i>H. falcatum</i> Poore, 1975	7—18	Pacific Oc., SE Australia (Victoria)	sandy gra- vel, fine sand — mud sediments	149
— <i>H. foveolata</i> Barnard, 1940: see MALACANTHURA				11
— <i>H. geminata</i> Menzies & Bar- nard, 1959 <i>Silophasma geminatum</i> (Menzies & Barnard, 1959)	9—512	Pacific Oc., S California (Santa Ca- talina Is., Santa Ro- sa Is., Monterey B., Bahia San Quentin)	sand, clay, mud	104, 167, 168
— <i>H. hermani</i> Barnard, 1940: see MALACANTHURA				11
— <i>H. irmae</i> Paul & Menzies, 1971: see NEMANTHURA				143
— <i>H. maculata</i> Haswell, 1981: see MESANTHURA				57
— <i>H. ornatum</i> Barnard, 1957: see MALACANTHURA				13
— <i>H. palmatum</i> Wägele, 1981	0.0—1	Red Sea, Elat G.	reef, lagoon; sand	194
— <i>H. pinnatum</i> Poore, 1975	46—66	Pacific O., SE Australia (New South Wales)	sand	149

1	2	3	4	5
— <i>H. poorei</i> Kensley, 1980	55—95	Indian Oc., off Somalia, India (off Bombay)	?	76
— <i>H. pseudocarinata</i> Barnard, 1940: see MALACANTHURA				11
— <i>H. pugnatum</i> Poore, 1975	0—16	Pacific Oc., SE Australia (Victoria)	muddy to coarse sand sediments	149
— <i>H. purpurea</i> Haswell, 1881 — type species —	?	Pacific Oc., SE Australia (New South Wales)	?	8, 57, 59
— <i>H. syrtis</i> Poore, 1975	12.5	Pacific Oc., SE Australia, Queensland (Moreton B.)	sand	149
— <i>H. tricarinata</i> Barnard, 1925	48—183	Atlantic Oc. a. Indian Oc., S Africa (Saldanha B. to S of East London)	?	8, 68, 80
— <i>H. valeriae</i> Paul & Menzies, 1971: see NEMANTHURA				143
— <i>H. yarra</i> Poore, 1975	3—11	Indian Oc., S Australia (Victoria-Port Phillip B.)	silty sand to sandy sediments	149
HEPTANTHURA Kensley, 1978 [H]				
— <i>H. novaezealandiae</i> Kensley, 1978 — type species —	101	Pacific Oc., New Zealand (North Island)	?	71
— <i>H. sp.</i> — Kensley & Poore, 1982*	1.3	Indian Oc., W Australia (Houtman Abrolhas Is., Rat Is.)	reef; coral rubble	82
HETERANTHURA Kensley, 1980: see EISOTHISTOS				76
HOROLOANTHURA Menzies & Frankenberg, 1966: see KUPELLONURA and NEOHYSSURA				105
HYSSURA Norman & Stebbing, 1886 [H]				
— <i>H. ligurica</i> Wägele, 1981	600—606	Mediterranean, Ligurian Sea	?	193
— <i>H. producta</i> Norman & Stebbing, 1886 — type species —	2653 2900	N Atlantic Oc.	?	8, 130, 167, 193
— <i>H. profunda</i> Barnard, 1925*	2018	Mediterranean (? off Corsica Is.)	?	8, 167

	1	2	3	4	5
— <i>H. spinicauda</i> Walker, 1901: see NEOHYSSURA					205
INDANTHURA Pillai & Eapen, 1966 [A]					
— <i>I. carinata</i> Pillai & Eapen, 1966	36	Indian Oc., SW India	mud		147
KATANTHURA Nierstrasz, 1941: see ACCALATHURA					128
KENSLEYANTHURA Wä- gele, 1981: see KUPELLONURA					192
KUPELLONURA Barnard, 1925 [H]					
— <i>K. capensis</i> (Kensley, 1975) <i>Horoloanthura capensis</i> Kensley, 1975 <i>Kensleyanthura capensis</i> (Kensley, 1975)	128—400	Atlantic a. Indian Oc., S Africa (Lam- bert's B. to Agulhas Bank)	sand, clay, mud		63, 80, 192
— <i>K. formosa</i> (Menzies & Frankenberg, 1966) <i>Panathura formosa</i> Menzies & Frankenberg, 1966	10—90	Atlantic Oc., off Georgia, E Florida	?		105, 192
— <i>K. mediterranea</i> Barnard, 1925 — type species —	70—380	Mediterranean, Tyr- rhenian Sea, Naples G., Sicily (Messina)	?		8, 193
— <i>K. serritelson</i> Wägele, 1981 <i>Belizanthura imswi</i> Kens- ley, 1982	0.1—33	Mediterranean, Tyr- rhenian Sea, Naples G.; Atlantic Oc., Bermudas; Carib- bean Sea, Belize (Carrie Bow Cay, Twin Cays)	rhizomes of <i>Posidonia o-</i> <i>ceanica</i> , sand with mud; mangroves (algal bed); coral rubble, coarse sedi- ments		78, 193
LEPTANTHURA Sars, 1897 [P]					
— <i>L. affinis</i> (Bonnier, 1896) <i>Calathura affinis</i> Bonnier, 1896	516— 2185	Atlantic Oc., Biscay B. Canary Is., Sier- ra Leone Basin, Gu- iana Basin	?		19, 79
— <i>L. agulhasensis</i> Kensley, 1975	26—320	Atlantic a. Indian Oc., S Africa (Sal- danha B. to East London)	gravel, shells, sand, mud		64, 80
— <i>L. antarctica</i> Kussakin, 1967	206—540	Antarctica, Davis Sea	gravel, sand, mud		90
— <i>L. apalpata</i> Wägele, 1981	300—800	Mediterranean, Tyr- rhenian Sea, Capri Is.	?		195

1	2	3	4	5
— <i>L. argentinae</i> Kensley, 1982	1002— 4392	Atlantic Oc., Argentina Basin	?	79
— <i>L. australis</i> (Haswell, 1881) <i>Paranthura australis</i> Haswell, 1881	31	Pacific Oc., Australia (N. Dundas Str., Queensland, New South Wales)	?	57
— <i>L. boweni</i> Poore, 1981	7—329	Pacific Oc., SE Australia (New South Wales, Victoria)	sandy to silty-sand sediments	152
— <i>L. chiltoni</i> (Beddard, 1886)* <i>Paranthura chiltoni</i> Beddard, 1886	1274	Pacific Oc., N New Zealand	mud	17
— <i>L. crassicornis</i> (Haswell, 1881); see ULAKANTHURA				51
— <i>L. dimenensis</i> (Haswell, 1884) <i>Paranthura dimenensis</i> Haswell, 1884	0—192	Pacific Oc., S Tasmania (Hobart), E a. S Australia (Queensland, New South Wales, Victoria)	coarse sand, shells	50, 150
— <i>L. elegans</i> Birstein, 1963	1226	NW Pacific Oc., Kurile Is.	?	18, 92
— <i>L. faurei</i> Barnard, 1914: see <i>Leptanthura laevigata</i> (Stimpson, 1855)				
— <i>L. flindersi</i> Poore, 1981	12—24	Pacific Oc., E Tasmania, SE Australia (New South Wales)	reef; sand and corallines	152
— <i>L. glacialis</i> Hodgson, 1910	50—5216	Antarctica (Röss Sea, Bellingshausen Sea, Weddel Sea); Atlantic Oc., King George Is., Shetland Is., Argentina Basin, Brazil (off Recife)	?	62, 79, 90
— <i>L. guianae</i> Kensley, 1982	516— 1487	Atlantic Oc., Guiana Basin	?	79
— <i>L. hendili</i> Wolff, 1956	6490— 6650	Pacific Oc., Indonesia, Banda Trench	clay	207
— <i>L. kapala</i> Poore, 1978	1200	Pacific Oc., S Australia (New South Wales)	?	150
— <i>L. laevigata</i> (Stimpson, 1855) <i>Anthura laevigata</i> Stimpson, 1855 <i>Leptanthura faurei</i> Barnard, 1914	5—1360	Atlantic Oc., S Africa (Saldanha B. to Cape Pen.); Indian Oc., S Africa (Cape Pen. to Agulhas Bank; Durban	rocks, shells, sand, coral rubble	8, 63, 80, 126



	2	3	4	5
		to Mozambique Channel), Madagascar, E Mauritius Is., off Sumatera		
— <i>L. melanomma</i> Vanhöffen, 1914; see PARANTHURA				186
— <i>L. micrura</i> Kensley, 1982	520—2494	Atlantic Oc., Guiana Basin, Brazil (off Recife)	?	79
— <i>L. minuta</i> Kensley, 1978	550—850	Indian Oc., S Africa (Natal)	?	67
— <i>L. muelleri</i> Negoescu, 1980	62—63	Mediterranean, Libya	heterogeneous bottoms	125
— <i>L. murrayi</i> Poore, 1981	12—24	Pacific Oc., S Australia (Victoria)	sand, muddy sand	152
— <i>L. natalensis</i> Kensley, 1978	690—850	Indian Oc., S Africa (off Natal)	?	67, 80
— <i>L. nigrocaudata</i> Nunomura, 1975; see PARANTHURA				133
— <i>L. nunana</i> Poore, 1978	8—22	Pacific Oc., S Australia (Victoria)	sand, mud	150
— <i>L. orientalis</i> Barnard, 1925*	0—?	Indian Oc., Singapore	?	8
— <i>L. sculpta</i> Pasternak, 1982	1113	Mediterranean, Tyrrhenian Sea	?	142
— <i>L. tenuis</i> (Sars, 1873) — type species — <i>Paranthura tenuis</i> Sars, 1873	0—1500	N Atlantic Oc., North Sea, Norway (Bergen), Skagerrak Str., Denmark, Biscay B., Portugal, W Gibraltar	rocks, corals, sand, mud, crevices, polychaets tubes, clay	92, 130, 160, 164, 195
— <i>L. thalassae</i> Negoescu, 1980	24—110	NW Indian Oc., Aden G.	maerl, sand	126
— <i>L. thori</i> Barnard, 1925*	957	N Atlantic Oc., S off Iceland Is.	?	2, 92
— <i>L. truncata</i> Richardson, 1911*	888	Atlantic Oc., W Africa, Mauritania (N Arguin Bank)	muddy sand	150
— <i>L. urospinosa</i> Kensley, 1975	5—2000	Indian Oc., S Africa (False B. to Still B.)	rocks, gravel, shells, sand	64, 80
— <i>L. victori</i> Negoescu	1894 1950	Atlantic Oc., SE Biscay B.	mud	214
— <i>L. sp.</i> — Kensley, 1982*	520—1930	Atlantic Oc., Canary Is., Sierra Leone Basin, Guiana Basin, Brazil (off Recife)	?	79
— <i>L. sp.</i> — Lo Bianco, 1903*	18 950	Mediterranean, E Galli di Positano	?	98

1	2	3	4	5
— <i>L. sp.</i> — Menzies, 1962*	2997	Atlantic Oc., W Africa (Congo Submarine Cn.)	?	102
<b>MALACANTHURA</b> Barnard, 1925 [A]				
— <i>M. antarctica</i> Kensley, 1982	454—513	Antarctica, Weddell Sea	?	79
— <i>M. cantabrica</i> Kensley, 1982: see <i>Malacanthura fresii</i> (Wägele, 1980)				79
— <i>M. caribbica</i> Paul & Menzies, 1971 <i>Filanthura caribbica</i> (Paul & Menzies, 1971)	42—95	Caribbean Sea, Colombia, Venezuela	?	74, 143, 192
— <i>M. coronicauda</i> (Barnard, 1925) <i>Haliophasma coronicauda</i> Barnard, 1925	7—174	Atlantic a. Indian Oc., S Africa (Saldanha B. to Still B.)	coarse sand, shells	8, 80
— <i>M. cumanensis</i> Paul & Menzies, 1971 <i>Filanthura cumanensis</i> (Paul & Menzies, 1971)	95	Caribbean Sea, Venezuela	?	143, 192
— <i>M. foveolata</i> (Barnard, 1940) <i>Haliophasma foveolata</i> Barnard, 1940	0—120	Atlantic a. Indian Oc., S Africa (Saldanha B. to Port Elizabeth)	stones, corallines, shells, coarse sand, worms tubes	11, 12, 68, 90
— <i>M. fresii</i> (Wägele, 1980) <i>Anthelura fresii</i> Wägele, 1980 <i>Malacanthura cantabrica</i> Kensley, 1982	290—1739	Atlantic Oc., Biscay B.; Mediterranean, Tyrrhenian Sea., E Capri Is.		79, 191
— <i>M. hermani</i> (Barnard, 1940) <i>Haliophasma hermani</i> Barnard, 1940	0—?15	Indian Oc., S Africa (Hermanus C.)	cavity in root-stock of coral <i>Allopora</i>	11, 68, 80
— <i>M. linguicauda</i> (Barnard, 1920) — type species — <i>Anthura linguicauda</i> Barnard, 1920 <i>Apanthura linguicauda</i> (Barnard, 1920)	90—190	Indian Oc., S Africa (Cape Pen., Natal)	sponges	7, 68, 80
— <i>M. mombasa</i> Kensley, 1980	3.5	Indian Oc., E Africa, S Mombasa	reef	76
— <i>M. ornata</i> (Barnard, 1957) <i>Haliophasma ornatum</i> Barnard, 1957	0—?15	Atlantic Oc., S Africa (Table B.)	?	13, 68, 80
— <i>M. pseudocarinata</i> (Barnard, 1940) <i>Haliophasma pseudocarinata</i> Barnard, 1940	0—4	Atlantic a. Indian Oc., S Africa (Saldanha B. to Port Elizabeth)	rocks, stones	11, 68, 80

1	2	3	4	5
— <i>M. schotteae</i> Kensley, 1982	80—775	Indian Oc., S Africa (Still B. to Transkei)	?	80
— <i>M. serenasinus</i> (Kensley, 1975) <i>Agulanthura serenasinus</i> Kensley, 1975	5—125	Atlantic a. Indian Oc., S Africa (Saldanha B. to Still B.)	rocks, gravel, coral rubble, shells, fine sediments	63, 68
— <i>M. transkei</i> Kensley, 1982	710—775	Indian Oc., S Africa (Transkei)	?	80
— <i>M. truncata</i> (Hansen, 1916) <i>Cyathura truncata</i> Hansen, 1916 <i>Anthelura truncata</i> (Hansen 1916)	516—2870	Atlantic Oc., Greenland (Davis Str.), Biscay B., Canary Is., Sierra Leone a. Guiana Basin	?	54, 79, 167
MESANTHURA Barnard, 1914 [A]				
— <i>M. albinotata</i> Thomson, 1951*	?	Indian Oc., W Australia (Rottneest Is.)	worms tubes, sponges	185
— <i>M. albolineata</i> Barnard, 1925*	?	Indian Oc., Singapore	?	8
— <i>M. bipunctata</i> Thomson, 1951*	?	Indian Oc., W Australia (Rottneest Is.)	worms tubes, sponges	185
— <i>M. brasiliensis</i> Koenig, 1980	25—255	Atlantic Oc., Brazil (Paraiba a. Pernambuco States)	calcareous algae, <i>Hali-meda</i> bottom, a. <i>Halodule</i> beds	85
— <i>M. callicera</i> Pires, 1981	4	Atlantic Oc., S Brazil (Ubatuba)	<i>Sargassum</i> , <i>Galaxaura</i>	148
— <i>M. catenula</i> (Stimpson, 1855) — type species — <i>Anthura catenula</i> Stimpson, 1855	11—4	Atlantic a. Indian Oc., S Africa (Table B. to East London)	stones	6, 8, 68, 80
— <i>M. childi</i> Kensley, 1979	1	Pacific Oc., Fiji Is.	reef; coral rubble	73
— <i>M. decorata</i> Menzies & Glynn, 1968: see <i>Mesanthura pulchra</i> Barnard, 1925				107
— <i>M. dimorpha</i> Kensley, 1982	84—90	Indian Oc., S Africa (Natal to Port Elizabeth)	?	80
— <i>M. excelsa</i> Pires, 1981	?	Atlantic Oc., S Brazil (Itanhaem)	<i>Ulva</i>	148
— <i>M. fasciata</i> Kensley, 1982	0—24	Caribbean Sea, Belize (Carrie Bow Cay)	coral rubble, sand, <i>Thalassia</i> , <i>Syringodium</i>	78

1	2	3	4	5
— <i>M. floridensis</i> Menzies & Kruczynski, 1983	18.3—36.6	Atlantic Oc., Mexico G. (central W Florida)	?	208
— <i>M. gerlachi</i> Wägele, 1981	0—4	Indian Oc., Maldives Is.	reef, lagoon; sand with detritus, corals	194
— <i>M. hieroglyphica</i> Miller & Menzies, 1952	?	Pacific Oc., Hawaii Is.	?	112
— <i>M. javensis</i> Wägele,	upper littoral	Indian Oc., Java Is. (Seribu Is.)	sandy-coral bottom	211
— <i>M. maculata</i> (Haswell, 1881) ≡ <i>Anthura affinis</i> Chilton, 1882 (?) <i>Haliophasma maculata</i> Haswell, 1881 <i>Mesanthura miersi</i> (Haswell, 1881) ≡ <i>Paranthura miersi</i> Haswell, 1885 (?)	0—95	Indian Oc., S Madagascar, S India (Comorin C.), Ceylon Is.; Pacific Oc., SE Australia (New South Wales, Victoria), New Zealand (South Island)	reef; seaweed	8, 39, 57, 60, 76, 83, 146, 174
— <i>M. miersi</i> (Haswell, 1881) — see <i>Mesanthura maculata</i> (Haswell, 1881)				51
— <i>M. miyakoensis</i> Nunooura, 1979	3	Pacific Oc., S Japan, Ryukyu Is.	reef; rocks	138
— <i>M. nigrodorsalis</i> Nunooura, 1977	?	Pacific Oc., Japan, Amakusa Is.	<i>Sargassum</i>	196
— <i>M. nubifera</i> Wägele,	intertidal	Pacific Oc., Baja California, Turner Is.	?	210
— <i>M. occidentalis</i> Menzies & Barnard, 1959*	0—55	Pacific Oc., California G. (Bahia de San Quintin)	coarse sand, red algae, dead kelp	104, 167, 210
— <i>M. ocellata</i> Barnard, 1925*	1.82	Pacific Oc., Siam G., Thailand	?	8
— <i>M. paucidens</i> Menzies & Glynn, 1968	18	Caribbean Sea, Puerto Rico, Belize	reef; rocks, stones, gravel, coral rubble; algae ( <i>Laurencia</i> ); mangroves, sand, <i>Thalassia</i> , <i>Syringodium</i> ,	78, 107,
— <i>M. protei</i> Kensley, 1980	4—37	Indian Oc., Mozambique, Madagascar, W Australia (Houtman Abrolhas Is.); Thailand G. (KoSichang)	reef; coral rubble; in sponge	76
— <i>M. pulchra</i> Barnard, 1925 <i>Mesanthura decorata</i> Menzies & Glynn, 1968	2—33	Atlantic Oc., Mexico G., S Florida (Dry Tortugas); Caribbean Sea, Belize, St. Thomas Is., St. John Is., Puerto Rico	reef; stones, coral rubble, sand, algae	8, 72, 107, 147

1	2	3	4	5
— <i>M. punctillata</i> Kensley, 1982	0—12	Caribbean Sea, Belize (Carrie Bow Cay)	coral rubble	78
— <i>M. reticulata</i> Kensley, 1982	24	Caribbean Sea, Belize (Carrie Bow Cay)	coarse sediments	78
— <i>M. sp.</i> — Brusca, 1973* ≡ <i>Mesanthura occidentalis</i> Menzies & Barnard, 1959 (?)	0—?15	Pacific Oc., N California G.	algae	24, 104
— <i>M. sp.</i> — Petrônio & Koenig*, 1972	?	Atlantic Oc., N a. NE Brazil (C. Orange to C. Frio)	?	
— <i>M. sp.</i> — Poore, 1981*	?	S Pacific Oc., S New Zealand (Snares, Is.)	?	153
— <i>M. sp.</i> — Wägele	0.24	Indian Oc., Java Is., Pulau Nirvanah	?	211
<b>METANTHURA</b> Nierstrasz, 1941: see <b>ACCALANTHURA</b>				128
<b>MINYANTHURA</b> Kensley, 1982 [P ?]	6—24			
— <i>M. corallicola</i> Kensley, 1982 — type species —		Caribbean Sea, Belize (Carrie Bow Cay)	coral rubble	78
<b>MONODANTHURA</b> Wägele & Platvoet, 1982 [A]				
— <i>M. liouvillei</i> (Monod, 1925) <i>Cyathura liouvillei</i> Monod, 1925 <i>Anthelura liouvillei</i> (Monod, 1925)	?	Atlantic Oc., NW Africa (Morocco, Mauritania)	?	115
— <i>M. maroccana</i> Wägele & Platvoet, 1982 — type species —	0—?15	Atlantic Oc., NW Africa (Morocco)	sand, <i>Zostera</i>	203
<b>NATALANTHURA</b> Kensley, 1978: see <b>APANTHUROIDES</b>				67
<b>NEMANTHURA</b> Wägele, 1981 [A]				
— <i>N. irmae</i> (Paul & Menzies, 1971) <i>Haliophasma irmae</i> Paul & Menzies, 1971	95	Caribbean Sea, off Venezuela	?	143, 192
— <i>N. valeriae</i> (Paul & Menzies, 1971) — type species — <i>Haliophasma valeriae</i> Paul & Menzies, 1971	95	Caribbean Sea, off Venezuela	?	143, 192
— <i>N. sp.</i> <i>Exanthura filiformis</i> sensu Barnard, 1958 (?)	58—173	Atlantic a. Indian Oc., S Africa (Table B. to Agulhas Bank)	?	14, 192

1	2	3	4	5
— NEOANTHURA Menzies, 1956 [P]				
— <i>N. coeca</i> Menzies, 1956 — type species — ≡ LEPTANTHURA (?)	1217	Caribbean Sea, S Jamaica Is.	pteropod and foraminiferal ooze	101, 167
NEOHYSSURA Amar, 1952 [H]				
— <i>N. irpex</i> (Menzies & Frankenberg, 1966) <i>Horoloanthura irpex</i> Menzies & Frankenberg, 1966	87	Atlantic Oc., N America, off Georgia	?	105, 167, 193
— <i>N. skolops</i> Kensley, 1978	90—850	Indian Oc., S Africa (East London to Natal)	?	67, 80
— <i>N. spinicauda</i> (Walker, 1901) — type species — <i>Hyssura spinicauda</i> Walker, 1901	1—40	Mediterranean, France, Corsica Is., Naples G., Morocco, Libya	sand, rhizomes of <i>Posidonia oceanica</i>	1, 50, 116, 193, 204
NOTANTHURA Monod, 1927 [A]				
— <i>N. barnardi</i> Monod, 1927 — type species — <i>Haliophasma barnardi</i> (Monod, 1927)	?	Atlantic Oc., W Africa, Guinea G., Niger Delta, Cameroon	brackish water, mangroves; from <i>Dasyatis margarita</i> stomach	72, 118, 119,
OCSANTHURA Kensley, 1978 [H]				
— <i>O. bacescui</i> George & Negoescu-Vlădescu, 1982	445	W Atlantic Oc., N American, off North Carolina	?	51
— <i>O. gracilis</i> Kensley, 1982	1500— 1700	Atlantic Oc., Bermuda Is.	?	79
— <i>O. vimsae</i> Kensley, 1978 — type species —	350— 1934	Atlantic Oc., N America (New Jersey, Virginia), Canary Is., Guiana a. Argentina Basin	fine sand	70
<i>Oniscus gracilis</i> Montagu, 1808: ANTHURA				122
PANANTHURA Barnard, 1925 [P]				
— <i>P. amstelodami</i> Kensley, 1976: see EXPANANTHURA				65
— <i>P. ardea</i> (Poore & Kensley, 1981): see EXPANANTHURA				82, 154
— <i>P. collaris</i> Kensley, 1979: see EXPANANTHURA				

	2	3	4	5
— <i>P. formosa</i> Menzies & Frankenberg, 1966: see KUPELLONURA				105
— <i>P. haddae</i> (Kensley & Poore, 1982): see EXPANATHURA				82
— <i>P. macronesia</i> Kensley, 1980: see EXPANATHURA				76
— <i>P. serricauda</i> (Barnard, 1920) — type species — <i>Apanthura serricauda</i> Barnard, 1920	0—90	Atlantic a. Indian Oc., S Africa (Lüderitz to Fast London), SW Madagascar, St. Paul Is.	holdfasts of the kelp <i>Ecklonia maxima</i>	7, 8, 65, 80, 192
PARANTHURA Bate & Westwood, 1866 [P]				
— <i>P. alba</i> Nunomura, 1977	0—?15	Pacific Oc., Japan (Tsujishima Is.)	boulders, shells, sand	136
— <i>P. algicola</i> Nunomura, 1978*	?	Pacific Oc., California	“rocky beach” washed from algae	137
— <i>P. antarctica</i> Kussakin, 1967	3—334	S Indian Oc., Crozet Is., Kerguelen Is.; Antarctica, Princess Astrid Land, Atka B.	rocks, pebbles, mud	90
— <i>P. antillensis</i> Barnard, 1925*	29	Caribbean Sea, St. John Is., St. James Is.	?	8
— <i>P. arctica</i> (Heller, 1878): see CALATHURA				61
— <i>P. argentinae</i> Kussakin, 1967	399—508	Atlantic Oc., Argentina Basin	?	90
— <i>P. astrolabium</i> Kensley, 1979	5—13	Pacific Oc., Fiji Is.	reef; calcareous algal rubble	73
— <i>P. australis</i> Haswell, 1881: nomen dubium (see LEPTANTHURA)				57
— <i>P. barnardi</i> Paul & Menzies, 1971*	95	Caribbean Sea, off Venezuela (Cariaco Trench)	?	143
— <i>P. bellicauda</i> Miller & Menzies, 1952	?	Pacific Oc., Hawaii Is.	?	112
— <i>P. brachiata</i> (Stimpson, 1854): see CALATHURA				180
— <i>P. californiae</i> Nunomura, 1978*	18—27	Pacific Oc., California G. (Magdalena B.)	?	137

1	2	3	4	5
— <i>P. caribbiensis</i> Kensley, 1982	shallow water	Caribbean Sea, Belize (Carrie Bow Cay)	mangroves; coral rubble	78
— <i>P. chiltoni</i> Beddard, 1886; see LEPTANTHURA				17
— <i>P. ciliata</i> Whitelegge, 1901; see <i>Paranthura flagellata</i> (Chilton, 1882)				206
— <i>P. costana</i> Bate & Westwood, 1866 <sup>1</sup> — type species — <i>Anthura gracilis</i> sensu Milne Edwards, 1840 <i>Idotea penicillata</i> Risso, 1816 (?) <i>Leptanthura melanomma</i> Vanhöffen, 1914 <i>Oliska penicillata</i> Risso, 1816 (?) <i>Paranthura nigropunctata</i> Norman & Stebbing, 1886	0—355	Mediterranean, France, Corsica Is., Italy (Naples G.), Turkey; Atlantic Oc., English Channel, SW England, N France, Shetland Is., Canary Is., Cape Verde Is., Morocco	rocks, stones, vegetation ( <i>Cystoseira Halopteris</i> , <i>Padina</i> , rhizomes of <i>Posidonia oceanica</i> , <i>Zostera</i> )	8, 16, 46, 47, 92, 113, 117, 130, 160, 174, 186, 200
— <i>P. crassicornis</i> Haswell, 1881; see ULAKANTHURA				57
— <i>P. dimenensis</i> Haswell, 1884; see LEPTANTHURA				60
— <i>P. elegans</i> Menzies, 1951*	0—55	Pacific Oc., California	rocks, algal holdfasts of <i>Macrocystis</i> , <i>Laminaria</i> ; coralline algae	92, 100, 108, 167
— <i>P. flagellata</i> (Chilton, 1882) <i>Anthura flagellata</i> Chilton, 1882 <i>Paranthura ciliata</i> Whitelegge, 1901	0—107	Pacific Oc., S Australia (New South Wales), New Zealand (South Island) Snares Is.	seaweed in rock-pools, crustose and red algae	37, 153, 205
— <i>P. floridensis</i> Menzies & Kruczynski, 1983	73.2	Atlantic Oc., Mexico G. (W Florida)	?	208
— <i>P. gracilipes</i> Nordenstam, 1930	30—40	Pacific Oc., Juan Fernandez Is.	sand, calcareous algae	129
— <i>P. hasticauda</i> Nunomura, 1974	?	Pacific Oc., Japan, Kii Pen. (Hiki River mouth)	sand	131
— <i>P. infundibulata</i> Richardson, 1902 <i>Paranthura verrillii</i> Richardson, 1902	0.30— 0.60	Atlantic Oc., Bermudas, E Florida; Caribbean Sea, Belize (Carrie Bow Cay), St. Thomas Is.	reef; coral rubble	156, 157, 167
— <i>P. involuta</i> Whitelegge, 1901*	91—95	Pacific Oc., SE Australia (New South Wales)	?	206

<sup>1</sup> See: L.B. Holthuis, 1977-The dates of publication of C. Spence Bate and J.O. Westwood's "A history of british sessile-eyed Crustacea". *Crustaceana*, 33, 3: 313—316.



1	2	3	4	5
— <i>P. japonica</i> Richardson, 1910	3—7	Pacific Oc., Japan Sea, Japan (Hokkaido Is. to Kyushu Is.), Okhotsk Sea	algae ( <i>Sargassum</i> )	91, 92, 133, 136, 158
— <i>P. kobensis</i> Nunomura, 1975*	?	Pacific Oc., Japan (Osaka G.)	?	133
— <i>P. laticauda</i> Nunomura, 1975	0—21	Pacific Oc., Japan (Osaka G.)	calcareous algae	133
— <i>P. latipes</i> Barnard, 1955*	0—215	Indian Oc., Mozambique (Inhambane B.)	sand banks and concrete piles	18, 68
— <i>P. lifuensis</i> Stebbing, 1900	72—146	Pacific Oc., Okhotsk Sea, China Sea, Loyalty Is.	?	175
— <i>P. linearis</i> (Boone, 1923): nomen nudum				21
— <i>P. lineata</i> Nunomura, 1977	30	Pacific Oc., Japan (Tomioka B.)	sand, mud	136
— <i>P. longitelson</i> Wägele	upper littoral	Pacific Oc., California G.	?	210
— <i>P. maculosa</i> Nunomura, 1974*	4	Pacific Oc., Japan, Kii Pen. (Hiki River mouth)	rocks, algae ( <i>Sargassum</i> )	131
— <i>P. miersi</i> Haswell, 1884: see MESANTHURA				59
— <i>P. nana</i> Nordenstam, 1930	30—40	Pacific Oc., Juan Fernandez Is.	calcareous algae	129
— <i>P. neglecta</i> Beddard, 1886*	131—205	Indian Oc., Kerguelen Is.	volcanic mud	17
— <i>P. nigrocaudata</i> (Nunomura, 1975) <i>Leptanthura nigrocaudata</i> Nunomura, 1975	30	Pacific Oc., Japan, Osaka G.	sand, rocks, algae ( <i>Coralina pilulifera</i> )	133, 136
— <i>P. nigropunctata</i> (Lucas, 1849) <i>Anthura nigropunctata</i> Lucas, 1849 <i>Leptanthura melanomma</i> Vanhöffen, 1914	0—34	English Channel (SW England, N France), NE Atlantic Oc., France, Azore Is., Cape Verde Is., Mauritania; Mediterranean, France, Corsica Is., Italy, Adriatic Sea, Greece, Turkey, Egypt, Tunisia, Algeria, Morocco	rocks, stones, sand, mud; algae (brownish red), rhizomes of <i>Posidonia oceanica</i>	B. 99, 130, 174, 186, 200
— <i>P. norvegica</i> Sars, 1873: see CALATHURA				163
— <i>P. ostergaardi</i> Miller & Menzies, 1952*	?	Pacific Oc., Hawaii Is.	?	112
— <i>P. plumosa</i> Pillai, 1966*	4	Indian Oc., S India (Quilon)	worms tubes	146

1	2	3	4	5
— <i>P. polynesica</i> Kensley, 1979	0.5—1	Pacific Oc., Cook Is.	reef; coral rubble, algae	73
— <i>P. porteri</i> (Boone, 1920) <i>Calamura porteri</i> Boone, 1920	?	Pacific Oc., Chile (Pisagua)	?	20
— <i>P. possessia</i> Kensley, 1980	142—2707	S Indian Oc., Crozet Is.; Atlantic Oc., Argentina Basin	?	75
— <i>P. punctata</i> (Stimpson, 1855) <i>Anthurus punctata</i> Stimpson, 1855 <i>Paranthura nigropunctata</i> Chilton, 1906 non Lucas <i>Paranthura costana</i> Thomson, 1882 non Bate & Westwood	0—200	Atlantic a. Indian Oc., S Africa (Orange River mouth to Natal); Indian Oc., (?) W Australia (Rottnest Is.); Pacific Oc., (?) S Australia (New South Wales), (?) New Zealand, (?) Tasmania	rocks, shells, coarse sand, sponges ( <i>Leuconia</i> ), algae; (?) freshwater lakes	6, 18, 41, 68, 80
— <i>P. skottsbergi</i> Nordenstam, 1930*	30—46	Pacific Oc., Juan Fernandez Is.	calcareous algae	129
— <i>P. tenuis</i> Sars, 1973: see LEPTANTHURA				163
— <i>P. urochroma</i> Pires, 1981	6	Atlantic Oc., Brazil (São Paulo a. Rio de Janeiro States)	algae ( <i>Jania</i> , <i>Amphiroa</i> , <i>Dictyopteris</i> , <i>Uva</i> )	148
— <i>P. verrillii</i> Richardson, 1902: see <i>Paranthura infundibulata</i> Richardson, 1902				156
— <i>P. sp.</i> — Kensley, 1980 *	1.5—31	Indian Oc., N Madagascar, off Somalia	?	76
— <i>P. sp.</i> — Kensley, 1982 * PENDANTHURA Menzies & Glynn, 1968 [A]	513	Antarctica, Weddell Sea	?	79
— <i>P. rarotonga</i> Kensley, 1979	1	Pacific Oc., Cook Is. (Rarotonga Is.)	coarse coral sand, algal scrapings	73
— <i>P. tanaiformis</i> Menzies & Glynn, 1968 — type species —	1.82—2.73	Caribbean Sea, Puerto Rico, Belize (Carrie Bow Cay)	reef; corals, coral rubble, algae ( <i>Digenia</i> )	78, 107
PSEUDANTHURA Richardson, 1911 [P]				
— <i>P. albatrossae</i> Kensley, 1978	1380	Pacific Oc., Flores Sea		69

1	2	3	4	5
— <i>P. lateralis</i> Richardson, 1911 — type species —	930— 3200	Atlantic Oc., W a. S Africa (Dakar to Cape Point)	mud, muddy sand	7, 8, 68, 80, 102, 159
— <i>P. recifensis</i> Kensley, 1982	587	Atlantic Oc., Brazil (Recife)	?	79
— <i>P. tenuis</i> Kensley, 1978	560—050	Indian Oc., S Africa (N Natal to Transkei)	?	69
<b>PTILANTHURA</b> Harger, 1978 [A]				
— <i>P. tenuis</i> Harger, 1878* — type species — <i>Anthura tenuis</i> (Harger, 1878)	0—36	Atlantic Oc., E North America (Long Island to Bay of Fundy)	stones, sand, mud	55, 56, 92, 157, 167
— <i>P. tricarina</i> Menzies & Frankenberg, 1966	25—141	Atlantic Oc., N America, off Georgia	?	105, 167
<b>QUANTANTHURA</b> Menzies & George, 1972 [A]				
— <i>Q. brasiliensis</i> Kensley & Koening, 1979	21—166	Atlantic Oc., Brazil (Rio de Janeiro)	sand, mud	81
— <i>Q. globitelson</i> Menzies & George, 1972 — type species —	2504 4516	Pacific Oc., Peru-Chile Trench	?	106
— <i>Q. menziesi</i> Kensley & Koening, 1979	14—96	Atlantic Oc., Brazil (Cape Orange to Cape Santo Agostinho)	sand, mud	81
— <i>Q. remipes</i> (Barnard, 1914) <i>Anthelura remipes</i> Barnard, 1914	78—312	Atlantic a. Indian Oc., S Africa (Lambert's B. to Agulhas Bank)	sand	6, 68, 80
— <i>Q. sinuata</i> Kensley, 1982	520—550	Atlantic Oc., Guiana Basin	?	74
<b>RHIGANTHURA</b> Kensley, 1978 [H]				
— <i>R. spinosa</i> Kensley, 1978 — type species —	101	Pacific Oc., New Zealand (North Island)	?	71
<b>SAURANTHURA</b> Poore & Kensley, 1981 [A]				
— <i>S. goldmanorum</i> Poore & Kensley, 1981 — type species —	0.5—10	Pacific Oc., E Australia, Great Barrier Reef	reef; lagoon; coral rubble, algae	154
<b>SILOPHASMA</b> Schultz, 1977: see HALIOPHASMA				160

1	2	3	4	5
<b>SKUPHONURA</b> Barnard, 1925 [A]				
— <i>S. ecuadorensis</i> Kensley, 1980	0—?15	Pacific Oc., Ecuador	?	74
— <i>S. itapuca</i> Kensley, 1980	0—?15	Atlantic Oc., Brazil (Rio de Janeiro)	?	74
— <i>S. laticeps</i> Barnard, 1925 — type species —	7—36	Caribbean Sea, Antilles (St. Thomas, St. John, St. Croix, Tobago Is.)	?	8, 74, 167
— <i>S. lindae</i> Menzies & Kruczynski, 1983	6.1— 73.2	Atlantic Oc., Mexico G. (central W Florida)	?	208
— <i>S. sp.</i> — Miller, 1968*	11	Atlantic Oc., Mexico G., W Florida (off Cape Sable)	anchor buoys	of 110
<b>STELLANTHURA</b> Wägele, 1979 [H]				
— <i>S. cryptobia</i> Wägele, 1979 — type species —	0—50	Mediterranean, Tyrrhenian Sea, Naples G.; Sicily Str.	?	188
<b>TRISTANTHURA</b> Sivertsen & Holthuis, 1980 [P] ? ≡ <i>Colanthura</i> Richardson, 1902				
— <i>T. barnardi</i> Sivertsen & Holthuis, 1980* — type species — ≡ <i>Paranthura sp.</i> Barnard, 1965 (?)	0—60	S Atlantic Oc., Tristan da Cunha Is.; Gough Is. (?)	rocks, stones, sand; algae ( <i>Macrocystis</i> , <i>Lithothamnion</i> ), sponges	15, 172
<b>ULAKANTHURA</b> Poore, 1978 [P]				
— <i>U. colac</i> Poore, 1978	5—22	Pacific Oc., SE Australia (Queensland)	sand	150
— <i>U. cooma</i> Poore, 1978	9—10	Pacific Oc., SE Australia (Queensland)	sand	150
— <i>U. crassicornis</i> (Haswell, 1881) — type species — <i>Paranthura crassicornis</i> Haswell, 1881 <i>Leptanthura crassicornis</i> (Haswell, 1881)	22—31	Pacific Oc., SE Australia (New South Wales)	coarse sand	57, 150
— <i>U. lara</i> Poore, 1978	2—31	Pacific Oc., SE Australia (Victoria)	coarse sand, shells	150
— <i>U. marlee</i> Poore, 1981 partly <i>Ulakanthura colac</i> Poore, 1978 (part from Victoria and New South Wales)	5—20	Pacific Oc., SE Australia (Victoria, New South Wales)	sand, muddy sand	150, 152

1	2	3	4	5
— <i>U. namoo</i> Poore, 1978	9—23	Pacific Oc., SE Australia (Queensland, New South Wales)	coarse sand	150
— <i>U. wanda</i> Poore, 1978	9—10	Pacific Oc., SE Australia (Queensland)	sand	150
<b>VALORANTHURA</b> Kensley, 1978 [P]				
— <i>V. abyssorum</i> (Norman & Stebbing, 1886) — type species — <i>Anthelura abyssorum</i> Norman & Stebbing, 1886 <i>Ananthura abyssorum</i> (Norman & Stebbing, 1886) <i>Apanthura abyssorum</i> (Norman & Stebbing, 1886)	3199— 4596	Atlantic Oc., N America, Davis Str.; SW Ireland; Angola Basin	?	8, 71, 92, 130, 157, 167, 174
<b>VENEZANTHURA</b> Kensley, 1978 [A]				
— <i>V. confixa</i> Kensley, 1978 — type species —	4—10	Atlantic Oc., Venezuela (Cubagua Is.)	sand, algae	71
<b>XENANTHURA</b> Barnard, 1925 [H]				
— <i>X. bacescui</i> Negoescu, 1979	?	Atlantic Oc., Brazil, Rio Grande (Lagôa dos Patos)	lagoon	124
— <i>X. brevitelson</i> Barnard, 1925 — type species —	8—145	Atlantic Oc., N America (Georgia, E Florida); Caribbean Sea, St. Thomas Is.	?	8, 74, 105, 167
— <i>X. linearis</i> Pillai, 1954	?	Indian Oc., SW India (Kerala)	brackish water, lakes; vegetation	145, 146
— <i>X. orientalis</i> Barnard, 1935	?	Indian Oc., SW India (Kerala)	brackish water, lakes	10, 145, 146
— <i>X. sinica</i> Wägele, 1981	1—35	Red Sea, Aqaba G.	sand, detritus, polychaets colonies	193
<b>ZULANTHURA</b> Poore, 1980: see ACCALATHURA				
				151

*Haliophasma austroafricanum* Kensley, 1982 = *Exanthura austroafricana* (Kensley, 1982).

Redescriptions are necessary for the comparison of the three Californian species *Paranthura elegans*, *P. algicola* and *P. californiae*.

*Exanthura* is not considered identical with *Haliophasma*. The latter genus is already a "collecting pot" for a variety of forms and *Exanthura* has good synapomorphic features: the pleonites are dorsally fused, the maxilli-

ped has (as in *Haliophasma*) 2 palpal articles, the basis of the antennula has a prominent hook. Possibly further features can be found when the species are examined carefully (*E. adinae* needs redescription).

*Expanathura* is not a junior synonym of *Panathura*. *Expanathura* seems to have more specialized mouthparts (endite of maxilliped stronger and narrower, mandibular basis longer, *pars molaris* smaller) and above all, the species of *Expanathura* show a typical shape of palms on pereopods 1–3, with strong, acute teeth, which are not present in *Panathura*.

*Nemanthura* has the same number of palpal articles of the maxilliped as *Haliophasma*, but certainly has a special morphology, the body being very slender in both sexes; the propodus of pereopod 1 is prolonged and has a dactylus with crenelated inner surface; the maxilliped is very long and the basis of antenna 1 has a hook similar to that of *Exanthura*, suggesting a possible relationship with this latter genus.

*Leptanthura apalpata* differs from the type species of the genus, *L. tenuis*, in the reduction of the mandibular palp; the other features including the chaetotaxy are identical. The reduction of the palp has been used to define the genus *Bullovanthura*. It is possible that *L. apalpata* has more features (synapomorphies) in common with *Bullovanthura*, but for the moment the variability of *Leptanthura* appears to be so wide that *L. apalpata* seems to fit within this genus.

There exist several genera that are so heterogeneous in their composition, that a diagnosis of their generic features would be very generalized. Such taxa probably are polyphyletic.

Such a genus is *Apanthura*, whose only constant features are the number of articles of the maxilliped and the trapezoidal outline of the carpus of pereopods 4–7. The form of the pleon, the setation of pereopods and tailfan, the sexual dimorphism are very variable. But the most variable factor is the way species have been described. Comparing the descriptions of *Apanthura signata* as prepared by Menzies & Glynn (107) and Kensley (78) it seems that 2 different species have been drawn, differing in the way the pleonites are fused, the reduction or presence of the endite of the maxilliped, the setation of telson and pereopod 1. More features cannot be compared for lack of information.

This example shows that a taxonomist has to calculate not only how genetic and phenotypic variation must be considered when describing the taxon, but also, which of the (often few) known facts have a higher probability of being closer to the truth.

The genus *Apanthuretta* had been separated from *Apanthura* to put together a group of species with similar morphology. The recent descriptions of *Apanthuretta signata* and *A. magnifica* Kensley (74) indicate that these species must be possibly left within the *Apanthura*.

The genus *Tristanthura* can be considered a junior synonym of *Colanthura*. The typical features are: mandible fused laterally with cephalothorax, palp reduced (therefore the mandible has very seldom been described), maxilliped with fused articles, basally fused to each other. The "mandible" described by Sivertsen & Holthuis (172) is in reality maxilla 1 and

the "maxilla 2" is the hypopharynx. Typical is the short pereonite 7 and reduced pereopod 7.

The genus *Malacanthura* also calls for some discussion. The maxilliped sometimes has large endites, sometimes no endite at all, the last article of the palp being as long and wide as the first article or much smaller; nothing is known about possible apomorphies of tailfan and pereopods. The latter are long and slender which is a plesiomorphic feature. Some species have primitive antennules with more than 3—4 articles and more than 3 aesthetascs. Together with the sculpture of the telson these features indicate a relationship with *Alloanthura*/*Indanthura*/*Haliophasma*, genera that must be carefully compared with *Malacanthura*.

Sometimes groups of species can be discerned within genera. Botswana & Stock (22) described the subgenus *Cyathura* (*Stygo-cyathura*) which shows adaptations to subterranean life. But it is not possible to leave the remaining species of *Cyathura* in a single sister-group. There seem to exist some distinct types of *Cyathura* with different morphology and biology, as the *carinata*-type from brackish water or the marine species with simple copulatory organ in the males. To prove the monophyly of these groups (= subgenera) further evidence are necessary.

## LISTA MONDIALĂ A IZOPODELOR ANTHURIDEE (CRUSTACEA, ISOPODA, ANTHURIDEA)

### REZUMAT

Se prezintă lista mondială a crustaceelor izopode din subord. Anthuridea, listă ce însumează 57 de genuri și 321 specii aparținând la 3 familii: Anthuridae, Hyssuridae și Paranthuridae. Genurile și speciile de anthuridee sînt date în ordine alfabetică, indicîndu-se și sinonimiile. Date privind răspîndirea geografică, adîncimea, habitatul, precum și referințe bibliografice completează lista.

În capitole aparte se fac comentarii privind unele sinonimii, se dă o scurtă caracterizare a grupului, precum și metode de colectare, preparare și conservare.

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