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# Contributions

in

BIOLOGY

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**A Compendium of  
Fossil Marine Animal Families  
2nd edition**

**J. John Sepkoski, Jr.**

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***Milwaukee Public Museum Contributions in Biology and Geology***

**Rodney Watkins, Editor**

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## Abstract

A comprehensive listing of 4075 taxonomic families of marine animals known from the fossil record is presented. This listing covers invertebrates, vertebrates, and animal-like protists, gives time intervals of apparent origination and extinction, and provides literature sources for these data. The time intervals are mostly 81 internationally recognized stratigraphic stages; more than half of the data are resolved to one of 145 substage divisions, providing more highly resolved data for studies of taxic macroevolution. Families are classified by order, class, and phylum, reflecting current classifications in the published literature. This compendium is a new edition of the 1982 publication, correcting errors and presenting greater stratigraphic resolution and more current ideas about acceptable families and their classification.

## Introduction

This compendium summarizes the classification and stratigraphic ranges of approximately 4075 animal families known from the marine fossil record. It is a literature survey that abstracts taxonomic and stratigraphic information from the *Treatise on Invertebrate Paleontology* (Moore et al. 1953-1983) and updates it with data from nearly 900 other sources. Thus, this work can be used as a summary of the current (if transitory) classification of fossil marine animals, as an entrance into the more recent paleontologic literature on the various taxa, and as a source of data for investigating macroevolutionary patterns among clades. The first edition of these data (Sepkoski 1982) was analyzed in studies of diversity and evolutionary rates (e.g., Raup and Sepkoski 1982; Sepkoski 1984; Van Valen 1984, 1985; Kitchell and Carr 1985; Boyajian 1986; Gilinsky and Bambach 1987; Erwin et al. 1987; McKinney 1987; Holman 1989) and was the basis for the hypothesis that there is a 26-million year periodicity in extinction (Raup and Sepkoski 1984, 1986; Sepkoski and Raup 1986).

This second edition incorporates a decade's worth of changes made to the 1982 publication. For several years after 1982, I attempted to document changes by annual "updates," distributed in the form of newsletters. However, this became too cumbersome as the total number of changes grew and the suprafamilial classifications of entire classes were altered. Even more changes accumulated as I checked the ranges of the families against an unpublished compilation of genera (described in Sepkoski 1986, 1989). The result is that this compendium of fossil families finds approximately 45% of the records (i.e., intervals of origination and extinction) remaining from the 1982 publication altered in one way or another, and 40% of the references documenting the records post-dating 1982. Changes in the data fall into five categories:

1. Corrections of stratigraphic ranges resulting from errors in the original compendium and from new discoveries or interpretations of fossil taxa;
2. Deletion of invalid or inappropriate (i.e., nonmarine) families;
3. Addition of newly erected families (22% of which are foraminifera);
4. Incorporation of new suprafamilial classifications, affecting the demosponges, regular archaeocyathids, polyplacophorans, monoplacophorans, gastropods, trilobites, conodonts, chondrichthyes, osteichthyes, and numerous problematical taxa;
5. Enhancement of the stratigraphic resolution of apparent originations and extinctions, involving
  - a. resolving many old system- and series-level records to stages,
  - b. adding several "new" stages, specifically the Tojonian, Pridolian, and Aalenian (but incorporating the Rhaetian into the Norian, following Tozer 1979), and
  - c. adding 145 new substage divisions.

Statistics showing the magnitudes of these changes are provided in Table 1. (These magnitudes are smaller than a ten-year extrapolation of the 10% change I reported for a single year in the 1982 publication, but nonetheless the differences are very substantial.)

The overall effect is an increase in the taxonomic and temporal precision of the data and, I hope, their accuracy. As listed in Table 2, approximately 97% of the records in this compendium are now resolved to at least the stage level. Of these records, 65% are resolved to a substage or to a stage that is not subdivided. The average precision of the records is now 5.3 million years, in contrast to 9.6 million years in the 1982 edition.

With these changes, this summary of the marine fossil record has several important attributes:

1. The classification is comprehensive, covering all groups with a marine fossil record, including some with sparse (and sometimes questionable) fossils (e.g., nematodes and sipunculids). Groups not yet summarized by the *Treatise*, such as the caeno- and opisthobranch gastropods and the coleoid cephalopods, are also included. I have attempted to give the suprafamilial classification of all groups a consistent, "classical" format, placing families in orders, classes, and phyla as appropriate. This has necessitated lumping some families treated as plesions in cladistic classifications under headings such as "Or. Incertae sedis." (Such groupings should not be interpreted as reflecting phylogenetic relationships.)
2. The taxonomic classification reflects the published state of the art and incorporates the many changes made since publication of the various volumes of the *Treatise on Invertebrate Paleontology*. Also included are more than 800 new families erected on the basis of new fossil discoveries and reinterpretations of known fossil groups, most notably within the foraminifera and the problematical taxa.
3. The stratigraphic information is of the highest resolution presently available, exceeding even that of the new *The Fossil Record 2* (Benton 1992). In addition to substage information, the compendium includes records resolved to 10 stages of the Cambrian, which is greater than the resolution of other data bases.

These positive features must be tempered with strong caveats. Classification of marine animals is now in flux as phylogenetic methods of analysis are applied to increasing numbers of fossil groups. Some of this emerging information has been incorporated here, especially within the Gastropoda, Trilobita, Stellerioidea, Echinoidea, Graptolithina, Placodermi, Chondrichthyes, and Osteichthyes. Classifications of many other groups are certain to change radically in coming years, with the Brachiopoda being a notable example (e.g., Carlson 1989). These changes will affect not only suprafamilial classifications but also the constitutions of families: new families will be erected on the basis of phylogenetic reinterpretations, and some listed families will be suppressed on the basis of paraphyly or polyphyly. Some of this new information will be published by various taxonomic experts in *The Fossil Record 2* (Benton 1992), and users of this compendium should integrate any new data with the information listed here.

For families that are preserved in new classifications, data on their first and last appearances are sure to change in many instances, just as has happened over the past decade. This will reflect new discoveries of fossil material, especially around critical stratigraphic boundaries; reinterpretations of oldest and youngest members of families; and changes in correlations of regional stratigraphic intervals to international standards. Critical discussions of the various stratigraphic and taxonomic problems can be found in Cappetta (1987), Culver et al. (1987), Patterson and Smith (1987, 1989), Teichert et al. (1987), and Smith and Patterson (1988). Overall, I expect that advancements in taxonomy and stratigraphy will affect first appearances more than lasts, and will alter substage data more than less precise stratigraphic information.

The format for this edition of the familial compendium is much like that of the first. Families are arranged alphabetically (rather than phylogenetically) beneath their respective taxonomic orders, and orders are classified mostly by class and phylum, following the arrangements in the *Treatise on Invertebrate Paleontology* and in Parker (1982). In some instances, distinctive genera are

listed after the families, either because they are early representatives of the taxonomic order that have not been assigned to families or because they have uncertain relationships to the established families. Families listed as "Incertae sedis" also are of uncertain relationship to established orders or are plesions that have not been ranked in phylogenetic classifications. Names preceded by "?" are assigned with doubt to the order (or higher taxon) under which they are listed. Sources for the higher classifications are listed in the introductions to the phyla, classes, or orders, along with occasional comments on the state of their taxonomy and the approximate number of families not known from the fossil record (derived largely from Parker 1982).

Following each family name are stratigraphic codes for its first and last documented occurrences in the marine fossil record. These codes begin with one or two letters for the geologic system and are followed in parentheses by more precise stratigraphic information. This comprises a four-letter code for stratigraphic stage and, if determined, a hyphenated "l," "u," and sometimes "m" for lower, upper, and middle part of the stage. Table 3 lists the codes and defines the substage intervals. Where stage-level data have not been located, usually there is a one- or two-letter code for the known stratigraphic series. Geologic ages of these stratigraphic intervals are not listed but can be interpreted from sources such as Palmer (1983), Snelling (1985), Odin (1986), Menning (1989), and Harland et al. (1990). Stratigraphic codes in the compendium that are followed by "?" are particularly uncertain because of problematic correlations, questionable assignments of first or last species in the family, or failure to locate good, modern information on the family range.

The last information listed for the families is the numerical code(s) for literature sources of information; these are entries in the Numbered References. The information can include sources for first and/or last appearances, sources that erected the family, or sources that grouped the family into its indicated taxonomic order. When no bibliographic codes are given, it must be assumed that the literature cited in the introduction to the order, class, or phylum is the source of the taxonomic and stratigraphic information.

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**TABLE 1.** Approximate numbers of changes between the 1982 and 1992 editions.

<b>Change</b>	<b>Originations</b>	<b>Extinctions</b>
Increased resolution <sup>1</sup>	383	215 <sup>2</sup>
Decreased resolution	7	3
Range extensions	623	403
Range contractions	341	172
Added families	838	584 <sup>3,4</sup>
Deleted families	<u>199</u>	<u>143</u> <sup>3,5</sup>
Totals	2391	1520

<sup>1</sup> Does not include resolution to substage.

<sup>2</sup> Includes 57 changes redundant with originations (families known from a single stratigraphic interval).

<sup>3</sup> Smaller than originations because some families extend to the Recent.

<sup>4</sup> Includes 227 changes redundant with originations.

<sup>5</sup> Includes 65 changes redundant with originations.

**TABLE 2.** Comparison of stratigraphic resolution in 1982 and 1992 editions. Numbers are percents of records (times of origination and extinction) falling into each category, based on approximately 5327 records in the 1982 edition and 6405 in the 1992 edition.

<b>Stratigraphic interval</b>	<b>Editions</b>	
	<b>1982</b>	<b>1992</b>
Stage (and substage)	86%	97%
Series	12%	3%
System	1%	0.1%

**TABLE 3.** List of stratigraphic intervals and codes used in the Compendium. Substage intervals follow divisions defined in Harland et al. (1990), except where indicated. Intervals in the Cambrian follow Sepkoski (1979, fig. 2) with modifications.

Stratigraphic Interval	Code
<b>QUATERNARY</b>	<b>Q</b>
Recent (Holocene)	R
Pleistocene	Plei
<b>TERTIARY</b>	<b>T</b>
Pliocene	Plio
Miocene	(Mi)
Upper	uMio
Messinian	-u
Tortonian	-l
Middle (Langhian + Serravallian)	mMio
Lower	lMio
Burdigalian	-u
Aquitanian	-l
Oligocene	(Ol)
Upper (Chattian)	uOli
Lower (Rupelian)	lOli
Eocene	(Eo)
Upper (Priabonian)	uEoc
Middle	mEoc
Bartonian	-u
Lutetian	-l
Lower (Ypresian)	lEoc
Paleocene	
Thanetian	Than
Danian	Dani
<b>CRETACEOUS</b>	<b>K</b>
Upper	(u)
(Senonian)	(Sn)
Maastrichtian	Maas
<i>neuberigicus</i> Zone	-u
<i>tridens</i> Zone	-l
Campanian	Camp
upper	-u
lower	-l
Santonian	Sant
upper	-u
lower	-l
Coniacian	Coni
upper	-u
lower	-l

Stratigraphic Interval (Continued)	Code
(Gallic)	
Turonian	Turo
<i>bizeti</i> - <i>deveriai</i> Zones	-u
lower	-l
Cenomanian	Ceno
upper	-u
middle	-m
lower	-l
Lower	(l)
Albian	Albi
upper	-u
middle	-m
lower	-l
Aptian	Apti
upper	-u
lower	-l
Barremian	Barr
upper	-u
lower	-l
(Neocomian)	(Nc)
Hauterivian	Haut
upper	-u
lower	-l
Valanginian	Vala
upper	-u
lower	-l
Berriasian	Berr
Ryazanian	-u
lower	-l
JURASSIC	J
Upper	(u)
Tithonian	Tith
Portlandian	-u
<i>elegans</i> - <i>fittoni</i> Zones	-l
Kimmeridgian	Kimm
<i>mutabilis</i> - <i>autissioderensis</i> Zones	-u
<i>baylei</i> + <i>cymodoce</i> Zones	-l
Oxfordian	Oxfo
upper	-u
middle	-m
lower	-l
Middle	(m)
Callovian	Call
<i>athleta</i> + <i>lamberti</i> Zones	-u
<i>jason</i> + <i>coronatum</i> Zones	-m
<i>macrocephalus</i> + <i>calloviense</i> Zones	-l
Bathonian	Bath
upper	-u
middle	-m
lower	-l

Stratigraphic Interval (Continued)	Code
Bajocian	Bajo
upper	-u
lower	-l
Aalenian	Aale
Lower	(l)
Toarcian	Toar
<i>variabilis</i> - <i>levesquei</i> Zones	-u
<i>tenuicostatum</i> - <i>bifrons</i> Zones	-l
Pliensbachian	Plie
<i>margaritatus</i> + <i>spinatum</i> Zones	-u
<i>jamesoni</i> - <i>davoei</i> Zones	-l
Sinemurian	Sine
upper	-u
lower	-l
Hettangian	Hett
<i>liasicus</i> + <i>angulata</i> Zones	-u
<i>planorbis</i> Zone	-l
TRIASSIC	Tr
Upper	(u)
Norian	Nori
Sevatian + Rhaetian	-u
Alaunian	-m
Lacian	-l
Carnian	Carn
Tuvanian	-u
Julian	-l
Middle	(m)
Ladinian	Ladi
upper	-u
lower	-l
Anisian	Anis
Illyrian	-u
Pelsonian	-m
Aegean	-l
Lower (Scythian)	(l)
Olenekian	Olen
Spathian	-u
Smithian	-l
Induan	Indu
Dienerian	-u
Griesbachian	-l
PERMIAN	P
Upper	(u)
Tatarian	Tatr
Changshingian (Dorashanian)	-u
Djulfian (Longtanian)	-l
Guadalupian	Guad
Capitanian (Kazanian)	-u
Wordian (Ufimian)	-l

Stratigraphic Interval (Continued)	Code
Lower	(l)
Leonardian	Leon
Kungurian (Roadian)	-u
Artinskian	-l
Sakmarian	Sakm
Sterlitamakian	-u
Tastubian	-l
Asselian	Asse
<b>CARBONIFEROUS</b>	<b>C</b>
Upper	(u)
Stephanian	Step
Gzelian	-u
Kasimovian	-l
Moscovian	Mosc
Podolskian + Myachkovskian	-u
Vereiskian + Kashirskian	-l
Bashkirian	Bash
Cheremshanskian + Melekesskian	-u
Kinderscoutian - Yeadonian	-l
Serpukhovian	Serp
Chokierian + Alportian	-u
Pendleian + Arnsbergian	-l
Lower	(l)
Visean	Vise
Holkerian - Brigantian	-u
Chadian + Arundian	-l
Tournaisian	Tour
Ivorian	-u
Hastarian	-l
<b>DEVONIAN</b>	<b>D</b>
Upper	(u)
Famennian	Fame
<i>Wocklumeria</i> Zone	-u
<i>Platyclymenia</i> + <i>Clymenia</i> Zones	-m
<i>Cheiloceras</i> Zone	-l
Frasnian	Fras
<i>P. gigas</i> + <i>P. triangularis</i> Zones	-u
<i>A. triangularis</i> Zone	-m
<i>A. asymmetricus</i> Zone	-l
Middle	(m)
Givetian	Give
<i>varcus</i> - <i>cristatus</i> Zones	-u
<i>ensensis</i> Zone	-l
Eifelian	Eife
<i>australis</i> - <i>kockelianus</i> Zones	-u
<i>costatus</i> Zone	-l

Stratigraphic Interval (Continued)	Code
Lower	(l)
Emsian	Emsi
<i>wenkenbachi</i> Zone	-u
<i>zorgensis</i> Zone	-l
Pragian	Prag
<i>dehiscens</i> Zone	-u
<i>sulcatus</i> Zone	-l
Lochkovian	Loch
<i>postwoschmidti</i> - <i>pesavis</i> Zones	-u
<i>woschmidti</i> Zone	-l
 SILURIAN	 S
Upper	(u)
Pridolian	Prid
Ludlovian	Ludl
Ludfordian	-u
Gorstian	-l
Middle	
Wenlockian	Wenl
Homerian	-u
Sheinwoodian	-l
Lower	
Llandoveryan	Ldov
Telychian	-u
Aeronian	-m
Rhuddanian	-l
 ORDOVICIAN	 O
Upper	
Ashgillian	Ashg
Hirnantian	-u
Cautleyan + Rawtheyan	-m
Pusgillian	-l
Middle	(m)
Caradocian	Cara
Actonian + Onnian	-u
Soudleyan - Marshbrookian	-m
Costonian + Harnagian	-l
Llandeilian	Llde
<i>gracilis</i> Zone	-u
<i>teretinsculus</i> Zone	-l
Llanvirnian	Llvi
<i>murchisoni</i> Zone	-u
<i>bifidus</i> Zone	-l
Lower	(l)
Arenagian	Aren
<i>hirundo</i> Zone	-u
<i>extensus</i> Zone	-l

Stratigraphic Interval (Continued)	Code
Tremadocian	Trem
<i>flabelliforme</i> - <i>incipiens</i> Zones	-l
<i>heres</i> - <i>serratus</i> Zones	-u
CAMBRIAN	Cm
Upper	(u)
Trempealeuan	Trep
<i>Acerocare</i> Zone	-u
<i>P. scarabaeoides</i> Zone	-l
Franconian	Fran
<i>Peltura</i> Zone	-u
<i>P. spinulosa</i> + <i>Leptoplastus</i> Zones	-l
Dresbachian	Dres
<i>Olenus</i> Zone	-u
<i>pisiformis</i> Zone	-l
Middle	(m)
upper Middle	uMid
<i>nathorsti</i> - <i>laevigata</i> Zones	-u
<i>parvifrons</i> + <i>punctuosus</i> Zones	-m
<i>fissus</i> + <i>atavus</i> Zones	-l
mid Middle	mMid
<i>Bathyriscus</i> - <i>Elrathina</i> Zone	-u
<i>Glossopleura</i> Zone	-l
lower Middle	lMid
Lower	(l)
Tojonian	Tojo
Elanskian	-u
Ketemian	-l
Botomian	Boto
Sinsko-Kutorginian	-u
Tarynian	-l
Atdabanian	Atda
<i>kokoulini</i> + <i>lermontovae</i> Zones	-u
<i>zegebarti</i> + <i>pinus</i> Zones	-l
Tommotian	Tomm
Kenyadian	-u
Sunnaginian	-l
VENDIAN	V
Nemakit-Daldyn	N-Da
( <i>Anabarites</i> - <i>Protohertzina</i> Zone)	
Ediacaran	Edia



## The Compendium

### ACTINOPODA

#### Cl. ACANTHARIA

[Classification and stratigraphic ranges are from the *Treatise on Invertebrate Paleontology*, Pt. D. 13 extant marine families without known fossil representatives are not listed.]

Acanthochiasmatidae	T (Eo)	-	R
Astrolonchidae	T (Mi)	-	R

#### Cl. "RADIOLARIA"

[Classification follows Riedel and Sanfilippo (1981); alternative classifications, especially for extinct families, are available. Basic stratigraphic ranges are from Kling (1978), Riedel and Sanfilippo (1981), and the *Treatise*, Pt. D, with additions as indicated. On order of 25 extant marine families without documented fossil representatives are not listed.]

##### Or. TRIPYLEA

Challengeriidae	T (uMio-l)	-	R
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##### Or. SPUMELLARIA

Actinommidae	Tr(Carn)?	-	R
Capnuosphariidae	Tr(Carn-u)?	-	Tr(Nori-u) (64,66)
Ceratoikiscidae	S (Wenl)	-	C (Serp-u) (130,507)
Coccodiscidae	K (Sant)	-	R (720)
Collosphaeridae	T (lMio)	-	R (301)
Entactiniidae	Cm(Atda-u)	-	P (Guad-u)? (301,426)
Litheliidae	C (Bash)	-	R
Orosphaeridae	T (uEoc)	-	R
Palaeoscenediidae	S (Ldov-u)	-	C (Vise-l) (507)
Phacodiscidae	C (Vise)	-	R
Porodiscidae	Tr(Nori)?	-	R
Pseudoaulophacidae	K (l)	-	K (Maas-u)
Pylentonemidae	S (Wenl)	-	C (Vise-l) (507)
Pyloniidae	T (mEoc)	-	R
Spongodiscidae	D (Give)	-	R (301)
Tholoniidae	T (mMio)	-	R

##### Or. NASSELLARIA

Acanthodesmiidae	T (Than)	-	R
Amphipyndacidae	K (Apti)	-	K (Maas-u) (301)
Archaeodictyomitridae	J (Bajo-l)	-	K (Maas-u) (65,676)
Artostrobiidae	K (Coni)	-	R (720)
Cannobotrydidae	K (Maas)	-	R (720)
Carpocaniidae	T (uEoc)	-	R (301)
Neosciadiocapsidae	J (m)?	-	T (mEoc)
Parvicingulidae	J (Aale)	-	K (Haut-l) (560)
Plagoniidae	K (Sant)	-	R
Pterocorythidae	T (Than)	-	R (720)
Rotaformidae	K (Ceno-l)	-	K (Camp) (720)
Spyrida	T (Than)	-	R
Syringocapsidae	Tr(Carn-u)	-	K (Barr)? (869)
Theoperidae	Tr(Anis)	-	R
Ultranoporidae	J (Sine)?	-	K (Turo-l) (65)

Or. Incertae sedis  
 Abaillellidae D (Fame-l) - P (Tatr-l) (130,301,506)

FORAMINIFERA

Or. FORAMINIFERIDA

[Classification and basic stratigraphic ranges follow Loeblich and Tappan (1987), with emendations as listed. Approximately 18 extant free-living marine families without known fossil representatives are not listed.]

Abadehellidae	P (Tatr-l) - P (Tatr-u)	(524)
Acervulinidae	T (Than) - R	
Alabaminidae	K (Turo) - R	
Alfredinidae	T (mEoc-l) - R	
Allogromiidae	O (Cara-l) - R	
Almaenidae	T (lEoc) - R	
Alveolinidae	K (Apti) - R	
Ammobaculinidae	K (Vala) - R	
Ammodiscidae	Cm(Atda) - R	(178)
Ammosphaeroidinidae	J (Aale) - R	(452)
Amphisteginidae	T (mEoc) - R	
Annulopatulidae	T (lMio) - R	
Archaeodiscidae	C (Vise-l) - C (Mosc-l)	(78,350,453)
Archaeosphaeridae	S (Ludl) - P (Asse)	
Aschemonellidae	K (Camp) - R	
Asterigerinatidae	K (Camp-l) - R	
Asterigerinidae	T (lEoc) - R	
Asterocyclinidae	T (Than) - T (uEoc)	
Astrorhizidae	O (Aren) - R	
Asymmetrinidae	Tr(Carn) - Tr(Nori-u)	
Ataxophragmiidae	Tr(Nori) - T (Than)	
Auroriidae	D (Give) - D (Fame)	
Austrotrillinidae	T (mEoc-l) - T (lMio-u)	
Bagginidae	K (Barr) - R	
Baisalidae	P (Leon) - P (Tatr-u)	(524)
Barkerinidae	K (Vala-l) - K (Maas)	
Bathysiphonidae (+ Platysiphonidae)	Cm(Tomm-l) - R	
Biokovinidae	J (Plie) - J (m)	
Biserialinidae	C (Tour-l) - P (Tatr-u)	(524)
Bolivinellidae	T (Eo-u) - R	
Bolivinidae	K (Turo) - R	
Bolivinidae	T (mMio) - R	
Bolivinoididae	K (Sant-u) - T (Than)	
Boreloididae	T (mEoc-l) - T (uEoc)	
Bradyinidae	C (Vise-u) - P (Tatr-u)	(453)
Bronnmanniidae	T (Mi) - R	
Bueningiidae	T (lMio) - R	
Buliminellidae	T (Dani) - R	
Buliminidae	T (Dani) - R	
Buliminoididae	T (lOli) - R	
Calcarinidae	K (Maas) - R	
Caligellidae	S (Ludl) - C (Vise-l)	(350)
Candeinidae	T (uOli) - R	(70)
Carterinidae	T (uEoc) - R	

Cassidulinidae	T (Than)	- R	
Cassidulinitidae	T (Plio)		
Cassigerinellidae	T (uEoc)	- T (mMio)	
Catapsydracidae	T (Dani)	- R	
Caucasinidae	K (Barr)	- R	
Ceratobuliminidae	J (Plie-u)	- R	
Chapmaninidae	T (Than)	- T (uMio-l)	
Charentiidae	J (Call-l)	- K (Maas)	
Chiloguembelinidae	T (Dani)	- R	
Chilostomellidae	K (Albi)	- R	
Chrysalidinidae	J (Oxfo)	- T (uEoc)	
Chrysothuramminidae	D (Eife)	- C (Tour)	
Cibicididae	K (Berr)	- R	
Colaniellidae	D (Fras-u)	- P (Tatr-u)	(360,524)
Coleitidae	T (Dani)	- T (mEoc-l)	
Conorbinidae	J (Oxfo-u)	- K (Coni)	
Conorboididae	K (Apti-u)	- K (Maas)	
Conotrochamminidae	K (Camp)	- T (IEoc)	
Cornuspiridae	C (Vise)	- R	
Coscinophragmatidae	Tr(Nori-u)	- R	(451)
Coskinolinidae	K (Ceno-m)	- T (mEoc-l)	(512)
Cribratinidae	K (Albi)	- K (Ceno-l)	
Cuneolinidae	Tr(Anis)	- K (Maas-u)	
Cyclamminidae	J (Plie-u)	- R	
Cyclolinidae	K (Vala-l)	- K (Maas)	(512)
Cymbaloporidae	K (Ceno)	- R	
Dictyopsellidae	K (Barr-l)	- K (Maas)	
Dicyclinidae	K (Albi-u)	- K (Maas-u)	
Diffusiliniidae	O (Cara-m)	- R	
Discamminidae	K (Camp)	- R	
Discocyclinidae	T (Than)	- T (uEoc)	
Discorbidae	T (Than)	- R	
Discorbinellidae	T (uEoc)	- R	
Discospirinidae	T (mMio)	- R	
Dryorhizopsidae	C (Step-u)	- R	
Duostominidae	Tr(Anis)	- Tr(Nori-u)	
Earlandiidae	S (Ludl)	- P (Tatr-u)	
Earlandinitidae	D (Fras-u)	- C (Serp)	(360)
Ecougellidae	K (Barr)	- K (Apti-l)	
Eggerellidae	J (Bajo-u)	- R	
Ellipsolagenidae	J (Hett-l)	- R	(301)
Elphidiidae	T (Dani)	- R	
Endothyridae	D (Fame-m)	- C (Step)	(360)
Eoglobigerinidae	T (Dani)		
Eouvigerinidae	K (Albi-u)	- K (Maas)	
Eovolutinidae	S (Prid)	- D (Fame)	
Epistomariidae	K (Sant-u)	- R	
Epistominidae	J (Aale)	- R	
Eponididae	T (Dani)	- R	(720)
Fabulariidae	K (Sant)	- T (uEoc)	(720)
Favusellidae	K (Barr-u)	- K (Ceno-m)	(72)
Fischerinidae	J (Bajo-u)	- R	
Fursenkoinidae	K (Albi-m)	- R	(844)
Fusulinidae	C (Bash-u)	- P (Tatr-u)	(196)

Gavelinellidae	K (Barr)	- R	
Geinitzinidae	D (Fras-u)	- P (Tatr-u)	(360)
Glabratellidae	T (Eoc)	- R	
Glandulinidae	Tr(Carn)	- R	
Globanomalinidae	T (Than)	- T (IOli)	
Globigerinelloididae	K (Barr-u)	- K (Maas-u)	(72)
Globigerinidae	T (Eoc)	- R	(70)
Globorotaliidae	T (Dani)	- R	
Globorotalitidae	K (Barr-l)	- K (Maas-l)	(301)
Globotextulariidae	K (Camp)	- R	
Globotruncanidae	K (Turo-l)	- K (Maas-u)	
Globuligerinidae	J (Bajo-u)	- K (Vala-u)	(72)
Guembeltriidae	K (Albi-m)	- R	
Haddoniidae	T (Eo)	- R	
Hantkeninidae	T (mEoc-l)	- T (uEoc)	
Haplophragmiidae	J (Bajo-u)	- K (Albi-u)	(844)
Haplophragmoididae	Tr(Nori)?	- R	
Hastigerinidae	T (mMio)	- R	
Hauerinidae	J (Bath-u)	- R	
Hedbergellidae	K (Apti-u)	- K (Maas-u)	(72)
Heleninidae	T (Eoc)	- R	
Hemigordiopsidae	C (Vise-u)	- R	
Hemisphaeamminidae	O (Cara)	- R	
Heronalleniidae	T (Eo)	- R	
Heterohelicidae	K (Apti)	- T (Than)	
Heterolepidae	K (Albi-u)	- R	
Hippocrepinellidae	C (Bash)	- R	
Hippocrepinidae	O (Cara)	- R	
Hirsutospirellidae	Tr(Nori)		
Homotrematidae	T (Eoc)	- R	
Hormosinidae	O (Cara-l)	- R	
Hospitellidae	T (Eo)	- R	
Hottingeritidae	J (Oxfo-u)	- K (Barr)	
Hyperamminoididae	D (Fras)	- K (Nc)	
Ichthyolariidae	P (Leon-l)	- K (Albi)	
Invanovellidae	S (Ludl)	- C (I)	
Involutinidae	P (Leon-u)	- K (Ceno)	
Karreriidae	K (Apti-l)	- R	
Keramosphaeridae	K (Berr)	- R	
Labyrinthidomatidae	K (Sant-l)	- K (Camp)	
Lacosteinidae	K (Camp-l)	- T (uEoc)?	
Lagenidae	J (Sine)?	- R	
Lasiiodiscidae	C (Vise-u)	- P (Tatr-u)	(524)
Lepidocyclinidae	T (mEoc-l)	- T (mMio)	(724)
Lepidorbitoididae	K (Sant)	- T (mEoc-l)	
Linderinidae	T (mEoc-l)	- T (uEoc)	
Lituolidae	C (Tour-l)	- R	(301)
Lituoliporidae	J (Plie)		
Lituotubidae	Tr(Ladi-u)	- R	
Loeblichidae	D (Give-u)	- C (Mosc-l)	(301)
Loftusiidae	K (Barr)	- K (Maas-u)	
Loxostomidae	K (Sant)	- T (mEoc-u)	
Marginaridae	D (Give-l)	- D (Fame)	
Marieitidae	K (Sant)	- K (Maas)	(720)

Maylisoridae	Cm(u)	-	S	
Mayncinidae	J (Oxfo)	-	K (Sant-u)	
Meandropsinidae	K (Ceno-l)	-	T (Than)	(720)
Mesoendothyridae	Tr(Ladi)	-	J (Tith-u)	
Miliolidae	T (mEoc-l)	-	R	
Miliolechinidae	Tr(Nori)			
Milioliporidae	P (Tatr-l)	-	Tr(Nori-u)	
Miogypsinidae	T (Ioli)	-	T (mMio)	
Mississippinidae	T (uEoc)	-	R	
Moravamminidae	D (Give-u)	-	D (Fras-m)	
Nautiloculinidae	J (Oxfo-u)	-	K (Sn)	
Neoschwagerinidae	P (Asse)	-	P (Tatr-l)	(196)
Nezzazatidae	K (Barr)	-	K (Maas-u)	
Nodosariidae	Tr(Nori-u)	-	R	
Nodosinellidae	S (Ludl)	-	P (Tatr-u)	
Nonionidae	K (Coni)	-	R	
Nouriidae	K (Turo-l)	-	R	
Nubeculariidae	Tr(Anis-u)	-	R	
Nummulitidae	T (Than)	-	R	
Oberhauserellidae	Tr(Anis-m)	-	J (Hett)	(451)
Ophthalmidiidae	Tr(Anis-u)	-	R	(531)
Orbitoididae	K (Sant-u)	-	K (Maas-u)	(301)
Orbitolinidae	J (Bath)	-	T (uEoc)	(301)
Orbitopsellidae	Tr(u)	-	J (Tith-l)	
Oridorsalidae	T (uOli)	-	R	
Osangulariidae	K (Albi-m)	-	R	
Oxinoxisidae	D (Fame-u)	-	C (Tour-l)	
Ozawainellidae	C (Vise-l)	-	P (Tatr-u)	(196,489)
Pachyphloidae	P (Leon)	-	P (Tatr-u)	(301)
Palaeosprio- plectamminidae	D (Fame-u)	-	C (Vise-l)	
Palaeotextulariidae	C (Tour-u)	-	P (Tatr-u)	
Pannellainidae	T (Ioli)	-	R	
Parathuramminidae	S (Wenl)	-	C (Vise-l)	
Paratikhinellidae	D (Give)	-	C (Serp-l)	
Parrelloididae	T (Dani)?	-	R	
Partisaniidae	P (Leon)	-	P (Guad)	
Patellinidae	K (Berr)	-	R	(844)
Pavoninidae	T (uEoc)	-	R	
Pavonitinae	T (Ioli)	-	T (Plio)	
Pegidiidae	T (Mi)	-	R	
Pellatinspiridae	T (Than)	-	T (uEoc)	
Peneroplidae	K (Coni)	-	R	(301)
Pfenderinidae	J (Sine-u)	-	K (Maas-u)	
Placentulinidae	J (Aale)	-	R	
Placopsilinidae	J (Toar)	-	R	
Planomalinidae	K (Albi-u)	-	K (Ceno-l)	
Planorbulinidae	T (mEoc)	-	R	
Planulinidae	T (uEoc)	-	R	
Planulinoididae	T (Plio)	-	R	
Plectorecurvoididae	K (Barr)	-	K (Ceno)	
Pleurostomellidae	K (Apti)	-	R	
Polymorphinidae	Tr(Nori-l)	-	R	(531)
Prolixoplectidae	J (Bajo)	-	R	

Psammosphaeridae	O (Cara-m) - R	(301)
Pseudoammodiscidae	D (Fame) - P (l)	
Pseudogaudryinidae	K (Apti-u) - R	
Pseudolituotubidae	C (Vise-l) - C (Mosc)	(350)
Pseudorbitoididae	K (Camp) - K (Maas-u)	(301)
Pseudoparrellidae	T (uOli) - R	
Pseudotaxidae	C (Tour-u) - C (Bash)	
Ptychocladidae	D (Fras) - C (Step)	
Pulleniatinidae	T (mMio) - R	
Quadriforminidae	K (Coni) - R	
Reussellidae	T (mEoc-l) - R	
Rhabdamminidae	K (Camp) - R	
Rhapydioninidae	K (Ceno-m) - K (Maas)	(301)
Riveroinidae	T (uOli) - R	
Robertinidae	T (Than) - R	
Robuloididae	P (Leon) - J (Kimm-u)	
Rosalinidae	T (uEoc) - R	
Rotaliidae	K (Coni) - R	
Rotaliporidae	K (Apti-u) - K (Coni-u)	
Rugoglobigerinidae	K (Coni-l) - K (Maas-u)	
Rzehakinidae	K (Berr) - R	
Saccamminidae	O (Aren) - R	
Schackoinidae	K (Barr-u) - K (Maas-u)	
Schubertellidae	C (Bash-u) - P (Tatr-u)	(196,489)
Schwagerinidae	C (Bash-u) - P (Tatr-u)	(231)
Semitexturlariidae	D (Eife) - C (Serp-l)?	(350)
Silicoloculinidae	T (uMio) - R	
Silicotubidae	K (Sn)	
Siphogenerinoididae	K (Turo-l) - R	
Siphoninidae	K (Maas) - R	
Siphoniferidae	Tr(Nori)	
Soritidae	K (Ceno-m) - R	(512)
Sphaeroidinidae	K (Maas) - R	
Spirillinidae	Tr(Carn) - R	
Spirocyclinidae	J (Sine-u) - T (uEoc)	
Spiroloculinidae	J (Bajo-u) - R	(452)
Spiroplectamminidae	C (Tour) - R	
Squamulinidae	K (Maas) - R	
Staffellidae	C (Vise) - P (Tatr-u)	
Stainforthiidae	T (uEoc) - R	
Stilostomellidae	K (Camp) - R	
Syzraniidae	S (Prid) - P (Tatr-l)	
Tetrataxidae	C (Tour-u) - C (Step)	(141)
Textulariellidae	T (lMio-l) - R	
Textulariidae	T (Than) - R	
Textulariopsidae	J (Plie) - K (Maas)	
Thomasinellidae	K (Ceno) - R	
Tosaiidae	T (mMio) - R	
Tournayellidae	D (Fras) - C (Step)	
Tremachoridae	T (mMio)	
Triaxiidae	J (Tith) - K (l)	
Trichohyalidae	T (uOli) - R	
Trochamminidae	C (Vise) - R	(141)
Truncorotaloididae	T (Dani) - T (uEoc)	

Tuberitinae	S (Ldov)	-	P (Tatr-u)	
Turrilinae	J (Bath)	-	T (Ioli)	
Uralinellidae	D (Give)	-	C (Vise)	
Usloniidae	D (Give-u)	-	C (Vise-l)	(78)
Uvigerinidae	T (Than)	-	R	
Vaginulinidae	Tr(Anis-u)	-	R	(531)
Valvulaminidae	T (mEoc-l)	-	T (Ioli)	
Valvulinellidae	C (Vise-l)	-	C (Bash)	(141)
Valvulinidae	T (Than)	-	R	
Ventrolaminidae	J (Bajo-u)	-	K (Berr-u)	
Verbeekinidae	P (Sakm)	-	P (Tatr-l)	
Verneuilinidae	C (Bash)	-	R	
Victoriellidae	K (Sant)	-	R	
Virgulinellidae	T (lEoc)	-	R	

?Or. CHITINOZOA

[Classification follows Tappan (1966).]

Ancyrochitinidae	O (Aren-l)	-	D (Fame)	(778)
Conochitinae	O (Trem-l)	-	D (Fame)	(778,810)
Desmochintinae	O (Trem-u)	-	D (Fame)	(778)
Hoegispharidae	O (Aren-l)	-	D (Fras)	(778)
Lagenochitinae	O (Trem-l)	-	D (Fame)	(778)
incertae sedis	C (Serp-l)			

CILIOPHORA

Cl. POLYHYMENOPHORA

[Classification and basic stratigraphic ranges follow Tappan and Loeblich (1968) and the *Treatise*, Pt. D, with emendations. More than 27 extant marine families without known fossil representatives are not listed.]

Or. SPIROTRICHIA (including Tintinnina)

Codonellidae	O (Ashg)	-	R	(407)
Codonellopsidae	J (Toar)	-	R	(301)
Coxiellidae	J (Toar)	-	R	(301)
Heterotrichina	T (Dani)	-	R	(407)
Hypotrichina	T (Eo)	-	R	(407)
Xystonellidae	J (u)	-	R	

PORIFERA

Cl. DEMOSPONGEA

[Classification follows Hartman et al. (1980) and the *Treatise*, Pt. E; basic stratigraphic ranges follow the *Treatise*, with numerous emendations, as listed. Approximately 42 extant families without known fossil representatives are not listed.]

Or. POECILOSCLERIDA

Acarniidae	K (Sn)	-	R	
Amphilectidae	Q (Plei)	-	R	
Cladorhizidae	Q (Plei)	-	R	
Hamptoniidae	Cm(mMid-u)	-	Cm(uMid-m)	(619,620)
Leptomidae	Cm(Atda-u)	-	Cm(uMid-m)	(126,151,620)
Myxillidae	K (u)	-	R	(532)

Tedaniidae	Q (Plei)	-	R	
Or. HAPLOSCLERIDA				
Adociidae	Tr(Carn-l)	-	R	
Corralioidae	Cm(mMid-u)			
Desmacidontidae	Q (Plei)	-	R	
Halichondritidae	Cm(mMid-u)			(151,620)
Haliclonidae	O (Trem)	-	R	
Hazeliidae	Cm(Tojo)	-	Cm(mMid-u)	(151,620)
Heliospongiae	D (Loch)	-	P (Leon-l)	(186,221)
Takakkawiidae	Cm(mMid-u)			(620)
Wapkiidae	Cm(mMid-u)			(620)
Or. DICTYOCERATIDA				
Dysideidae	J (u)	-	R	
Spongiidae	C (Mosc)	-	R	
Or. VERONGIIDA (extant)				
Vauxiidae	Cm(lMid)	-	Cm(uMid-l)	(151,618)
Or. VERTICILLITIDA				
Murguiathalamiidae	J (m)	-	K (u)	(713)
Verticillitidae	D (Eife-l)	-	R	
Or. ASTROPHORIDA (= Choristida)				
Ancorinidae	J (u)	-	R	
Craniellidae	K (u)	-	R	
Euleraphidae	J (u)	-	K (Camp-l)	(332)
Geodiidae	C (Vise-u)	-	R	(301)
Halinidae	C (l)	-	R	
Ohiraphiditidae	J (u)	-	R	
Scolioraphididae	J (u)	-	K (u)	
<i>Loganiella</i>	O (Llvi-l)			(624)
Or. LITHISTIDA				
Acrochordoniidae	K (Apti)	-	T (uMio-l)	(99,331)
?Anomoclonellidae	O (Cara)?	-	S (Wenl)	
Anthaspidellidae	Cm(Tojo)	-	P (Tatr-l)	(406)
Anthracosyconidae	P (Leon-l)	-	P (Guad-u)	(221)
Archaeodorydermatidae	C (l)			(597)
Astroboliidae	K (Apti)	-	T (uMio-l)	(199)
Astrocladiidae	P (Sakm)	-	K (Camp-l)?	(331)
Astylospongiidae	O (Cara-m)	-	J (u)	(340)
Attungaiidae	D (Prag-l)?			(564)
Aulaxiniidae	K (Apti)	-	K (Maas-u)	(331)
Azoricidae	J (Plie)	-	R	
Chenendoporidae	J (m)	-	K (Maas-l)	(331,499)
Chiastroclonellidae	S (Wenl)	-	P (Guad-l)	(221)
Cnemidiastriidae	C (Vise)?	-	T (uMio-l)	(99)
Columellaespongiidae	D (Prag-l)	-	D (Eife)	(564)
Corallistidae	J (Oxfo-l)	-	R	(798)
Cylindrophymatidae	J (Aale)	-	J (Tith)	(301,798)
Discodermiidae	K (Apti)	-	R	(331,340)
Dorydermatidae	C (Vise)?	-	K (Maas)	
Hallirhoidae	J (Oxfo-m)	-	K (Maas)	(331,452)
Haplistiidae	O (Cara)	-	P (Guad-l)	(634)
Helobrachiidae	K (u)			



Hindiidae	O (Cara-l)	-	P (Tatr-l)	(223,301)
Isoraphiniidae	J (u)	-	K (Maas)	
Jereicidae	J (Oxfo)	-	R	(798)
Jereidae	P (Leon-u)	-	K (Camp-u)	(221,331)
Kaliapsidae	K (Turo)	-	R	(332)
Leiodorellidae	J (Bajo-l)	-	R	(798)
Neopeltidae	K (Camp-l)	-	R	(332)
Phymaraphiniidae	K (Ceno-m)	-	T (Mi)	(331)
Pleromidae	K (Albi-u)	-	R	(331)
Plinthosellidae	K (Ceno)	-	T (Mi)	(99,331)
Raanespongiidae	P (Leon)			(634)
?Saccospongiidae	O (Cara-m)	-	S (Ludl)	(301)
Scleritodermatidae	K (u)	-	R	
Vetulinidae	J (Oxfo)	-	R	

Or. HADROMERIDA

?Cassoanotalamiidae	Tr(Carn-l)	-	Tr(Nori-l)	(713)
Clionidae	J (Tith-l)?	-	R	
Piraniidae	Cm(mMid-l)	-	Cm(mMid-u)	(151)
Spirastrellidae	Q (Plei)	-	R	
Suberitidae	K (Barr)	-	R	

Or. STROMATOPOROIDEA (sensu stricto)

[Classification is from Stearn (1980) with stratigraphic ranges from the *Treatise*, Pt. F, and other sources, as indicated.]

Actinostromatidae	S (Ldov)	-	D (Fame-u)	(760)
Amphiporidae	S (Ldov)	-	D (Fame-u)	(510,760)
Aulaceridae	O (Llvi)	-	O (Ashg-u)	(841)
Clathrodictyidae	O (Cara-l)	-	D (Fame-u)	(760)
Densastromatidae	S (Ldov)	-	D (Loch-l)	
Diplostromatidae	S (Wenl)	-	S (Prid)	(420)
Ecclimadictyidae	O (Cara-l)	-	D (Fame)?	(840)
Hermatostromatidae	S (Ludl)	-	D (Fame)	(760)
?Khasaktidae	Cm(Atda-l)	-	Cm(Boto-l)	(679)
Labechiidae	O (Aren)	-	D (Fame-u)	(760,841)
Lophiostromatidae	O (Llde)	-	S (Prid)	(510,841)
Pseudolabechiidae	S (Ldov)	-	S (Ludl)	
Rosenellidae	O (Llvi)	-	D (Fame-u)	(760,841)
Stachyoditidae	D (Eife)	-	D (Fras-u)	(760)
Stichostromatidae	S (Prid)	-	D (Fame-u)	(760)
Stromatoporidae	S (Ldov)	-	D (Fame-u)	(760)
Syringostromatidae	S (Prid)	-	D (Fras-u)	(633)
Syringostromellidae	S (Wenl)	-	D (Fras)	(510,760)
Tienodictyidae	S (Ldov-u)	-	D (Fame-u)	(760)

Or. GUADALUPIIDA

Guadalupiidae	P (Sakm-u)	-	P (Guad-u)	(222,713)
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Or. AXINELLIDA (= post-Devonian "stromatoporoids"; extant)

Actinostromarianinidae	J (Oxfo-u)	-	J (Kimm-u)	(861)
Actinostromariidae	J (Oxfo-u)	-	K (Sant)	(861)
Burgundiidae	J (Oxfo-u)	-	K (Haut)	(861)
?Disjectoporidae	P (Guad)	-	Tr(Carn-u)	(213,260,305)
Milleporellidae	Tr(Nori)	-	K (Apti-l)	(861)
?Sphaeractinidae	C (Step-l)	-	K (Ceno-l)	(183,301)

?Spongiomorphidae	P (Tatr-u)	- J (Tith)	(716)
Or. TABULOSPONGIDA (= Chaetitida + Ceratoporellida)			
Acanthochaetetidae	J (Oxfo)	- R	(663)
Ceratoporellidae	Tr(Anis)	- R	(663)
Chaetetidae	O (Ashg-l)	- J (Tith-u)	(340)
Desmidoporidae	O (Ashg)	- D (Eife)	
Favosichaetidae	C (l)		
Tabulospongidae	J (Oxfo)	- T (mEoc)	(305,663)
Tiverinidae	S (Wenl)	- D (l)	
Or. HOMOSCLEROMORPHA			
Plakinidae	K (u)	- R	
Or. UNCERTAIN			
Choiidae	Cm(Boto-l)	- O (l)	(151,620)
Sollasellidae	O (Cara-m)	- R	
? <i>Lapidipanis</i>	O (Llvi-l)		(543)
? <i>Protohyalostelia</i>	Cm(Atda)		(36)
Cl. CALCAREA (= Calcispongia)			
[Classification and stratigraphic ranges principally from the <i>Treatise</i> , Pt. E, Harland et al. (1967), and Senowbari-Daryan (1990). Eleven extant families without known fossil representatives are not listed.]			
Or. HETERACTINIDA			
Astraeospongiidae	O (Cara)	- D (Fame-u)	(616,633)
Eiffeliidae	Cm(Atda-u)	- C (Mosc)	(36,616)
Wewokellidae	C (Tour)	- P (Leon-u)	(616,617)
Or. CALCARONEA (= Calcina, Lebetida, Syconosa)			
Grantiidae	J (u)	- R	
Leuconiidae	C (Vise)?	- R	(532)
Or. PHARETRONIDA (= Inozoa; Murrayonida + Lithonida)			
Bactronellidae	J (u)	- T (Eo)	
Discocoeliidae	Tr(Carn-l)	- K (Maas)	(305)
Elasmocoeliidae	J (Oxfo)	- K (Albi-u)	(332)
Elasmomatidae	P (Leon-u)	- T (IEoc)	(233)
Fissispongiidae	C (Mosc-u)	- P (Guad-l)	(221)
Lelapiidae	P (Sakm)	- R	
Maendrostiidae	C (Mosc-u)	- P (Tatr-u)	(221,231)
Pharetrospongiidae	J (Kimm)	- K (Maas)	(340)
Porosphaeridae	K (Nc)	- R	
Sestrostomellidae	Tr(Carn-l)	- R	
Stellispongiidae	P (Sakm)	- K (Maas)	(224)
Or. PERMOSPHINCTA (= Sphinctozoa, in part)			
Amphorithalamiidae	P (Guad)?		(713)
Angullongiidae	O (Cara-m)	- O (Ashg)	(630,713)
Annaecoeliidae	Tr(Nori-u)		(713)
Celyphiidae	O (Ashg)	- Tr(Nori)	(305,630)
Cheilosporitiidae	Tr(Nori-u)		(713)
Cliefdenellidae	O (Cara-m)	- O (Ashg-m)	(840)
Colospongiidae	Cm(lMid)	- Tr(Nori-u)	(630,713,716)
Cribrothalamiidae	Tr(Nori)		(713)
Cryptocoeliidae	S (Ludl)	- J (Oxfo-u)	(713)
Glomocystospongiidae	P (Tatr-u)		(623,713)

Intrasporeoceliidae	P (Guad-l)	-	P (Tatr-u)	(231,623,713)
Olangoceliidae	Tr(Anis)	-	Tr(Ladi)	(713)
Palermoceliidae	Tr(Anis)	-	Tr(Nori)	(713)
Phragmoceliidae	D (Loch)	-	Tr(Carn)	(564,713)
Pisothalamiidae	P (Guad)?			(713)
Polyedridae	P (Leon-u)	-	P (Guad)?	(713)
Polytholosiidae	Tr(Carn-l)	-	Tr(Nori-u)	(713)
Salzburgiidae	P (Guad-l)	-	Tr(Nori-u)	(623,713)
Sebargasiidae	Cm(IMid)	-	Tr(Nori-l)	(630,713)
Solenolmiidae	D (Eife-l)	-	Tr(Nori-u)	(621,713)
Spicidae	O (Cara-l)	-	Tr(Nori)	(713)
Tebagathalamiidae	P (Leon-u)	-	P (Tatr-u)	(231,713)
Thaumastoceliidae	O (Cara-l)	-	Tr(Carn)	(630,713)

Or. SPHAEROCOELIDA

Sphaeroceliidae	J (Tith)?	-	K (Ceno)	(713)
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Or. INCERTAE SEDIS

Alpinothalamiidae	Tr(Ladi)	-	Tr(Carn)	(713)
Ceotinellidae	Tr(Ladi)	-	Tr(Carn)	(713)
?“phobetractinids”	Cm(Atda)	-	O (l)	(36)

Cl. HEXACTINELLIDA (= Triaxonida, Hyalospongea)

[Classification and stratigraphic ranges based on the *Treatise*, Pt. E, with emendations as listed. Two extant families without known fossil representatives are not listed.]

Or. HEXACTINOSIDA (= Dictyida)

Aphrocallistidae	K (Ceno-u)	-	R	
Botryosellidae	J (Bajo-u)	-	K (Maas)	(596)
Criticulariidae	J (Bajo-l)	-	R	
Cribrospongiidae	Tr(Anis-m)	-	R	(301)
Eubrochididae	K (Albi-u)	-	K (Maas)	(596)
Euretidae	J (u)	-	R	
Farreidae	K (Albi-u)	-	R	
?Myliusiidae	J (Bajo-u)	-	R	(425)
Pileolitidae	P (Sakm)	-	P (Leon-l)	(221,224)
Staurodermatidae	Tr(Anis-m)	-	K (Maas-u)	(301,332)
Tretodictyidae	K (Ceno)	-	R	(596,633)
<i>Pseudopemmatites</i>	D (Fras)			(631)

Or. LYCHNISCOSIDA (= Lychniskida)

Becksiidae	J (Oxfo-u)	-	K (Maas)	(596,633)
Callodictyidae	K (Albi-u)	-	K (Maas)	(596)
Calyptrellidae	Tr(Carn)	-	K (Ceno-m)	(596,633)
Camerospongiidae	J (u)	-	K (Sn)	
Coeloptychiidae	K (Coni)	-	K (Maas)	(332,596)
Coeloscyphiidae	K (Albi-u)	-	K (Sn)	(596)
Coscinoporidae	K (Sant)	-	K (Maas)	(596)
Cypelliidae	J (Aale)	-	R	(798)
Dactylocalycidae	K (Ceno)	-	R	
Oncotoechidae	K (u)			
Polyblastidiidae	J (Oxfo)	-	K (Sn)	(633)
?Sporadosciniidae	K (Albi)?	-	K (Maas)	(596)
Ventriculitidae	J (Call-u)	-	K (Maas-u)	(332,452)

Or. RETICULOSA		
Aglithodictyidae	D (Fras-u)	(294,633)
Dictyospongiidae	O (Cara-l) - P (Leon-u)	
Dierespongiidae	Cm(uMid-l) - O (Cara-l)	(616,625)
Docodermatidae	C (Mosc) - J (u)	(305)
Hintzespongiidae	Cm(mMid-u) - Cm(uMid-m)	(476,625)
Hydnodictyidae	Cm(uMid) - O (Ashg-l)	(633)
Multivasculatidae	Cm(Fran) - Cm(Trep)	(525)
Protospongiidae	Cm(Tomm-l) - D (Fras)?	(629,891)
Stereodictyiidae	C (Bash) - P (Leon-l)	(221,635)
?Stromatidiidae	P (Guad-l) - P (Guad-u)	(221,224)
Teganiidae	Cm(uMid) - P (Leon-u)	(616)
Titusvilliidae	D (Fras) - C (Tour-l)	
Or. LYSSACINOSIDA (= Lyssakida)		
Brachiospongiidae	O (Cara-m) - P (Guad-u)	(613,628)
Caulophacidae	T (Eo) - R	
Euplectellidae	O (Ashg-l) - R	(615)
Lumectospongiidae	S (Ludl-l)	(622)
Malumispongiidae	S (Ldov)	(633)
?Mattaspongiidae	D (Fras)	(6)
?Pileospongiidae	C (Vise-u) - C (Serp-l)	(626,632)
Pyraspongiidae	O (Cara)	(614)
Rossellidae	T (Eo) - R	
Stauractinellidae	J (Call) - J (Oxfo)	
Or. AMPHIDISCOSA		
Hyalonematidae	C (Bash)? - R	(382,633)
Pelicaspongiidae	O (Ashg) - D (Fras)	(612,615)
Pheronematidae	K (Camp) - R	(382)
Stiodermatidae	C (Vise) - P (Guad)	(221)
Or. HEMIDISCOSA	C (Step) - K (u)	(382,633)
Or. INCERTAE SEDIS		
Konyriidae	Cm(Dres-l)? - O (Llde-u)	(48)
<i>Azyrtalia</i>	Cm(Atda-u)	(36)

## ARCHAEOCYATHA

### Cl. REGULARES

[Classification and stratigraphic ranges are from Debrenne, Rozanov, and Zhuravlev (1990).]

#### Or. MONOCYATHIDA

Favilynthidae	Cm(Atda-u) - Cm(Boto-l)
Globosocyathidae	Cm(Atda-u) - Cm(Boto-u)
Monocyathidae	Cm(Tomm-l) - Cm(Boto-u)
Palaeoconulariidae	Cm(Atda-u)? - Cm(Boto-u)
Sajanolynthidae	Cm(Boto-l) - Cm(Boto-u)
Tumuliolynthidae	Cm(Tomm-u) - Cm(Boto-u)

#### Or. AJACICYATHIDA

Ajacicyathidae	Cm(Tomm-l) - Cm(Boto-u)
Alataucyathidae	Cm(Atda-l) - Cm(Boto-l)
Anaptyctocyathidae	Cm(Atda-u) - Cm(Boto-u)
Annulocyathidae	Cm(Atda-u) - Cm(Boto-u)

Aptocyathidae	Cm(Boto-l) - Cm(Boto-u)
Asterocyathidae	Cm(Tomm-u)- Cm(Boto-l)
Bipallicyathidae	Cm(Boto-l)
Botomocyathidae	Cm(Atda-u) - Cm(Boto-u)
Bronchocyathidae	Cm(Atda-l) - Cm(Boto-u)
Calyptocoscinae	Cm(Boto-l)
Carinacyathidae	Cm(Atda-l) - Cm(Boto-u)
Clathricoscinae	Cm(Boto-l) - Cm(Boto-u)
Cordobicyathidae	Cm(Atda-u)
Coscinocyathellidae	Cm(Boto-l) - Cm(Boto-u)
Coscinocyathidae	Cm(Atda-l) - Cm(Boto-l)
Coscinoptycidae	Cm(Boto-l) - Cm(Boto-u)
Crassicoscinae	Cm(Boto-l)
Densocyathidae	Cm(Atda-l) - Cm(Tojo-l)
Dokidocyathellidae	Cm(Atda-l) - Cm(Boto-u)
Dokidocyathoidae	Cm(Tomm-u)- Cm(Boto-u)
Erbocyathidae	Cm(Boto-l) - Cm(Tojo-u)
Ethmocoscinae	Cm(Boto-l)
Ethmophyllidae	Cm(Atda-u) - Cm(Tojo-l)
Fallocyathidae	Cm(Atda-l) - Cm(Boto-u)
Gagarinicyathidae	Cm(Boto-l)
Geocyathidae	Cm(Atda-l) - Cm(Boto-l)
Gloriosocyathidae	Cm(Atda-u) - Cm(Boto-l)
Hupecyathellidae	Cm(Boto-l)
Jakutocarinae	Cm(Atda-l) - Cm(Boto-u)
Japhaniccyathidae	Cm(Atda-u) - Cm(Boto-l)
Jebiletoscinae	Cm(Boto-l) - Cm(Boto-u)
Kaltatocyathidae	Cm(Atda-l) - Cm(Boto-u)
Kasyriicyathidae	Cm(Boto-l) - Cm(Boto-u)
Kidrjasocyathidae	Cm(Boto-l) - Cm(Boto-u)
Kijacyathidae	Cm(Atda-u) - Cm(Tojo-l)
Kisasacyathidae	Cm(Atda-u) - Cm(Boto-u)
Kolbicyathidae	Cm(Atda-u) - Cm(Boto-l)
Kordecyathidae	Cm(Boto-l) - Cm(Boto-u)
Kymbecyathidae	Cm(Boto-l)
Lenocyathidae	Cm(Atda-l) - Cm(Boto-l)
Leptosocyathidae	Cm(Atda-l) - Cm(Boto-u)
Lunulacyathidae	Cm(Boto-l)
Mootwingecyathidae	Cm(Boto-l)
Mrassocyathidae	Cm(Atda-u)
Olgaecyathidae	Cm(Boto-l) - Cm(Boto-u)
Papillocyathidae	Cm(Atda-u) - Cm(Boto-l)
Peregrinicyathidae	Cm(Boto-l) - Cm(Boto-u)
Piamaecyathidae	Cm(Boto-l) - Cm(Boto-u)
Polycoscinae	Cm(Atda-u) - Cm(Boto-l)
Porocyathidae	Cm(Atda-l)? - Cm(Boto-l)
Pretiosocyathidae	Cm(Atda-l) - Cm(Boto-l)
Putapacyathidae	Cm(Boto-l) - Cm(Boto-u)
Rewardocyathidae	Cm(Atda-u) - Cm(Boto-l)
Robertocyathidae	Cm(Atda-u) - Cm(Boto-l)
Rozanoviccyathidae	Cm(Atda-u) - Cm(Boto-l)
Rudanulidae	Cm(Boto-l)
Sajanocyathidae	Cm(Atda-u) - Cm(Tojo-l)
Salairocyathidae	Cm(Atda-u) - Cm(Boto-u)

Sanarkocyathidae	Cm(Atda-u) - Cm(Boto-l)
Schumnyicyathidae	Cm(Boto-l)
Sigmocoscinae	Cm(Boto-l) - Cm(Boto-u)?
Sigmocyathidae	Cm(Boto-l)
Soanicyathidae	Cm(Atda-u) - Cm(Boto-l)
Sylviacoscinae	Cm(Boto-l)
Tegerocyathidae	Cm(Boto-l) - Cm(Tojo-u)
Tercyathidae	Cm(Boto-l) - Cm(Boto-u)
Titijanaeacyathidae	Cm(Boto-l)
Tumulifungiidae	Cm(Atda-u) - Cm(Boto-u)
Tumulocoscinae	Cm(Atda-u) - Cm(Boto-l)
Tumulocyathidae	Cm(Tomm-u)- Cm(Boto-u)
Vologdinocyathidae	Cm(Boto-l) - Cm(Tojo-u)
Wrighticyathidae	Cm(Boto-l) - Cm(Boto-u)
Xestecyathidae	Cm(Boto-l) - Cm(Boto-u)
Zhuravlevaacyathidae	Cm(Boto-l)
Zonacoscinae	Cm(Boto-l)

Or. CAPSULOCYATHIDA

Capsulocyathidae	Cm(Atda-u) - Cm(Boto-u)
Cryptoporocyathidae	Cm(Tomm-l) - Cm(Atda-l)
Fransuasaacyathidae	Cm(Atda-l) - Cm(Boto-u)
Laniccyathidae	Cm(Boto-l)
Mawsonicoscinae	Cm(Boto-l) - Cm(Boto-u)?
Tomocyathidae	Cm(Atda-u) - Cm(Boto-l)
Tubericyathidae	Cm(Boto-l)
Tylocyathidae	Cm(Boto-l)
Uralocyathellidae	Cm(Boto-l) - Cm(Boto-u)

Cl. IRREGULARES

[Classification and stratigraphic ranges are based largely on the *Treatise*, Pt. E1 (revised). Some families may belong among the Porifera.]

Or. THALASSOCYATHIDA (= Rhizacyathida)

Bacatocyathidae	Cm(Tomm-u)- Cm(lMid)	(822)
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Or. ARCHAEOCYATHIDA

Anthomorphidae	Cm(Atda-u) - Cm(Tojo-l)	
Archaeocyathidae	Cm(Boto-l) - Cm(Dres-u)	(186)
Archaeofungiidae	Cm(Atda-u) - Cm(Boto-l)	(665)
Archaeopharetridae	Cm(Boto-l)	
Archaeosyconidae	Cm(Tomm-l) - Cm(Tojo-u)	
Ardrossacyathidae	Cm(Atda-u)	(286)
Beltanacyathidae	Cm(Atda-u)	(286)
Bicyathidae	Cm(Tomm-u)- Cm(Boto-u)	
Claruscoccinae	Cm(Boto-l) - Cm(Tojo)	(286)
Copleicyathidae	Cm(Boto-l)	
Dictyocoscinae	Cm(Boto-l)	
Dictyocyathidae	Cm(Tomm-u)- Cm(Boto-u)	(185)
Flindersicyathidae	Cm(Boto-l) - Cm(Tojo)	
Graphoscyphiidae	Cm(Boto)	(405)
Hawkericyathidae	Cm(Atda-u)	(286)
Jugaliccyathidae	Cm(Atda-u)	(286)
Metacoscinae	Cm(Boto-l) - Cm(Tojo-u)	(665)
Metacyathidae	Cm(Tomm-u)- Cm(Tojo)	
Prismocyathidae	Cm(Boto)	

Protocycloocyathidae	Cm(Atda-u) - Cm(Boto-l)	
Protopharetridae	Cm(Tomm-u)- Cm(Boto-u)	(185)
Pycnoidocosciniidae	Cm(Boto-l)	
Sigmofungiidae	Cm(Boto-l)	
Spirillicyathidae	Cm(Atda-u)	(286)
Tabellaecyathidae	Cm(Boto) - Cm(Tojo-l)	
Tabulacyathidae	Cm(Atda-l) - Cm(Boto-u)	

Or. SYRINGOCNEMIDIDA

Pseudosyringocnemididae	Cm(Boto)	(405)
Syringocnemididae	Cm(Boto)	(665)
Syringocosciniidae	Cm(Boto)	

Cl. INCERTAE SEDIS

[Classification and stratigraphic ranges follow the *Treatise*, Pt. E1 (revised).]

Or. KAZAKHSTANICYATHIDA

Kazakhstanicyathidae	Cm(Boto) - Cm(Tojo)	
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Or. ARCHAEOPHYLLIDA

Archaeophyllidae	Cm(Atda)	
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Or. INCERTAE SEDIS

Acanthopyrgidae	Cm(Boto)	
?Korovinellidae	Cm(Boto-u)	
?Mattewcyathidae	Cm(m)	

TRILOBOZOA

[Animals with unique triradial symmetry, probably constituting a distinct phylum near the coelenterate grade. Classification is modified from Fedonkin (1985).]

Albumaresidae	V (Edia)	(217,538)
?Anabaritidae		
(+ Angustiochreidae)	V (N-Da) - Cm(Boto-u)	(36,82,746)
<i>Tribrachidium</i>	V (Edia)	(217,273)

CNIDARIA

Cl. "PETALONAMAE"

[The "petal organisms" of Pflug (1972); several are considered to be pennatulaceans by R.J.F. Jenkins (1985). Classification follows the *Treatise*, Pt. A. "Incertae sedis" includes *Baikalina*, *Namalia*, *Nasepia*, and others including forms described by Anderson and Conway Morris (1982). Inclusion of *Dickinsonia* and *Spriggina* follows the implications of Seilacher's (1989) analysis.]

Or. ERNIETTAMORPHA

?Dickinsonidae	V (Edia)	(273,538)
Erniettidae	V (Edia)	(265,561)
Pteridiniidae	V (Edia)	(362,364,538,561)
incertae sedis	V (Edia) - V (N-Da)	(265,274,538,743)

Or. RANGEOMORPHA

?Bomakellidae	V (Edia)	(218)
Charniidae	V (Edia)	(363,743)
Rangeidae	V (Edia)	(273,274,561,743)

?Sprigginiidae  
 (+ Vendomiidae) V (Edia) (269,217,271)

Cl. CYCLOZOA

[Classification modified from Fedonkin (1985).]

Cyclomedusidae V (Edia) - V (N-Da)? (217,538)  
 ?Mawsonitidae V (Edia) (769)  
 ?Medusinitidae V (Edia) (217)

Cl. SCYPHOZOA

[Basic classification and stratigraphic ranges follow the *Treatise*, Pt. F, and Harland et al. (1967). Approximately 19 extant families (including all in the Stauromedusida) without known fossil representatives are not listed.]

Or. CORONATIDA

Collaspididae O (Trem-u) - R  
 Periphyllidae J (Tith-l) - R

Or. SEMAEOSTOMATIDA (extant)

Eulithotidae J (Tith-l)  
 Semaestomitidae J (Tith-l)  
*Lascoa* C (Mosc-u) (247)

Or. LITHORHIZOSTOMATIDA

Rhizostomitidae J (Tith-l)

Or. RHIZOSTOMATIDA

Leptobrachiidae J (Tith-l) - R  
 ?*Essexella* C (Mosc-u) (247)  
*Prothysanostoma* C (Step-l) (533)  
*Reticulomedusa* C (Mosc-u) (247)

?Or. CONULARIIDA

[Considered by some workers, including Babcock and Feldman (1986), to be problematica.]

Carinachitidae V (N-Da) - Cm(Tomm-u) (36)  
 Circonulariidae S (Ldov-l) - D (Loch-u) (52)  
 Conulariellidae V (N-Da) - O (Aren) (82,301,590)  
 Conulariidae O (m) - Tr(Nori-u) (16,301)  
 Conulariopsidae Tr(Olen) (301)  
 ?*Byronia* Cm(mMid-l) - O (Cara-m) (478,703)

Or. CONCHOPELTIDA

Conchopeltidae V (Edia) - O (Cara-m) (270,745)

Or. INCERTAE SEDIS

?Corumbellidae V (Edia) (292)  
 Tirasianidae V (Edia)

Cl. CUBOZOA

[Two extant families.]

Or. CARYBDEIDA

Carybdeidae C (Mosc-u) - R (355)



## Cl. HYDROZOA

[Basic classification and stratigraphic ranges follow the *Treatise*, Pt. F, and Harland et al. (1967). Approximately 78 extant families without known representatives are not listed.]

Or. TRACHYLINIDA			
Cuninidae	J (Tith-1)	- R	
Or. HYDROIDA			
?Chondropilidae	V (u)		
Hydractiniidae	J (Tith-1)?	- R	
Inocaulidae	O (Aren)	- D (Loch)	(478)
Oceaniidae	C (Step)	- R	
?Palaeacmaeidae	Cm(Trep)	- K (Barr-u)	(670,757,879)
Porpitidae	Cm(Atda-u)	- R	(770)
Rhabdohydridae	O (Llvi)	- O (Ashg)	(478)
?Scenellidae	Cm(Tomm-u)	- D (Prag)	(587)
Sertulariidae	K (Maas-u)	- R	(817)
Velellidae	S (Ludl)	- R	
<i>Drevotella</i>	C (Mosc-u)		(698)
? <i>Eoporpita</i>	V (Edia)		(824)
<i>Kullingia</i>	V (Edia)	- V (N-Da)	(505)
<i>Mazohydra</i>	C (Mosc-u)		(698)
? <i>Velumbrella</i>	Cm(Boto)		(703)
Or. CALYPTOBLASTINA			
(= Leptomedusae)	Cm(Tojo)	- R	
Or. MILLEPORINA			
Axoporidae	J (Tith)?	- T (Ol)	
Heterastridiidae	Tr(Nori-u)		(337)
Milleporidae	T (Dani)	- R	
? <i>Palaeomillepora</i>	J (Plie-u)		(337)
Or. STYLASTERINA			
Stylasteridae	K (Maas)	- R	(337)
Or. UNCERTAIN			
<i>Spriggia</i>	V (Edia)		(489)
Cl. INCERTAE SEDIS			
Bonatiidae	V (Edia)		(217)
Hiemaloriidae	V (Edia)		(217)
Kimberellidae	V (Edia)		(489)
?Pomoriidae	V (Edia)		(216,217)
<i>Cambromedusa</i>	Cm(uMid)		(857)
? <i>Etacystis</i>	C (Mosc-u)		(157,247)
? <i>Rosellatona</i>	Cm(Boto-l)		(388)
Cl. HYDROCONOZOA			
[Classification is from Korde (1963).]			
Dasyconidae	Cm(Boto)		(891)
Gastroconidae	Cm(Boto)		(891)
Hydroconidae	Cm(Atda)	- Cm(Boto)	(633)
?Tabulaconidae	Cm(Boto)	- Cm(lMid)	(703)

## Cl. ANTHOZOA

[Classification and stratigraphic ranges are based on the *Treatise*, Pt. F (including 1981 supplement), and Harland et al. (1967), with emendations. Approximately 83 extant families (including all in the Ceriantharia, Teleostacea, Zoanthiniaria, and Corallimorpharia) without known fossil representatives are not listed.]

Or. ANTIPATHARIA			
<i>Leiopathes</i>	T (Mi)	- R	
Or. STOLONIFERA			
Tubiporidae	T (Mi)?	- R	(532)
Or. ALCYONIDA			
Alcyoniidae	S (Ldov-u)	- R	(34)
Nephtheidae	J (Hett)	- R	
Xeniidae	K (Turo-l)	- R	(532,570)
Or. HELIOPORACEA (= Coenothecalia)			
Clavulariidae	K (Berr)?	- R	
Helioporidae	K (Barr)	- R	(337)
Or. GORGONIDA			
Briareidae	T (Dani)	- R	
Coralliidae	K (Berr)	- R	
Ellisellidae	K (Maas-l)	- R	
Gorgoniidae	T (mEoc)	- R	(268)
Isididae	K (Ceno-l)	- R	(408)
Keroeididae	K (Maas-l)	- R	(408)
Melithaeidae	T (Dani)	- R	(408,720)
Parisididae	K (Camp-l)	- R	
Primnoidae	K (Camp)	- R	(448)
?Pragnellia	O (Ashg)		(703)
Or. PENNATULACEA			
Pennatulidae	Tr(m)	- R	(532)
Pteroeididae	T (Eo)	- R	
Virgulariidae	K (Berr)?	- R	
Or. TABULATA			
Agetolitidae	O (Cara-u)	- S (Wenl)	
Alveolitidae	S (Ldov-u)	- D (Fras-u)	
Aulocystidae	O (Ashg-m)	- P (Guad-u)	(704)
Auloheliidae	P (Leon-l)	- P (Guad-u)	(301)
Auloporidae	O (Aren)?	- P (Guad-u)	(301,703)
Bajgoliidae	O (Cara-l)	- O (Ashg-l)	(704)
Billingsariidae	O (Llde-l)	- S (Ldov-l)?	
Chonostegitidae	D (Emsi)	- D (Eife)	
Cleistoporidae	S (Ludl-u)	- C (Mosc-l)	
Coccoserididae	O (Cara-m)	- S (Wenl-l)	(703,704)
Coenitidae	S (Ldov-u)	- D (Give)	
Cryptolichenariidae	O (Aren-u)	- O (Ashg-m)	(704)
Cyrtophyllidae	O (Cara-m)	- O (Ashg-m)	(301,703)
Favositidae	O (Llde-u)	- P (Leon-l)	
Fletcheriellidae	O (Cara-u)	- D (Eife)	
Gorskyitidae	D (Fame-u)	- P (Sakm-l)	(705)
Halysitidae	O (Cara-l)	- S (Ludl)	

Heliolitidae	O (Llde) - D (Fras)	(301)
Khmeriidae	P (Leon-l)	
Kozlowskiocystiidae	D (Eife-u)	
Lamottiidae	O (Llvi-u)	
Lichenariidae	O (Trem-u) - O (Cara-u)	(704)
?Lipoporidae	Cm(Tojo) - Cm(mMid)	(349)
Micheliniidae	S (Ludl-u) - P (Tatr-l)	
Multisoleniidae	O (Ashg-m) - S (Prid)	
Multithecoporidae	S (Ldov) - P (Guad-u)	
Pachyporidae	S (Ldov-m) - P (Tatr-l)	(417)
Palaeacidae	D (Fame-u) - C (Serp-l)?	
Palaeofavosporidae	S (Wenl)	
Palaeoporitidae	O (Cara-m) - O (Ashg-u)	(417)
Paleoalveolitidae	O (Cara-l)	(704)
Parastriatoporidae	O (Cara-u) - D (Eife)	(704)
Periphaceloporidae	D (Give-l)	
Plasmoporellidae	O (Cara-m) - S (Wenl-u)	(704)
Plasmoporidae	O (Cara) - S (Ludl)?	
Proheliolitidae	O (Cara-u) - S (Ludl)	
Proporidae	O (Cara-l) - S (Ludl-u)	
Pseudofavositidae	P (Guad-u) - P (Tatr-l)	
Pseudoplasmoporidae	O (Cara-u) - D (Eife)	
Pycnolithidae	S (Ldov-u) - S (Wenl-l)	(301)
Pyrgiidae	S (Ludl-l) - P (Tatr-l)	(301,417)
Roemeriidae	D (Prag) - P (Sakm)	
Romingeriidae	S (Ldov-u) - C (Vise-u)	
Sibiriolitidae	O (Cara-u) - O (Ashg-m)	
Sinoporidae	S (Ldov) - P (Leon-l)	
Stelliporellidae	O (Ashg-l) - D (Eife)	
Syringolitidae	S (Ldov-m) - S (Ludl)	
Syringophyllidae	O (Llde-l) - S (Ldov-m)	(498,704)
Syringoporidae	O (Ashg-m) - P (Guad-u)	(522,704)
Taeniolitidae	O (Cara-m) - O (Ashg-m)	
Tetradiidae	O (Llvi) - O (Ashg-u)	
Tetraporellidae	O (Cara-m) - P (Tatr-l)	(301,703)
Theciidae	S (Ldov-u) - D (Eife)	
Thecostegitidae	D (Loch) - C (Serp-l)	
Trachypsammiidae	P (Leon-l) - P (Guad-u)	(301)
Vaughaniidae	C (Tour-u)	
<b>Or. COTHONIIDA</b>		
Cothoniidae	Cm(Tojo)	(349,706)
<b>Or. RUGOSA</b>		
Acervulariidae	S (Wenl-l) - S (Ludl)	
Acrophyllidae	D (Emsi)	(527)
Adamanophyllidae	C (Tour) - C (Serp)	
Amplexidae	S (Ldov-l) - C (Bash-u)	
Amsdenoididae	S (Ludl) - D (Eife)	
Anisophyllidae	S (Wenl) - S (Ludl)	(301)
Antiphyllidae	D (Fame-u) - P (Asse)	(748)
Aphrophyllidae	C (Tour-u) - C (Vise-u)	
Arachnophyllidae	S (Ldov-u) - D (Fras-u)	
Asserculiniidae	P (Guad-l)	
Aulophyllidae	D (Fame-u) - P (Asse)	(554,748)

Axophyllidae	D (Fame-u) - C (Bash)	(711,748)
Bethanyphyllidae	D (Give-l)	
Bothrophyllidae	D (Fame-u) - P (Sakm)	(554,748)
Calostylidae	O (Cara) - D (Loch)?	(527,703)
Campophyllidae	D (Fame-u) - C (Serp-l)	(748)
Centristelidae	D (Give)	
Columnariidae	D (Loch) - D (Fras-u)	(301,554)
Combophyllidae	D (Loch) - D (Eife-l)	(301)
Cyathaxoniidae	D (Fame-l) - P (Guad-u)	(748)
Cyathophyllidae	D (Loch) - D (Fras-u)	(527,748)
Cyathopsidae	D (Fame-u) - P (Tatr-l)	(527,748)
Cystiphyllidae	O (Ashg) - D (Give)	(703)
Diffingiidae	P (Asse) - P (Sakm)	
Digonophyllidae	D (Emsi-l) - D (Give-u)	(527)
Disphyllidae	S (Prid) - D (Fame-u)	(705)
Ditoecholasmatidae	S (Ludl)	
Durhaminidae	C (Vise-u) - P (Guad-u)	
Edridophyllidae	S (Ludl) - D (Give-u)	(527)
Ekvasophyllidae	D (Fame-u) - C (Vise-u)	(748)
Endamplexidae	P (Guad-u)	
Endophyllidae	S (Ldov-l) - D (Fame-u)	(554,748)
Endotheeciidae	P (Guad-u)	
Entelophyllidae	S (Ldov-l) - D (Loch)	
Eridophyllidae	S (Ludl) - D (Give-u)	
Expressophyllidae	S (Wenl-l) - S (Ludl)	
Fasciphyllidae	D (Prag) - D (Give)	(527)
Fletcheriidae	S (Ldov) - S (Wenl-u)	
Geyerophyllidae	C (Serp-u) - P (Leon)	(301)
Goniophyllidae	S (Ldov-m) - D (Give-u)	
Hadrophyllidae	D (Emsi) - D (Give-l)	(527)
Halliidae	D (Prag) - D (Fras-u)	(748)
Hapsiphyllidae	D (Emsi) - P (Guad-u)	(527)
Holmophyllidae	S (Ldov) - D (Eife)	
Ketophyllidae	S (Ldov-u) - S (Prid)	
Kielcephyllidae	D (Fame-l)	(748)
Kiziliidae	C (Vise-u) - C (Serp-u)	(712)
Kodonophyllidae	S (Ldov-m) - D (Eife)	(417)
Koninckocariniidae	C (Bash-l) - C (Mosc-u)	
Kyphophyllidae	O (Ashg) - D (Fras-u)	(466)
Laccophyllidae	S (Wenl-l) - P (Tatr-u)	(232)
Lambelasmatidae	O (Cara-l) - S (Ldov-u)	
Lindstroemiidae	D (Give-l)	
Lithostrotionidae	D (Fame-u) - P (Tatr-l)	(748)
Lophophyllidae	D (Fame-u) - P (Tatr-l)	(232,748)
Lykophyllidae	S (Ldov-m) - S (Ludl)	(417)
Metriophyllidae	D (Loch) - C (Tour-l)	(527,554)
Mucophyllidae	S (Ldov-u) - D (Emsi)	
Neocolumnariidae	D (Eife) - D (Fras)	(527)
Neotryplasmataidae	O (Cara-m) - O (Ashg-m)	
?Numidiaphyllidae	P (Guad)	(232)
Palaeocyclusidae	O (Cara-l) - D (Eife)	(301)
Palaeosmiliidae	D (Fame-u) - C (Serp-u)	(554,712,748)
Paliphyllidae	O (Cara-u) - S (Wenl)	(417)
Pentaphyllidae	D (Prag) - P (Tatr-u)	(232,527)

Petalaxidae	C (Vise-l)	-	P (Leon-l)	(712)
Petraidae	O (Cara)	-	D (Fame-u)	(748)
Phillipsastreidae	D (Prag)	-	D (Fame-u)	(554,748)
Plerodiffiidae	P (Sakm)			
Pleurophyllidae	D (Fame-u)	-	P (Tatr-u)	(232,716,748)
Polycoeliidae	D (Loch)	-	P (Tatr-u)	(232,716)
Pseudopavonidae	C (Serp-u)	-	C (Mosc-u)	
Ptenophyllidae	S (Ldov-u)	-	D (Fras-u)	(554)
Ptychophyllidae	S (Ldov)	-	S (Prid)?	
Pycnostylidae	S (Ldov-u)	-	C (Vise-u)	(839)
Spongophyllidae	S (Ldov)	-	D (Give)	
Stauriidae	O (Cara-l)	-	D (Fras)	(527)
Stereolasmatidae	D (Give-l)	-	C (Vise-u)	
Streptelasmatidae	O (Cara-l)	-	D (Give-u)	(301)
Stringophyllidae	D (Loch)	-	D (Fras)	(527)
Timorphyllidae	P (Guad-u)	-	P (Tatr-l)	(232)
Tryplasmataidae	O (Cara-l)	-	D (Give)	(527)
Uraliniidae	D (Fame-u)	-	C (Vise-u)	(748)
Verbeekiellidae	C (Tour-u)	-	P (Tatr-l)	(232)
Waagenophyllidae	C (Mosc-u)	-	P (Tatr-u)	(232)
Zaphrentidae	D (Loch)	-	D (Give-u)	
Zaphrentoididae	D (Fame-u)	-	C (Mosc-l)?	(748)

Or. HETEROCORALLIA

Heterophylliidae	D (Eife)	-	C (Bash-l)	
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Or. SCLERACTINIA

Acroporidae	K (Ceno)	-	R	
Actinacididae	J (Sine)	-	T (Ioli)	(651)
Agariciidae	K (Apti-u)	-	R	
Amphiastreidae	J (Hett)	-	K (Ceno-u)	(508,723)
Astrocoeniidae	Tr(Anis)	-	R	
Calamophyllidae	Tr(Carn)	-	K (Maas)	(605,651)
Carolastreaeidae	J (Call-m)	-	J (Tith)	(470)
Caryophylliidae	J (Sine)	-	R	
Cuifastreaeidae	Tr(Nori-m)	-	Tr(Nori-u)	(469,651)
Cyclolitidae	K (Haut)	-	T (mEoc-u)	
Dendrophyllidae	K (Barr)	-	R	(806)
Distichophyllidae	Tr(Carn)	-	Tr(Nori-u)	(651)
Donacosmiliidae	J (Sine)	-	J (Tith)	(452,508,805)
Faviidae	J (Aale)	-	R	
Flabellidae	K (Albi)	-	R	
Fungiidae	K (Apti)	-	R	
Guyniidae	J (Bajo)	-	R	(456)
Haplaraeidae	J (Oxfo-l)	-	T (uEoc)	(131,720)
Intersmiliidae	J (Sine)	-	J (Tith)	(452,470)
Meandrinidae	K (Barr)	-	R	
Merulinidae	T (uMio)	-	R	(131)
Micrabaciidae	K (Barr)	-	R	
Microsolenidae	J (Hett)?	-	K (Sant-u)	
Montlivaltiidae	Tr(Anis-l)	-	T (mEoc-u)	(337,605)
Mussidae	J (Oxfo-l)	-	R	
Oculinidae	K (Ceno)	-	R	
Pachytheccalidae	Tr(Carn)	-	Tr(Nori-l)	(333,651)
Pamiroseriidae	Tr(Anis-l)	-	Tr(Nori-u)	(451,651)

Pectiniidae	T (mEoc)	- R	
Pocilloporidae	K (Turo)?	- R	
Poritidae	J (Kimm)	- R	(804)
Procycolitidae	Tr(Anis)	- J (Bajo)	
Rhipidogyridae	J (Oxfo-l)	- K (Sant-u)	
Rhizangiidae	K (Barr)	- R	
Siderastreidae	K (Barr)	- R	(805)
Stylinidae	Tr(Anis)	- T (uEoc)	
Stylophyllidae	Tr(Ladi)	- J (Bajo-l)	(651)
Synastreidae	J (Hett)	- K (Coni)	
Thamnasteriidae	Tr(Carn-u)	- R	(651,804)
Zardinophyllidae	Tr(Ladi)	- Tr(Carn)	(333,651)

Or. KILBUCHOPHYLLIDA

Kilbuchophyllidae	O (Cara-m)		(706)
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Or. ACTINARIA

[Extant. Represented in the later record by trace fossils such as *Bergaueria* and *Kulindrichnus*, which resemble *Beltanelliformis*; see Seilacher (1985).]

? <i>Beltanelliformis</i>	V (Edia)	- V (N-Da)	(538,710)
<i>Mackenzia</i>	Cm(mMid-u)		

Or. INCERTAE SEDIS

Tjanshanophylliidae	O (Ashg)	- S (Ldov)	(207)
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Cl. INCERTAE SEDIS

<i>Cambrorhytium</i>	Cm(mMid-l)	- Cm(uMid-m)	(151,155)
<i>Escumasia</i>	C (Mosc-u)		(518)

CTENOPHORA

[19 extant marine families.]

<i>Archeocydippida</i>	D (Emsi-l)		(759)
? <i>Fasciculus</i>	Cm(mMid-l)	- Cm(mMid-u)	(138,151)
<i>Paleoctenophora</i>	D (Emsi-l)		(758)

PLATYHELMINTHES

[On order of 250 extant marine families are recognized.]

Turbellaria	T (Mi)?	- R	(150)
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NEMERTINA

[Approximately 35 extant marine families.]

<i>Archisymplectes</i>	C (Serp-l)?	- C (Mosc-u)	(686,689)
incertae sedis	J (Tith-u)		

NEMATODA

[Approximately 50 extant marine families.]

Cl. RHABDITIDA	C (Serp-l)	- R	(689)
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PROBLEMATICA [Taxa unassigned to phyla or of phylum-level rank.]

1. Families assigned to named classes:

Cl. CAMBROCLAVIDA

Zhijinitidae Cm(Atda-l) - Cm(Boto-l) (35,37,82,153)

Cl. COELOSCLERITOPHORA

[May be related to molluscs.]

Or. SACHITIDA

Halkieriidae Cm(Tomm-l) - Cm(Atda-u) (37,82,590)  
 Sachitidae Cm(Tomm-u)- Cm(Atda-u) (32,39,474,746)  
 Siphogonuchitidae V (N-Da) - Cm(Boto) (82,484,590)  
 ?*Maikhanella* Cm(Tomm-l) - Cm(Atda) (82)

Or. CHANCELLORIIDA

Chancelloriidae Cm(Tomm-l) - Cm(Dres-l) (39,170,179,428)

Cl. CRIBRICYATHEA

[Classification and stratigraphic ranges are mostly from the *Treatise*, Pt. E1 (revised).]

Or. CONOIDOCYATHIDA

Conoidocyathidae Cm(Boto) - Cm(Tojo)

Or. CRIBRICYATHIDA

Capillicyathidae Cm(Boto)  
 Cribricyathidae Cm(Boto) - Cm(Tojo-l)  
 Pyxidocyathidae Cm(Boto) - Cm(Tojo-l)

Or. VOLOGDINOPHYLLIDA

Achorocyathidae Cm(Atda) (339)  
 Akademiophyllidae Cm(Atda)  
 Cloudinidae V (Edia) - V (N-Da) (266,284,293)  
 Leibaellidae Cm(Atda) (339)  
 Manacyathidae Cm(Atda)  
 ?Striatocyathidae Cm(Atda)  
 Vologdinophyllidae Cm(Atda) (339)

Cl. MACHAERIDIA

[Classification is based on Dzik (1986), with the Sachitida and Tommotiida removed.]

Or. HERCOLEPADIDA

Hercolepadidae S (Wenl-l) - D (Eife-u) (201)

Or. TURRILEPADIDA

Lepidocoelidae O (Llvi) - D (Give) (201)  
 Plumulitidae O (Trem) - C (Tour) (201)  
 Turrilepadidae O (Aren) - C (Serp-l) (201,584)

Cl. STENOTHECOIDA

[Assigned to the Mollusca by Yochelson (1969).]

Cambridiidae Cm(Atda-l) - Cm(uMid) (82,639,718,872)

Cl. TOMMOTIIDA

[Classification derived from Bengtson (1970, 1977a).]

Or. MITROSAGOPHORA

?Kennardiidae Cm(Atda-u) (37)

Tannuolinidae	Cm(Atda-u) - Cm(Boto-l)	(82,590,891)
Tommotiidae	Cm(Tomm-l) - Cm(mMid-l)	(81,170,459,666)
Or. UNNAMED		
Kelanellidae	Cm(Atda) - Cm(mMid)	(36)
Lapworthellidae	Cm(Tomm-l) - Cm(Tojo)	(82,459,666,774)
Sunnaginidae	Cm(Tomm-l) - Cm(Boto-l)	(82,412,666)

2. Families assigned to unrelated orders:

Or. "anomalocariids"

[Informal grouping suggested by D. Collins (pers. comm.) on the basis of possession of the apomorphic "Peyotia" mouth.]

Anomalocariidae	Cm(Tomm-u)- Cm(uMid-m)	(90,97,155)
Opabiniidae	Cm(mMid-u)- Cm(uMid-l)	(149,646,849)
<i>Hurdia</i>	Cm(mMid-u)	(151)

Or. COLEOLIDA

Coleolidae	Cm(Tomm-l) - C (Tour-l)	(301,745,746)
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Or. HYOLITHELMINTHES

[Assigned to Pogonophora by Sokolov (1972a).]

Hyolithellidae	V (N-Da) - Cm(lMid)	(30,742,796)
?Torellidae	Cm(Tomm-l) - P (Sakm)	(741,745,845)

Or. PAIUTHIDA

[Assigned to Cnidaria by Tynan (1983).]

Paiutitubulitidae	Cm(Atda-u)	(807)
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Or. SABELLIDITIDA

[Assigned to Pogonophora by Sokolov (1972a).]

Saarinidae	V (N-Da) - Cm(Tomm-l)	(741,742)
Sabelliditidae	V (N-Da) - Cm(lMid)	(169,666,741,742)

Or. VOLBORTHELLIDA

[Considered a distinct phylum, "Agmata," by Yochelson (1977) but a part of the Spiomorpha (Polychaeta) by Glaessner (1976). Classification is from the *Treatise*, Pt. W.]

Salterellidae	Cm(Boto-l) - Cm(lMid)	(82,873,875,878)
Volborthellidae	Cm(Atda-l) - Cm(Boto-l)	(300,364,873,875)
Vologdinellidae	Cm(uMid)	(788)

3. Unrelated families not assigned to higher taxa:

Amiskwiidae	Cm(mMid-u)	(94,144)
Ancientidae	O (Cara-l) - O (Ashg-u)	(653,682)
Cornulitidae	O (Cara-m) - C (Serp-l)	(301)
Cupithecidae	Cm(Tomm-u)- Cm(Boto)	(37)
Dinomischidae	Cm(Atda-u) - Cm(mMid-u)	(145,151)
Mongolitubulidae	Cm(Tomm-l) - Cm(Tojo-l)	(82,664)
Odontogriphidae	Cm(mMid-u)	(94,142)
Paracarinachitidae	Cm(Tomm-u)- Cm(Atda-u)	(590)
Stoibostrombidae	Cm(Atda-u)	(37)
Tianzhushanellidae	Cm(Tomm-u)- Cm(Atda-u)	(37)



Typhloesidae	C (Serp-l)	(152)
Utahphosphidae	Cm(Atda-u) - S (Ldov-u)	(33,828)

4. Unrelated but distinct genera, worthy of higher taxonomic status but not assigned to familial or higher taxa:

<i>Banffia</i>	Cm(mMid-u)	(94,149)
<i>Cowiella</i>	Cm(Atda-u)	(36)
<i>Cyrtochites</i>	Cm(Tomm-u)	(590)
<i>Deuteronectanebos</i>	C (Serp-l)	(689)
<i>Eldonia</i>	Cm(Atda-u) - Cm(uMid-m)	(151,155)
<i>Fomitchella</i>	Cm(Tomm-l) - Cm(Tomm-u)	(35)
<i>Nectocaris</i>	Cm(mMid-u)	(94,149)
<i>Oesia</i>	Cm(mMid-u)	(94,149)
<i>Palaeobotryllus</i>	Cm(Trep)	(500)
<i>Pollingeria</i>	Cm(mMid-u)	(94)
<i>Portalia</i>	Cm(mMid-u)	(94,149)
<i>Pyrgites</i>	Cm(Atda-u)	(36)
<i>Redkinia</i>	V (Edia)	(744)
<i>Redoubtia</i>	Cm(mMid-u)	(94,149)
<i>Rhombocorniculum</i>	Cm(Tomm-u) - Cm(Boto-u)	(79,82,83,746)
<i>Stefania</i>	Cm(Boto)	(36)
<i>Tubulella</i>	Cm(Boto-u) - Cm(uMid-m)	(94,151)
<i>Tullimonstrum</i>	C (Mosc-u)	(608)
<i>Tumulduria</i>	Cm(Tomm-l)	(811)
<i>Westgardia</i>	Cm(Boto-l)	(661)
<i>Worthenella</i>	Cm(mMid-u)	(94,149)
<i>Yunnanodus</i>	Cm(Tomm-u)	(35,590)

#### PRIAPULIDA

[Classification principally derived from Conway Morris (1977a); three families are extant.]

Ancalagonidae	Cm(mMid-u)	(143)
Fieldiidae	Cm(mMid-u)	(143)
Miskoiidae	Cm(mMid-u)	(143)
Ottoidae	Cm(Atda-u) - Cm(uMid-m)	(143,154,327,771)
Priapulidae	C (Mosc-u) - R	(143,686)
Selkirkiidae	Cm(Boto-u) - Cm(uMid-m)	(143,151,154)
<i>Cricocosmia</i>	Cm(Atda-u)	(771)
<i>Lecythioscopa</i>	Cm(mMid-u)	(143)
<i>Scolecofura</i>	Cm(mMid-u)	(143)

#### MOLLUSCA

##### CI. POLYPLACOPHORA

[Classification and basic stratigraphic ranges are based on the *Treatise*, Pt. I, with emendations. Three extant families without fossil representatives are not listed.]

##### Or. SEPTEMCHITONIDA

Septemchitonidae	O (Ashg-m)	(672)
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##### Or. PALAEOLORICATA

Chelodidae	O (Trem-l) - S (Ludl)	(672)
Gotlandochitonidae	S (Wenl)	

Praecanthochitonidae	Cm(Trep-l) - O (Trem-l)	(301,672)
Scanochitonidae	K (Camp-l)	(301)
Or. LEPIDOPLEURIDA		
Acutichitonidae	C (Serp-l) - P (Leon-u)	(314)
Hanleyidae	T (Mio-u) - R	
Lepidopleuridae	O (Cara-l) - R	
Ochmazochitonidae	D (Fame-u) - J (Sine)?	(314)
Or. CHINTONIDA (= Ischnochitonida)		
Callistoplacidae	T (lMio) - R	
Callochitonidae	T (uOli) - R	(50)
Chaetopleuridae	T (lMio-u) - R	
Chitonidae	K (Maes-l) - R	(735)
Ischnochitonidae	J (Plie-u) - R	
Mopaliidae	T (lMio) - R	
Schizochitonidae	K (Maas-l) - R	(735)
Or. ACANTHOCHITONIDA		
Acanthochitonidae	T (lOli) - R	
?Afossochitonidae	T (mMio)	
Or. INCERTAE SEDIS		
Llandeiloichitonidae	O (Llde)	
Mattheviidae	Cm(Fran-u) - O (Trem-l)	(482,671,672,877)

#### Cl. MONOPLACOPHORA

[Classification and stratigraphic ranges are from Runnegar and Jell (1976) and Pojeta and Runnegar (1985), with emendations.]

Or. CYRTONELLIDA			
Cyrtolitidae	O (Aren) - D (Give)	(445,489)	
Helcionellidae	V (N-Da) - O (Aren-u)	(82,846)	
Hypseloconidae	Cm(Dres-l) - O (Llde-l)	(301,489,669)	
Shelbyoceridae	Cm(uMid) - O (Trem-u)	(766)	
Stenotheceidae	Cm(Tomm-l) - Cm(uMid-l)	(82,459,666)	
Yochelecionellidae	Cm(Atda-u) - Cm(uMid-l)	(669)	
? <i>Canopoconus</i> + <i>Purella</i> + <i>Ramentia</i>	V (N-Da) - Cm(Atda-u)	(36,82,590)	
? <i>Janospira</i>	O (Aren)	(246)	
? <i>Ocuranus</i>	Cm(Tomm-u)?	(36,590)	
? <i>Xianfengella</i>	Cm(Tomm-u)?	(36,590)	
Or. TRYBLIDIIDA			
Tryblidiidae	Cm(Boto-u) - R	(37,42)	
Or. PELAGIELLIDA			
Pelagiellidae	Cm(Atda-u) - O (Trem)	(36,459)	
Or. TUARANGIIDA			
Tuarangiidae	Cm(uMid-l) - Cm(Dres)	(444,575)	

#### Cl. PARAGASTROPODA

[Classification is based on Linsley and Kier (1984) and P.J. Morris (1991).]

?Aldanellidae	Cm(Tomm-l) - Cm(Atda-u)	(36,425)
Clisospiridae	Cm(Dres-l)? - D (Give)	(424)
Omphalocirridae	D (Prag) - D (Give)	(423,424)
Onychochilidae	Cm(Atda-u)? - D (Prag)	(424,669)

## CI. GASTROPODA

[Classification is based on the *Treatise*, Pt. I, Erwin (1990), Lindberg (1988), Ponder and Warren (1988), and Wenz (1938, 1959-60), with numerous sources for stratigraphic ranges, as listed. Only families with marine representatives are listed; 96 extant marine families (including all in the Nudibranchia, Soleolifera, Philinoglossoidea, Acochlidoidea, and Parasita) without known fossil records are not listed.]

### ?Or. BELLEROPHONTIDA

Bellerophontidae	Cm(Atda-l)? - Tr(Indu-l)	(669)
Euphemitidae	D (Prag-u) - Tr(Anis)	(210,424)
?Multifariidae	Cm(Atda-u)? - O (Aren)	(42,57,669)
Sinuittidae	Cm(uMid) - P (Leon)	(42,669)

### Or. EUOMPHALINA

Euomphalidae	O (Aren) - P (Tatr-l)	(489)
?Omphalotrochidae	D (Emsi) - Tr(Nori)	(210,424)
?Weeksiidae	Tr(Ladi) - K (Maas-u)	(210,301,514,736)

### Or. PATELLOGASTROPODA

Acmaeidae	Tr(Anis-m) - R	(210)
?Metoptomatidae	O (Llde-l) - Tr(Ladi-u)	(210,489)
Patellidae	J (Sine) - R	(393)
Symmetrocopulidae	Tr(Ladi) - T (mEoc-u)	(489,722)

### Or. ARCHAEOGASTROPODA

Amberleyidae	Tr(Anis) - K (Maas)	(489)
Anomphalidae	S (Wenl-l) - Tr(Nori)	(210,489)
Ataphridae	Tr(Ladi) - K (Maas)	(489)
Catantostomatidae	D (Eife) - D (Give)	(424)
Cirridae	Tr(Carn) - J (Bath)	(210,489)
Cocculinidae	T (lMio) - R	(50)
Deianiridae	K (Camp) - T (Dani)	(489)
Elasmonematidae	S (Wenl) - P (Guad)	(25,489)
Eotomariidae	Cm(Trep-u) - J (Plie)	(301,775)
Euomphalopteridae	O (Cara) - D (Eife)	(722)
Fissurellidae	Tr(Ladi) - R	(489)
Gossetinidae	O (Cara-m) - Tr(Nori)	(210,393)
Haliotidae	K (Camp) - R	(514)
Helicotomidae	O (Trem) - O (Ashg-m)	(846)
Holopeidae	O (Aren) - P (Guad-u)	(24)
Kittlidiscidae	Tr(Ladi)	(489,846)
Laubellidae	Tr(Ladi)	(489,846)
Lepetellidae	T (mMio) - R	(736)
Lepetidae	T (Than) - R	(489)
Lophospiridae	O (Trem-u) - Tr(Nori)	(210,871)
Luciellidae	O (Aren) - Tr(Carn)	(24,432)
Macluritidae	Cm(Dres) - O (Ashg-m)	(425)
Microdomatidae	O (Llde) - P (Guad-l)	(24)
Murchisoniidae	O (Trem-u) - Tr(Nori)	(210,301,489)
Neritidae	Tr(Olen-l) - R	(26)
Neritopsidae	S (Ludl-u) - R	(311)
Oriostomatidae	O (Cara-l) - D (Give)	(424)
Palaeotrochidae	D (Loch) - D (Fras-u)	(184,424)
Paraturbinidae	Tr(Olen-l) - K (Sn)	(26,489)

Pelyciidae	T (mEoc)	- R	(582)
Phanerotrematidae	O (Llvi-l)	- C (Bash)	(210)
Phasianellidae	T (Than)	- R	(489)
Phenacolepadidae	T (mEoc-u)	- R	(846)
Phymatopleuridae	D (Eife)	- K (Camp)	(311,424)
Plagiothyridae	D (Eife)	- C (Vise)	(424,846)
Platyacridae	Tr(Ladi)	- J (Kimm)	(210,311,532)
?Platyceratidae	O (Llvi)	- P (Guad-u)	(24)
Plethospiridae	O (Trem)	- Tr(Nori)	(301,432,489)
Pleurotomariidae	Tr(Ladi)	- R	(489)
Polytremariidae	C (Vise)	- P (Leon-u)	(24,846)
Portlockiellidae	D (Emsi)	- P (Tatr-l)	(210,424)
Rhaphischismatidae	C (Vise)	-	(846)
Schizogoniidae	Tr(Ladi)	- Tr(Nori)	(210,489)
Scissurellidae	T (Dani)	- R	(489)
Sequenzidae	T (uEoc)	- R	(591,846)
Sinuopeidae	Cm(Trep)	- P (Tatr-l)	(210,301)
Skeneidae	T (Mio)	- R	(722)
Stomatellidae	Tr(Nori)	- R	(489)
Temnotropidae	Tr(Ladi)	- Tr(Carn)	(489)
Trochidae	P (Guad-u)?	- R	(210)
Trochonematidae	O (Cara-l)	- P (Tatr-u)	(210)
Trochotomidae	Tr(Nori-u)	- J (Tith-u)	(393,489)
Tubinidae	S (Wenl)	- Tr(Nori)	(210,424,489)
Turbinidae	P (Guad)	- R	(210)
Zygitidae	Tr(Anis)	- Tr(Ladi)	(489,871)
<i>Vivianella</i>	Tr(Nori)	- J (Bajo)	(846)

#### Or. ARCHITAENOGLOSSA

Codonocheilidae	Tr(Carn)?	- J (Bajo)	(210,489)
Craspedostomatidae	O (Ashg-m)	- J (Bajo)	(532,846)
Crossostomatidae	Tr(Ladi)	- J (Bajo-u)	(489,775)

#### Or. NEOTAENIOGLOSSA

Acididae	T (Dani)	- R	(846)
Adeorbidae	T (Than)	- R	(394)
Ampullinidae	Tr(Carn)	- T (uMio-l)	(846)
Anabathridae	T (uOli)	- R	(50,589)
Aporrhaidae	Tr(Nori-u)	- R	(210,846)
Assimineidae	K (Maas)	- R	(182,846)
Atlantidae	K (Albi)?	- R	(846)
Barleeidae	T (uEoc)	- R	(722)
Batillariidae	K (Sant)	- R	(846)
Brachytremidae	J (Bajo)	- J (Tith-u)	(846)
Bursidae	K (Maas)	- R	(783)
Caecidae	T (Than)	- R	(182,846)
Calyptraeidae	K (Albi)	- R	(846)
Campanilidae	K (Camp-u)	- R	(846)
Capulidae	Tr(Ladi)	- R	(846)
Carinariidae	K (Barr)	- R	(846)
Cassididae	K (Coni)	- R	(738,846)
Cerithideidae	T (Mi)?	- R	(846)
Cerithiidae	K (Turo)	- R	(846)
Cerithiopsidae	K (Coni)	- R	(846)
Cingulopsidae	T (Mi)?	- R	(846)

Coelostylinidae	D (Prag)	- J (Kimm)?	(424)
Colombellinidae	J (Sine)?	- K (Maas)	(1,311)
Cyclozygidae	C (Tour-u)	- C (Step)	(210,888)
Cypraeidae	J (Tith)	- R	(499,846)
Dialidae	T (IEoc)	- R	(514)
Diastomidae	Tr(Ladi)	- R	(210)
Eatoniellidae	T (IMio-l)	- R	(589)
Epitoniidae	J (Bath)	- R	(182,846)
Eulimidae	K (Albi)	- R	(782)
Eustomidae	J (Bajo)	- K (Turo)	(846)
Ficidae	T (Dani)	- R	(50,783,846)
Fossaridae	P (u)?	- R	(846)
Glauconiidae	J (Tith)	- K (Maas)	(846)
Harpagodidae	J (Bath)	- K (Ceno)	(311,499,737)
Hipponicidae	K (Maas)	- R	(846)
Iravadiidae	T (mEoc-u)	- R	(846)
Ischnoptygmidae	P (Leon-u)		(208)
Isospiridae	O (Cara-u)	- O (Ashg-m)	(846)
Janthinidae	T (Mi)	- R	(182,846)
Lamellariidae	T (Than)	- R	(499)
Lamelliphoridae	Tr(Nori)	- J (Oxfo-u)	(210,846)
Litiopidae	T (Than)?	- R	(542)
Littorinidae			
(+ Lacunidae)	Tr(Anis)	- R	(846)
Loxonematidae	O (Cara-l)	- Tr(Nori-u)	(301,871)
Meekospiridae	C (Tour)	- P (Guad-u)	(24,208)
Modulidae	K (Camp-u)	- R	(182,846)
Naticidae			
(+ Choristidae)	J (l)	- R	(722)
Obtortionidae	T (Eo)?	- R	(846)
Ovulidae	K (Ceno)	- R	(182,846)
Planaxidae	T (Than)	- R	(3)
?Planitrochidae	O (Aren)	- D (Eife)	(424,432)
Pomatiasidae	T (Dani)	- R	(846)
Potamididae	K (Apti)	- R	(846)
Procerithiidae	D (Give)?	- K (Maas-l)	(489,736)
Pseudomelaniidae	P (Guad)	- T (Mi)	(24,182)
?Pseudophoridae	O (Aren)	- P (Tatr-l)	(210)
Pseudozygopleuridae	D (Loch)	- P (Tatr-l)	(24,210,424)
Purpurinidae	Tr(Ladi-l)	- K (Turo)	(846)
Ranellidae			
(+ Cymatiidae)	K (Albi)	- R	(783)
Rissoidae	J (Aale)	- R	(722)
Scaliolidae	T (Than)?	- R	(846)
Seraphidae	T (Than)	- R	(182)
Siliquariidae	Tr(Ladi)	- R	(846)
Spirostylidae	Tr(Anis-m)	- J (Sine)	(210,451,846,871)
Strombidae	K (Haut)	- R	(739)
Struthiolariidae	T (Dani)?	- R	(182,893)
Subulitidae	O (Aren)	- Tr(Olen)	(210,301)
Synolopsidae	T (Dani)	- R	(846)
Terebrellidae	T (mEoc-u)?	- T (Ioli)	(446,846)
Thersiteidae	T (Eo)		(182,846)
Tonnidae	K (Maas)	- R	(514,783,846)

Tornidae	T (Than)	- R	(182)
Trajanellidae	K (Barr)	- K (Maas)	(846)
Triforidae	K (Barr)	- R	(846)
Triphoridae	K (Albi)	- R	(182)
Triviidae			
(= Eratoidae)	T (Dani)	- R	(182,514)
Turritellidae	D (Emsi)	- R	(209,424)
Vanikoridae	J (Tith)	- R	(722)
Velainellidae	T (mEoc-1)		(489)
Vermetidae	Tr(Anis-u)	- R	(393)
Vitrinellidae	T (IEoc)	- R	(542,846)
Xenophoridae	K (Ceno)	- R	(721)
Zygopleuridae	Tr(Olen-1)	- J (Kimm-1)	(26,489)
<b>Or. NEOGASTROPODA</b>			
Buccinidae	K (Barr-u)?	- R (337)	
Cancellariidae	K (Albi-u)	- R	(783)
Columbellidae			
(= Pyrenidae)	T (Dani)	- R	(783)
Conidae	K (Maas)	- R	(783)
Costellariidae	K (Albi-u)?	- R	(846)
Harpidae	K (Maas)	- R	(783)
Marginellidae	K (Maas)	- R	(783,846)
Mitridae	T (Dani)	- R	(846)
Muricidae	K (Albi-1)	- R	(738,783)
Olividae	K (Ceno)	- R	(846)
?Pyropsidae	K (Turo-u)	- T (Than)	(585)
Speightiidae	T (mEoc-1)		(50)
Terebridae	K (Maas)	- R	(783)
Turbinellidae	K (Ceno)	- R	(783)
Turridae	K (Ceno)	- R	(783)
Volutomitridae	T (IEoc)	- R	(50)
Volutidae	K (Ceno-1)	- R	(783)
<b>Or. HETEROSTROPHIA (= Entomotaeniata, Allogastropoda)</b>			
Aptyxiellidae	J (Oxfo-1)	- K (Apti)	(846)
Architectonicidae	K (Ceno)	- R	(499)
Auroraellidae	J (Oxfo)		(846)
Bactroptyxisidae	J (Bajo)	- J (Kimm)	(846)
Elatioriellidae	J (Oxfo-m)	- J (Tith)	(846)
Elegantellidae	J (Oxfo)	- K (Ceno-u)	(846)
Fibuloptxygmatidae	J (Oxfo-u)	- K (Turo)	(452,846)
Fibuloptxyxisidae	J (Bajo)	- J (Bath)	(846)
Itieriidae	J (Oxfo-1)	- K (Maas)	(514,737,846)
Mathildidae	P (Guad)	- R	(24,210)
Nerineidae	P (Leon)	- K (Maas)	(25)
Nerinellidae	J (Hett)	- K (Maas)	(846)
?Omalaxidae	K (Apti-1)	- R	(722)
Omalogyridae	T (Eo)	- R	(182)
Phaneroptyxisidae	J (Bath)	- K (Maes)	(846)
Polyptyxisidae	J (Bath)	- K (Maas)	(846)
Pyramidellidae	K (Camp)?	- R	(846)
Streptacididae	D (Give)	- Tr(Ladi)	(210)
Tubiferidae			
(= Ceritellidae)	J (Hett)	- K (Ceno)	(846)

Upellidae	K (Vala)		(846)
Or. CEPHALASPIDEA			
Actaeonidae	K (Albi)	- R	(395)
Actaeonellidae	J (Plie)	- T (Than)	(514,846)
Atyidae	T (Than)	- R	(182,514)
Bullidae	J (Plie)	- R	(846)
Diaphanidae	J (Bajo)	- R	(846)
Hydatinidae	J (Sine)	- R	(846)
Philinidae	K (Sn)	- R	(182,846)
Retusidae	J (Bath)	- R	(846)
Ringiculidae	K (Nc)	- R	(846)
Scaphandridae	K (Albi-u)	- R	(782)
Or. ANASPIDEA (= Aplysiomorpha)			
Akeratidae	J (Call-u)	- R	(532)
Aplysiidae	T (IMio-u)	- R	(182)
Or. THECOSOMATA			
Cavolinidae	T (Than)	- R	(182,514)
Limacinidae			
(= Spiratellidae)	T (Dani)	- R	(50)
Peraclidae	Q (Plei)	- R	(110)
Or. GYMNOSOMATA			
Clionidae	T (mEoc)	- R	(499)
Or. SACOGLOSSA (= Ascoglossa)			
Cylinodrobulidae	J (Hett)	- R	(846)
Elysiacea	T (Eo)	- R	(499)
Juliidae	T (mEoc)	- R	(182)
Volvatellidae			
(= Arthessidae)	T (lEoc)	- R	(407)
Or. UMBRACULOMORPHA (= Notaspidea)			
Umbraculidae	T (lEoc)	- R	(182)
Or. BASOMMATOPHORA			
Acroreidae	K (Sn)	- T (Eo)	(846)
Siphonariidae	J (Call)	- R	(182)
Trimusculidae	T (Ol)	- R	(846)
Or. INCERTAE SEDIS			
Actaeoninidae	C (Tour)	- Tr(Carn)	(209,210,395)

#### Cl. CEPHALOPODA

[Classification of the Nautiloidea primarily follows Teichert (1967); Dzik (1984) offers an alternative classification with fewer families and orders. The Ammonoidea follows House and Senior (1981), with augmentation of stratigraphic ranges from the *Treatise*, Pts. K and L, and other sources. Classification of the Coleoidea is from Jeletsky (1966). 33 extant families of coleoids without known fossil representatives are not listed.]

#### Or. PLECTONOCERIDA

Balkoceratidae	Cm(Trep-u)		(127,129)
Plectonoceratidae	Cm(Fran-u)	- Cm(Trep-u)	(127)

#### Or. ELLESMEROCERIDA

Acaroceratidae	Cm(Trep-l)	- Cm(Trep-u)	(129)
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Baltoceratidae	O (Trem-l)	- O (Cara-m)	(175,200)
Bassleroceratidae	O (Trem-u)	- O (Llvi-l)	(175,176,301)
Bathmoceratidae	O (Aren-l)	- O (Llde-l)	(176,200)
Cyrtocerinidae	O (Llde)	- O (Ashg-m)	(200,755)
Ellesmeroceratidae	Cm(Trep-l)	- O (Aren-u)	(127,129,175,200)
Huaiheceratidae	Cm(Trep-l)	- Cm(Trep-u)	(127,129,175)
Protocycloceratidae	O (Trem-l)	- O (Llvi-l)?	(129,175,200)
Shideleroceratidae	O (Ashg-m)		(489)
Xiaoshanoceratidae	Cm(Trep-u)		(127)
<b>Or. PROTACTINOCERIDA</b>			
Protactinoceratidae	Cm(Trep-l)	- Cm(Trep-u)	(127,128)
<b>Or. YANHECERIDA</b>			
Yanheceratidae	Cm(Trep-u)		(127,128)
<b>Or. ORTHOCERIDA</b>			
Brachycycloceratidae	C (Serp-l)	- C (Step)	(200)
Clinoceratidae	O (Llvi)	- O (Ashg-m)	(175,230)
Dawsonoceratidae	O (Llde)	- S (Prid)	(176,200)
Engorthoceratidae	D (Eife)		(790)
Folioceratidae	D (Emsi)	- D (Eife-l)	(200,790)
Geisonoceratidae	O (Llvi)	- D (Fras)	(176,790)
?Lamellorthoceratidae	D (Lock-l)	- D (Give)	(176)
Mysterioceratidae	O (Llde)	- O (Cara-m)	(129,175,230)
Neptunoceratidae	C (Mosc)	- C (Step-l)	(200)
Offleyoceratidae	S (Wenl)	- D (Loch)	(176,790)
Ophidioceratidae	S (Wenl)	- S (Ludl-l)	(200,301)
Orthoceratidae	O (Aren-u)	- Tr(Nori)	(176,200)
Paraphragmitidae	S (Ldov-u)	- S (Prid)	(200)
Protoceratidae	O (Llvi)	- S (Ludl-u)	(175,176,200,230)
Pseudorthoceratidae	O (Llvi)	- P (Tatr)	(175,200)
Sactorthoceratidae	O (Aren)	- O (Cara-m)	(175)
Sphooceratidae	O (Ashg-m)	- S (Ludl)	(176,200)
Stereoplasmoceratidae	O (Llvi-l)	- O (Cara)	(129,175,176)
Troedssonellidae	O (Trem)	- O (Llvi-u)	(175,176,200)
<b>Or. ASCOCERIDA</b>			
Ascoceratidae	O (Llvi)	- S (Prid)	(175,176,200)
Choanoceratidae	O (Cara)	- S (Ludl-l)	(200)
Hebetoceratidae	O (Llvi-u)	- O (Cara-l)	(176)
<b>Or. INTEJOCERIDA</b>			
Bajkoloceratidae	O (Aren-u)	- O (Llvi-l)	(175,200)
Intejoceratidae	O (Aren-u)	- O (Llvi-l)	(175,200)
Majoceratidae	O (Trem)	- O (Aren)	(175,176)
Padunoceratidae	O (Aren-u)	- O (Llvi-u)	(175,176,200)
<b>Or. ACTINOCERIDA</b>			
Actinoceratidae	O (Aren-u)	- S (Ldov)	(175,176,200)
Armenoceratidae	O (Llvi-l)	- S (Ludl-l)	(176,200)
Astoceratidae	D (Emsi-u)		(890)
Caractinoceratidae	C (Vise)?	- C (Mosc)	(176)
Ellinoceratidae	O (Llvi-l)		(175,200)
Georginidae	O (Aren-u)		(176)
Gonioceratidae	O (Llde)	- O (Ashg-m)	(175,176,200)
Huroniidae	O (Cara-l)	- S (Ludl)	(176,200)



Meitanoceratidae	O (Llvi-u) - O (Llde)	(175,200)
Ormoceratidae	O (Aren-u) - D (Eife)	(176,200)
Polydesmiidae	O (Aren-u)? - O (Llvi-u)	(176,200)
Wutinoceratidae	O (Aren-u) - O (Cara-l)	(200)
Or. ENDOCERIDA		
Allotrioceratidae	O (Aren-u) - O (Llde)	(129,175)
Botryceratidae	O (Ashg-u)	(175,176)
Chihlioceratidae	O (Aren-u)	(176,200)
Cyrtendoceratidae	O (Trem-l) - O (Cara-l)	(175,176,200)
Emmonsoceratidae	O (Aren-u) - O (Llde)	(129,175)
Endoceratidae	O (Aren-l) - O (Ashg-m)	(175,176,301)
Humeoceratidae	S (Wenl-l)	(489)
Manchuroceratidae	O (Aren-l) - O (Llvi-l)	(175,176,200)
Nathecoceratidae	O (Cara-u) - S (Wenl-l)	(175,532)
Piloceratidae	O (Aren-l) - O (Aren-u)	(175,176,200)
Proterocameroceratidae	O (Trem-u) - O (Llde-l)	(175,176,200)
Thylacoceratidae	O (Aren-l) - O (Llvi-l)	(175,200,230)
Yorkoceratidae	O (Aren)	(175,176)
Or. DISCOSORIDA		
Brevioceratidae	D (Eife) - D (Fame-m)	(200,790)
Cyrtogomphoceratidae	O (Llde-u) - S (Wenl)	(175,200)
Devonocheilidae	D (Eife-u) - D (Fame-u)	(176,200,790)
Discosoridae	S (Ldov-u) - D (Fame)	(176,200)
Entimoceratidae	S (Wenl) - D (Fame)	(176,790)
Greelandoceratidae	O (Llde) - S (Ludl)	(176,756)
Lowoceratidae	O (Cara) - S (Wenl)	(175,176,200)
Mandaloceratidae	S (Ludl-u) - S (Prid)	(200)
Mecynoceratidae	D (Eife) - D (Fame-l)	(176,200,790)
Mesoceratidae	S (Wenl)	(176)
Naedyceratidae	S (Wenl-u) - D (Fame)	(176,790)
Phragmoceratidae	O (Ashg) - D (Emsi-l)	(176,200)
Ruedemannoceratidae	O (Llvi-u) - O (Cara-m)	(129,175,176)
Taxyceratidae	D (Loch) - D (Fame-l)	(176,790)
Ukhloceratidae	S (Ludl) - D (Fame)	(176,200)
Westonoceratidae	O (Llde-u) - S (Ldov)	(176)
Or. ONCOCERIDA		
Acleistoceratidae	O (Ashg) - D (Fame-m)	(176,200,790)
Akjubocheilidae	D (Fame-m)	(176,200,790)
Archiacoceratidae	D (Eife) - D (Give)	(176,790)
Bolloceratidae	D (Eife) - D (Fras)	(176,790)
Cyrtoceratidae	S (Ldov) - D (Fras)	(176,790)
Diestoceratidae	O (Cara-u) - S (Ludl-u)	(200)
Graciloceratidae	O (Llvi-u) - O (Ashg-m)	(175,176,200)
Hemiphragmoceratidae	S (Wenl) - S (Ludl)?	(176)
Jovellaniidae	S (Wenl) - D (Fame)	(176,790)
Karoceratidae	S (Ldov-m) - D (Fame)	(176,200,790)
Nothoceratidae	S (Ldov-l) - D (Fras)	(200,790)
Oncoceratidae	O (Llvi-l) - S (Prid)	(175,200)
Phthanonceratidae	O (Aren-l) - O (Llvi-l)	(176)
Polyelasmoceratidae	O (Ashg) - D (Fras-m)?	(176,200,790)
Potrioceratidae	D (Loch) - C (Vise)	(176,200,790)
Ptenoceratidae	D (Prag-u) - D (Eife)	(176,301,790)
Trimeroceratidae	S (Wenl-l) - S (Prid)	(200,498)

Tripleuroceratidae	S (Wenl)	- C (Vise)	(176)
Tripteroцератidae	O (Llvi)	- O (Ashg-m)	(175,230)
Valcouroceratidae	O (Llde-u)	- S (Wenl)	(175,176,230)
<b>Or. NAUTILIDA</b>			
Aipoceratidae	C (Tour-l)	- C (Step-l)	(200)
Aturiidae	T (Than)	- T (uMio-u)	(50)
Centroceratidae	D (Eife)	- P (Sakm)	(176,301)
Clydonatuilidae	P (Guad-u)	- Tr(Nori)	(200)
Cymatoceratidae	J (Bajo)?	- T (uOli)	(200)
Ephippioceratidae	D (Fame)	- C (Step-u)	(176,200)
Gonionautilidae	Tr(Nori)		(489)
Gypoceratidae	D (Fame)	- Tr(Nori)	(176,200,301)
Hercoglossidae	J (Bath)	- T (uEoc)	(176,200)
Koninckioceratidae	D (Fame)	- P (Tatr-l)	(176,200)
Liroceratidae	D (Fame)	- Tr(Nori)	(176,200)
Nautilidae	Tr(Carn)	- R	(200)
Paracnoceratidae	J (Aale)	- K (Albi)	(200)
Permoceratidae	P (Leon)?	- P (Guad-l)	(200)
Pseudonautilidae	Tr(Nori)?	- K (Vala)	(176,532)
Rhiphaeoceratidae	P (Sakm)	- P (Leon)	(200)
Rutoceratidae	D (Loch)	- C (Serp-l)	(176,790)
Scyphoceratidae	P (Leon-l)		(200)
Siberionautilidae	Tr(Carn)		(489)
Solenochilidae	C (Vise-u)	- P (Leon-l)	(200)
Syringonautilidae	Tr(Anis-l)	- Tr(Nori)	(200)
Tainoceratidae	D (Fame)	- Tr(Nori)	(176,301)
Tetragonoceratidae	D (Eife)	- D (Fras)	(176,790)
Trigonoceratidae	D (Fame)	- P (Sakm)	(176)
<b>Or. TARPHYCERIDA</b>			
Estonioceratidae	O (Aren-l)	- O (Llvi-l)	(175,176,200)
Lituitidae	O (Aren-u)	- O (Ashg-m)	(200)
Tarphyceratidae	O (Aren-l)	- O (Aren-u)?	(129,175,200)
Trocholitidae	O (Aren-u)	- S (Ludl)	(175,176,200)
<b>Or. BARRANDEOCERIDA</b>			
Apsidoceratidae	O (Cara-u)	- O (Ashg-m)	(175,200,230)
Barrandeoceratidae	O (Llvi-u)	- D (Eife)	(175,230,790)
Lechritrochoceratidae	O (Llvi)	- S (Ludl)	(175,176)
Nephriticeratidae	D (Emsi-u)	- D (Fras)	(176,790)
Plectoceratidae	O (Llvi-u)	- O (Ashg-l)	(176)
Uranoceratidae	O (Cara-u)	- S (Ludl)	(200)
<b>Or. ANARCESTIDA</b>			
Agoniatitidae	D (Emsi-u)	- D (Give-u)	(328)
Anarcestidae	D (Emsi-l)	- D (Fras-u)	(329)
Auguritidae	D (Emsi-u)		(329)
Bactritidae	D (Prag-u)	- P (Tatr)	(329)
Beloceratidae	D (Fras-u)		(329)
Devonopronoritidae	D (Fras-m)		(329)
Gephuroceratidae	D (Fras-l)	- D (Fras-u)	(328,329)
Maenioceratidae	D (Give-l)	- D (Give-u)	(329)
Mimagoniatitidae	D (Emsi-l)	- D (Eife-l)	(329)
Mimoceratidae	D (Emsi-l)	- D (Eife-l)	(301,329)
Mimosphinctidae	D (Emsi-l)	- D (Eife-u)	(328,329)

Parabactritidae	P (Asse)	-	P (Leon)	(301)
Pharciceratidae	D (Fras-l)			(329)
Phenacoceratidae	D (Fras-l)	-	D (Fame-m)	(328,329)
Pinacitidae	D (Eife-u)	-	D (Give-u)	(328,329)
Prolobitidae	D (Eife-u)	-	D (Fame-m)	(328,329)
Trainoceratidae	D (Fras-l)	-	D (Fras-m)	(328,329)
<b>Or. CLYMENIIDA</b>				
Biloclymeniidae	D (Fame-m)			(329)
Carinoclymeniidae	D (Fame-m)			(329)
Clymeniidae	D (Fame-m)	-	D (Fame-u)	(329)
Costaclymeniidae	D (Fame-m)			(329)
Cymaclymeniidae	D (Fame-m)	-	D (Fame-u)	(329)
Cyrtoclymeniidae	D (Fame-m)	-	D (Fame-u)	(329)
Glatziellidae	D (Fame-u)			(329)
Gonioclymeniidae	D (Fame-m)	-	D (Fame-u)	(329)
Hexaclymeniidae	D (Fame-m)	-	D (Fame-u)	(329)
Miroclymeniidae	D (Fame-m)			(329)
Parawocklumeriidae	D (Fame-u)			(329)
Rectoclymeniidae	D (Fame-m)			(329)
Sellaclymeniidae	D (Fame-m)	-	D (Fame-u)	(329)
Wocklumeriidae	D (Fame-u)			(329)
<b>Or. GONIATITIDA</b>				
Adrianitidae	C (Step-l)	-	P (Guad-u)	(329)
Agathiceratidae	C (Vise-u)	-	P (Guad-l)	(329)
Anthracoceratidae	C (Serp-l)?	-	C (Mosc-l)	(329)
Berkhoceratidae	C (Tour-u)	-	C (Serp-l)	(329)
Bisatoceratidae	C (Bash-l)	-	C (Step-u)	(329)
Cheiloceratidae	D (Fame-l)			(329)
Christioceratidae	C (Bash-u)			(329)
Cravenoceratidae	C (Vise-l)	-	C (Serp-l)	(329,636,678)
Cyclolobidae	P (Leon-u)	-	P (Tatr-u)	(329)
Delepinoceratidae	C (Serp-l)			(329,678)
Dimeroceratidae	D (Fame-l)			(329)
Dimorphoceratidae	C (Vise-u)	-	C (Bash-l)	(329,678)
Eogonioloboceratidae	C (Vise-u)	-	C (Serp-l)	(329,678)
Gastrioceratidae	C (Bash-l)	-	C (Step-u)	(329)
Girtyoceratidae	C (Tour-u)	-	C (Serp-l)	(329,678)
Glaphyritidae	C (Serp-l)	-	P (Leon-l)	(678)
Goniatitidae	C (Vise-u)	-	C (Serp-l)	(329,678)
Gonioloboceratidae	C (Bash-u)	-	P (Sakm-u)	(329)
Homoceratidae	C (Serp-u)	-	C (Bash-l)	(329,678)
Hyattoceratidae	P (Leon-l)	-	P (Guad-u)	(329)
Intoceratidae	C (Vise-l)			(636)
Karagandoceratidae	C (Tour-l)	-	C (Tour-u)	(329)
Marathonitidae	C (Mosc-u)	-	P (Guad-l)	(329)
Maximitidae	C (Bash-u)	-	C (Step-l)	(329)
Metalegoceratidae	P (Asse)	-	P (Guad-l)	(329)
Mongoloceratidae	P (Guad-l)			(329)
Munsteroceratidae	C (Tour-l)	-	C (Serp-l)	(329,678)
Neodimorphoceratidae	C (Bash-l)	-	C (Step-u)	(329,678)
Neoglyphioceratidae	C (Vise-u)	-	C (Serp-l)	(329,678)
Neiococeratidae	C (Bash-u)	-	P (Sakm)	(329)
Nomismoceratidae	C (Vise-l)	-	C (Bash-l)	(329,678)

Orulganitidae	C (Bash-u)		(329)
Paragastrioceratidae	P (Asse)	- P (Tatr-u)	(329)
Pericyclidae	C (Tour-l)	- C (Vise-l)	(329,636)
Perrinitidae	P (Asse)	- P (Leon-u)	(329,791)
Popanoceratidae	P (Asse)	- P (Guad-u)	(329)
Praeglyphioceratidae	D (Fame-m)		(329)
Prionoceratidae	D (Fame-l)	- C (Serp-l)	(329)
Pseudohaloritidae	C (Step-l)	- P (Tatr-u)	(248)
Pseudoparalegoceratidae	C (Bash-u)	- C (Mosc-l)	(329)
Ramositidae	C (Serp-l)	- C (Bash-l)	(678)
Reticuloceratidae	C (Bash-l)	- C (Mosc-u)	(329,678)
Rhymmoceratidae	C (Vise-u)	- C (Bash-l)	(329,678)
Schistoceratidae	C (Bash-u)	- C (Step-u)	(329)
Shumarditidae	C (Mosc-u)	- C (Step-u)	(329)
Sinotitidae	D (Fame-l)		(329)
Somoholitidae	C (Step-l)	- P (Leon-l)	(329,678)
Sporadoceratidae	D (Fame-l)	- D (Fame-u)	(328,329)
Thalassoceratidae	C (Mosc-u)	- P (Guad-l)	(329)
Tornoceratidae	D (Give-l)	- D (Fame-u)	(328,329)
Vidrioceratidae	C (Step-l)	- P (Tatr-l)	(329)
Welleritidae	C (Bash-u)	- C (Mosc-l)	(329)
Wiedeyoceratidae	C (Bash-l)	- C (Step-u)	(489,678)
<b>Or. PROLECANITIDA</b>			
Daraelitidae	C (Vise-l)	- P (Guad-l)	(329)
Episageceratidae	P (Guad-u)	- Tr(Olen-l)	(329)
Medlicottiidae	C (Mosc-u)	- P (Tatr-l)	(329)
Prodoromitidae	C (Tour-l)	- C (Tour-u)	(329)
Prolecanitidae	C (Tour-l)	- C (Serp-l)	(329)
Pronoritidae	C (Vise-l)	- P (Guad-u)	(329)
Shikhanitidae	P (Asse)		(329)
Sundaitidae	P (Sakm)	- P (Guad-u)	(329)
<b>Or. CERATITIDA</b>			
Acrochordiceratidae	Tr(Olen-u)	- Tr(Anis-m)	(329)
Anderssonoceratidae	P (Tatr-l)		(329)
Aplococeratidae	Tr(Anis-m)	- Tr(Anis-u)	(329)
Araxoceratidae	P (Guad-u)	- P (Tatr-u)	(329)
Arcestidae	Tr(Anis-m)	- Tr(Nori-u)	(329)
Arpaditidae	Tr(Ladi-l)	- Tr(Nori-u)	(329)
Aspenitidae	Tr(Olen-l)		(329)
Badiotitidae	Tr(Carn-l)		(329)
Balatonitidae	Tr(Anis-m)		(329)
Beneckeiidae	Tr(Olen-u)	- Tr(Anis-m)	(329)
Carnitidae	Tr(Ladi-u)	- Tr(Nori-u)	(329)
Ceratitidae	Tr(Anis-m)	- Tr(Ladi-u)	(329)
Choristoceratidae	Tr(Nori-u)		(329)
Cladiscitidae	Tr(Olen-u)	- Tr(Nori-u)	(329)
Clionititidae	Tr(Ladi-u)	- Tr(Nori-m)	(329)
Clydonitidae	Tr(Carn-u)	- Tr(Nori-m)	(329)
Cochloceratidae	Tr(Nori-u)		(329)
Columbitidae	Tr(Olen-u)		(329)
Cycloceltitidae	Tr(Nori-u)		(329)
Cyrtopleuritidae	Tr(Nori-m)	- Tr(Nori-u)	(329)
Danbubitidae	Tr(Anis-l)	- Tr(Ladi-u)	(329)

Didymitidae	Tr(Nori-m)	(329)
Dinaritidae	Tr(Olen-u) - Tr(Anis-m)	(329)
Distichitidae	Tr(Nori-m)	(329)
Dzhulfitidae	P (Tatr-u)	(329)
Episculitidae	Tr(Nori-m)	(329)
Gymnitidae	Tr(Anis-l) - Tr(Nori-u)	(329)
Haloritidae	Tr(Carn-u) - Tr(Nori-u)	(329)
Hedenstroemiidae	Tr(Olen-l)	(329)
Heraclitidae	Tr(Nori-m)	(329)
Hungaritidae	Tr(Anis-u) - Tr(Carn-l)	(329)
Inyoitidae	Tr(Olen-l)	(329)
Isculitidae	Tr(Anis-l) - Tr(Anis-m)	(329)
Japonitidae	Tr(Olen-u) - Tr(Anis-m)	(329)
Joannitidae	Tr(Ladi-u) - Tr(Carn-l)	(329)
Keyserlingitidae	Tr(Olen-u)	(329)
Lanceolitidae	Tr(Olen-l)	(329)
Lecanitidae	Tr(Carn-l) - Tr(Carn-u)	(329)
Lobitidae	Tr(Ladi-u) - Tr(Carn-l)	(329)
Longobarditidae	Tr(Anis-l) - Tr(Ladi-l)	(329)
Meekoceratidae	Tr(Indu-l) - Tr(Olen-u)	(329)
Megaphyllitidae	Tr(Anis-u) - Tr(Nori-u)	(329)
Melagathiceratidae	Tr(Olen-l)	(329)
Metasibiritidae	Tr(Nori-m) - Tr(Nori-u)	(329)
Nannitidae	Tr(Carn-l)	(329)
Nathorstidae	Tr(Ladi-l) - Tr(Ladi-u)	(329)
Noridiscitidae	Tr(Nori-m)	(329)
Noritidae	Tr(Olen-u) - Tr(Carn-l)	(329)
Olenikitidae	Tr(Olen-u)	(329)
Ophiceratidae	Tr(Indu-l) - Tr(Olen-u)	(329)
Otoceratidae	Tr(Indu-l)	(329)
Paracelitidae	P (Leon-u) - P (Guad-u)	(329)
Paranannitidae	Tr(Olen-l) - Tr(Olen-u)	(329)
Parapopanoceratidae	Tr(Anis-l) - Tr(Anis-u)	(329)
Pinacoceratidae	Tr(Ladi-u) - Tr(Nori-u)	(329)
Prionitidae	Tr(Olen-l)	(329)
Procarnitidae	Tr(Olen-u)	(329)
Proteusitidae	Tr(Anis-u)	(329)
Pseudotirolitidae	P (Tatr-u)	(329)
Ptychitidae	Tr(Anis-m) - Tr(Ladi-l)	(329)
Rhabdoceratidae	Tr(Nori-u)	(329)
Rimkinitidae	Tr(Ladi-u)	(329)
Sageceratidae	Tr(Indu-u) - Tr(Carn-l)	(329)
Sagenitidae	Tr(Ladi-u) - Tr(Nori-u)	(329)
Sandlingitidae	Tr(Carn-u)	(329)
Sibiritidae	Tr(Olen-u)	(329)
Sphingitidae	Tr(Ladi-u) - Tr(Carn-l)	(329)
Stephanitidae	Tr(Olen-l)	(329)
Sturiidae	Tr(Olen-u) - Tr(Ladi-u)	(329)
Thanamitidae	Tr(Ladi-l) - Tr(Ladi-u)	(329)
Thetididae	Tr(Nori-m)	(329)
Thisbitidae	Tr(Carn-u) - Tr(Nori-u)	(329)
Tibetitidae	Tr(Nori-l) - Tr(Nori-u)	(329)
Trachyceratidae	Tr(Ladi-u) - Tr(Carn-u)	(329)
Tropicelitidae	Tr(Carn-u) - Tr(Nori-l)	(329)

Tropitidae	Tr(Carn-u) - Tr(Nori-l)	(329)
Ussuriidae	Tr(Olen-l)	(329)
Xenodiscidae	P (Leon-u) - Tr(Olen-u)	(329)
<b>Or. PHYLLOCERIDA</b>		
Discophyllitidae	Tr(Carn) - Tr(Nori-u)	(329)
Juraphyllitidae	J (Hett) - J (Plie-u)	(329)
Libycoceratidae	K (Camp-u) - K (Maas-u)	(329,881)
Phylloceratidae	J (Hett) - K (Maas-u)	(329,832,864)
Ussuritidae	Tr(Olen-l) - Tr(Nori-u)	(329)
<b>Or. AMMONITIDA</b>		
Acanthoceratidae	K (Albi-u) - K (Coni-u)	(329)
Amaltheidae	J (Plie-u)	(329)
Ancycloceratidae	K (Vala-u) - K (Albi-l)	(329)
Anisoceratidae	K (Apti-u) - K (Coni-l)	(329,368,454)
Arietitidae	J (Hett-u) - J (Sine-u)	(329)
Aspidoceratidae	J (Call-m) - J (Tith-u)	(329)
Astiericeratidae	K (Albi-m)	(329)
Ataxioceratidae	J (Oxfo-m) - J (Tith-u)	(329)
Aulacostephanidae	J (Oxfo-u) - J (Tith-l)	(329)
Baculitidae	K (Albi-u) - K (Maas-u)	(301,329,832)
Binneyitidae	K (Albi-u) - K (Sant-l)	(301,329)
Bochianitidae	J (Tith-l) - K (Apti-l)	(329)
Brancoceratidae	K (Albi-l) - K (Ceno-u)	(329)
Cardioceratidae	J (Bajo-u) - J (Kimm-u)	(329)
Cicatritidae	K (Apti-l) - K (Apti-u)	(329)
Coeloceratidae	J (Sine-u) - J (Plie-l)	(329)
Coilopoceratidae	K (Coni-l) - K (Maas-l)	(329)
Collignoniceratidae	K (Turo-l) - K (Maas-l)	(329)
Craspeditidae	K (Berr-l) - K (Barr-l)	(329)
Cymbitidae	J (Hett-u) - J (Plie-u)	(329)
Dactylioceratidae	J (Plie-l) - J (Toar-l)	(329)
Deshayesitidae	K (Barr-u) - K (Albi-m)	(329)
Desmoceratidae	K (Haut-u) - K (Maas-u)	(329,832)
Dorsoplanitidae	J (Tith-l) - K (Berr-u)	(329)
Douvilleiceratidae	K (Apti-l) - K (Albi-m)	(329)
Echioceratidae	J (Sine-u)	(329)
Engonoceratidae	K (Albi-l) - K (Turo-l)	(329)
Eoderoceratidae	J (Sine-u) - J (Plie-l)	(329)
Eodesmoceratidae	K (Vala-l) - K (Barr-u)	(329)
Flickiidae	K (Albi-u) - K (Turo-l)	(329)
Forbesiceratidae	K (Albi-u) - K (Ceno-u)	(329,864)
Gaudryceratidae	K (Barr) - K (Maas-u)	(329,864)
Graphoceratidae	J (Aale)	(329)
Hamitidae	K (Apti-u) - K (Turo-u)	(329)
Haploceratidae	J (Kimm-u) - K (Barr-u)	(329)
Hemihoplitidae	K (Haut-u) - K (Barr-u)	(329)
Heteroceratidae	K (Barr-l) - K (Barr-u)	(329)
Hildoceratidae	J (Plie-l) - J (Bajo-l)	(329)
Himalayitidae	J (Tith-l) - K (Berr-l)	(329)
Holcodiscidae	K (Haut-l) - K (Barr-u)	(329)
Hoplitidae	K (Albi-l) - K (Ceno-m)	(329)
Kossmaticeratidae	K (Apti-u) - K (Maas-u)	(329,832)
Kosmoceratidae	J (Bath-u) - J (Call-u)	(329)

Labeceratidae	K (Albi-m)	-	K (Ceno-l)	(329)
Leymeriellidae	K (Albi-l)	-	K (Albi-m)	(329)
Liparoceratidae	J (Sine-u)	-	J (Plie-u)	(329)
Lissoceratidae	J (Bajo-l)	-	J (Oxfo-m)	(329)
Lyelliceratidae	K (Albi-l)	-	K (Ceno-l)	(329,864)
Lytoceratidae	J (Hett-l)	-	K (Ceno-m)	(329)
Macrocephalitidae	J (Bath-m)	-	J (Call-m)	(329)
Macroscaphitidae	K (Haut-u)	-	K (Apti-u)	(329)
Morphoceratidae	J (Bajo-u)	-	J (Bath-l)	(329)
Muniericeratidae	K (Turo-l)	-	K (Maas-u)	(329)
Neocomitidae	J (Tith-u)	-	K (Haut-l)	(329)
Olcostephanidae	J (Tith-l)	-	K (Haut-u)	(329)
Oosterellidae	K (Vala-u)	-	K (Haut-l)	(329)
Oppeliidae	J (Aale)	-	K (Coni-l)	(329)
Otoitidae	J (Aale)	-	J (Bajo-l)	(329)
Oxynoticeratidae	J (Sine-u)	-	J (Plie-l)	(329)
Pachyceratidae	J (Call-m)	-	J (Oxfo-m)	(329)
Pachydiscidae	K (Albi-m)	-	K (Maas-u)	(301,329,832)
Parahoplitidae	K (Apti-u)	-	K (Albi-m)	(329)
Perisphinctidae	J (Bajo-l)	-	J (Tith-u)	(329)
Phricodoceratidae	J (Sine-u)	-	J (Plie-l)	(329)
Phymatoceratidae	J (Toar-l)	-	J (Bajo-l)	(329)
Plagenticeratidae	K (Albi-u)	-	K (Maas-l)	(329,832)
Polymorphitidae	J (Sine-u)	-	J (Plie-l)	(329)
Protetragonitidae	J (Tith-l)	-	K (Albi-m)	(329)
Psiloceratidae	J (Hett-l)	-	J (Hett-u)	(329)
Ptychoceratidae	K (Haut-u)	-	K (Albi-u)	(329)
Pulchelliidae	K (Haut-u)	-	K (Apti-l)	(329)
Reineckeidae	J (Call-l)	-	J (Call-u)	(329)
Scaphitidae	K (Albi-m)	-	K (Maas-u)	(301,329,832)
Schloenbachiidae	K (Albi-u)	-	K (Turo-l)	(329)
Schlothemiidae	J (Hett-u)	-	J (Sine-u)	(329)
Silesitidae	K (Haut-l)	-	K (Albi-m)	(329)
Simoceratidae	J (Tith-l)	-	J (Tith-u)	(329)
Sonniniidae	J (Aale)	-	J (Bajo-l)	(329)
Sphaeroceratidae	J (Bajo-l)	-	J (Kimm-l)	(329)
Sphenodiscidae	K (Sant-l)	-	K (Maas-u)	(301,329,832)
Spiroceratidae	J (Bajo-u)	-	J (Call-m)	(329)
Stephanoceratidae	J (Aale)	-	J (Call-l)	(329)
Strigoceratidae	J (Aale)	-	J (Call-m)	(329)
Tetragonitidae	K (Apti-u)	-	K (Maas-u)	(329,832,864)
Tissotiidae	K (Coni-l)	-	K (Sant-u)	(329)
Trochleiceratidae	K (Apti-u)	-	K (Albi-m)	(329)
Tulitidae	J (Bath-l)	-	J (Call-u)	(329)
Turrilitidae	K (Albi-m)	-	K (Maas-u)	(329)
Vascoceratidae	K (Ceno-u)	-	K (Coni-l)	(329,368)
Virgatitidae	J (Tith-u)			(329)
Xipheroceratidae	J (Sine-u)	-	J (Plie-l)	(329)
Or. BELEMNITIDA				
Bayanoteuthidae	T (uEoc)			(301,765)
Belemnitellidae	K (Ceno-l)	-	K (Maas-u)	(765)
Belemnitidae	J (Hett)	-	J (Call)	(343,764,765)
Belemnopseidae	J (Toar)	-	K (Vala-u)	(764,765)
Chondroteuthidae	J (Toar-l)			(343,764)

Cylindroteuthididae	J (Plie-u)	- K (Apti-l)	(764,765)
Dicoelitidae	J (Hett)?	- J (Tith)	(764)
Dimitobelidae	K (Apti-l)	- K (Maas)	(765)
Diplobelidae	J (Tith-l)	- K (Ceno-u)	(343,764,765)
Duvaliidae	J (Toar)	- K (Apti-u)	(764,765)
Hastitidae	J (Plie-l)	- J (Tith)	(764)
Oxyteuthidae	K (Vala)	- K (Apti-u)	(765)
Sinoblemitidae	Tr(Carn)		(889)
<b>Or. OCTOPIDA</b>			
Argonautidae	T (Mi)	- R	(301,343)
Octopodidae	J (Call)	- R	(227)
Palaeoctopodidae	K (Coni)		(301,570)
<b>Or. SEPIIDA</b>			
Belemnoseidae	T (Dani)	- T (Ioli)	(343,570)
Belopteridae	T (Than)	- T (Ioli)	(570)
Belosepiellidae	T (mEoc)		(343,570)
Groenlandibelidae	K (Camp-u)	- K (Maas-u)	(343,570)
Sepiidae	T (mEoc-u)	- R	(542,570)
Spirulidae	T (Mi)	- R	(343,570)
Spirulirostridae	T (Eo)?	- T (mMio)	(343,570)
Vasseuriidae	T (mEoc)		(343,570)
<b>Or. TEUTHIDA</b>			
Geopeltidae	J (Toar)	- J (Tith-l)	(343,570)
Gonatidae	T (Plio)	- R	(134)
Gramadellidae	J (Call-l)		(226)
Kelaenidae	J (Kimm-u)	- K (Camp-l)	(570)
Leptoteuthididae	J (Tith-l)	- K (Sant-u)	(343,570)
Lioteuthididae	J (Toar-l)		(343,570)
Loliginidae	T (mEoc-l)	- R	(134)
Loligosepiidae	Tr(Ladi-l)	- K (Apti)	(204,570)
Necroteuthididae	T (Ioli)		(343,570)
Ommastrephidae	T (Plio)	- R	(134)
Onychoteuthidae	T (Plio)	- R	(134)
Palaeololiginidae	J (Toar-l)	- K (Camp-l)	(343)
Pleisoteuthidae	J (Toar-l)	- K (Maas)	(343,570)
Trachyteuthididae	J (Oxfo-l)	- K (Maas)	(287,301,343,570)
<b>Or. PHRAGMOTEUTHIDA</b>			
Belemnoteuthididae	J (Oxfo-u)	- J (Kimm-u)	(764)
Phragmoteuthidae	P (Guad)	- J (Sine)	(301,343,407)
<b>Or. BOLETZKYIDA</b>			
Boletzkyidae	D (Emsi-l)		(18)
Naefiteuthididae	D (Emsi-l)		(18)
<b>Or. AULACOCERIDA</b>			
Aulacoceratidae	D (Fras)	- Tr(Nori-l)	(343)
Chitinoteuthidae	J (Hett)	- J (Plie-u)	(301,343)
Protoaulacoceratidae	D (Emsi-l)		(18,343)
Xiphoteuthididae	Tr(Anis-l)	- J (Oxfo-u)	(343)
<b>Cl. ROSTROCONCHIA</b>			

[Classification and stratigraphic ranges are based principally on Pojeta and Runnegar (1976), with emendations.]



Or. RIBEIRIOIDA		
Ischyriidae	Cm(Trep-u) - O (Ashg-m)	
Ribeiriidae	Cm(Tomm-l) - S (Ldov-u)	(36,746)
Technophoridae	Cm(Dres-u) - S (Ldov-u)	(575)
Or. CONOCARDIOIDA		
Bransoniidae	O (Trem-l) - P (Guad-u)	(718)
Conocardiidae	D (Prag) - P (Sakm)	(721,867)
Eopteriidae	Cm(Dres) - O (Ashg)?	(577,718)
Hippocardiidae	O (Llde) - C (Mosc-u)	
Cl. BIVALVIA		
[Classification and basic stratigraphic ranges follow the <i>Treatise</i> , Pt. N, with numerous emendations. Exclusively nonmarine families and 5 extant marine families without known fossil representatives are not listed.]		
Or. SOLEMYOIDA		
?Ctenodontidae	O (Aren-u) - J (Bath)	(172,311,574)
Manzanellidae	P (Leon-u)	
Nucinellidae	K (Camp-l)	
Solemyidae	O (Cara-l) - R	(580)
Or. NUCULOIDA		
Isoarcidae	J (Aale) - T (Dani)	(295)
Malletiidae	O (Trem-u) - R	(311,574)
Nuculanidae	D (Emsi) - R	
Nuculidae	O (Trem-u) - R	
Praenuculidae		
(+ <i>Pojetaia</i> )	Cm(Atda-l) - D (l)	(668)
Thoraliidae	O (Aren)	(492)
Or. PRAECARDIOIDA		
Antipleuridae	S (Wenl) - D (Fras)	
Butovicellidae	S (Wenl) - S (Ludl-l)	
Praecardiidae	S (Ldov-m) - C (Tour-l)	
Vlastidae	O (Cara) - S (Ludl)	(574)
Or. ACTINODONTOIDA		
Allodesmatidae	O (Cara-m) - S (Ludl-u)	
Babinkidae	O (Trem-u) - O (Llde)	(461,491,574)
Carydiidae	D (Prag-u) - D (Fras)	
Cycloconchidae	O (Aren-u) - O (Ashg-m)	(574,576)
?Fordillidae	Cm(Atda-l) - O (Cara-u)	(80,83,346)
Lydrodesmatidae	O (Aren) - S (Ldov-u)	(574,576)
Redoniidae	O (Aren) - O (Llde)	(17,574)
Or. MYTILOIDA		
Mysidiellidae	Tr(Olen) - Tr(Nori-u)	
Mytilidae	D (Emsi) - R	
Pinnidae	C (Vise-l) - R	(301)
Or. ARCOIDA		
Arcidae	Tr(Nori) - R	(297)
Cucullaeidae	J (Hett) - R	(296,310)
?Cyrtonodontidae	O (Llvi-u) - S (Prid)	(17)
Glycymerididae	K (Vala) - R	
Limopsidae	Tr(Ladi) - R	(297)
Myodakryotidae	O (Cara-l) - O (Cara-m)	(801)

Noetiidae	K (Apti)	- R	
Parallelodontidae	O (Llde)	- R	(407)
Philobryidae	T (Eoc)	- R	(514)
Or. PTERIOIDA			
Alatoconchidae	P (Leon-l)	- P (Guad-l)	(868)
Ambonychiidae	O (Llde)	- D (Fras-u)	(301,311)
Anomiidae	J (Bath-u)	- R	(259)
Aviculopectinidae	D (Fame-u)	- J (Tith)	
Bakevelliidae	P (Sakm)	- T (uEoc)	(514)
Buchiidae	Tr(Olen)	- K (Haut)	
Cassianellidae	P (Leon)	- Tr(Nori-u)	(297)
Chondrodontidae	K (Albi)	- K (Camp)	
Dattidae	Tr(Nori-u)		
Dellopectinidae	C (Step-l)	- P (Tatr-u)	(835,870)
Dimyidae	Tr(Anis)	- R	(870)
Entoliidae	D (Fame-u)	- K (Maas-u)	(1,193)
Gryphaeidae	Tr(Carn)	- R	(297)
Inoceramidae	P (Sakm)	- K (Maas-u)	(310,312)
Isognomonidae	P (Sakm)	- R	(311)
Kochiidae	D (Prag)	- D (Fras)	
Leiopectinidae	O (Ashg)	- D (l)	
Limidae	O (Cara-m)?	- R	
Lithiotidae	J (Plie)		(296)
Lunulacardiidae	O (Aren)	- C (l)	
Malleidae	J (Bajo)	- R	(296)
Monopteriidae	C (Bash)	- C (Step)	
Monotidae	Tr(Carn)	- Tr(Nori-u)	(285,297)
Myalinidae	D (Fras)?	- J (l)	
Ostreidae	P (Guad)	- R	(311)
Oxytomidae	P (Leon-l)	- K (Maas-u)	(1,749)
Pectinidae	P (Tatr-l)	- R	(870)
Pergamidiidae	Tr(Carn-u)	- J (Sine-u)	(295,298)
Placunidae	T (Eoc)	- R	(259,485)
Plicatulidae	Tr(Anis)	- R	(870)
Posidoniidae	C (Vise-l)	- K (Coni-l)	
Pseudomonotidae	C (Tour-l)	- P (Tatr-u)	(835,870)
Pteriidae	P (Sakm)	- R	(311,504)
Pterineidae	O (Llvi)	- P (Guad-u)	(311)
Pterinopectinidae	S (Prid)	- P (Tatr-l)	(870)
Pulvinitidae	J (Plie-u)	- R	(180)
Spondylidae	Tr(Ladi)	- R	(393)
Terquemiidae	P (Asse)	- J (Oxfo-u)	(295,297)
<i>Permanomia</i>	P (Leon-l)	- P (Guad-l)	(259,515)
Or. UNIONOIDA (mostly freshwater)			
Pachycardiidae	Tr(Indu-l)	- J (Plie)	(310)
Or. TRIGONIOIDA			
Myophoriidae	D (Loch)	- Tr(Nori-u)	(297)
Scaphellinidae	P (Leon-u)	- P (Guad-u)	
Trigoniidae	Tr(Anis)	- R	
Or. VENEROIDA			
Arcticidae	Tr(Nori-u)	- R	
Astartidae	D (l)	- R	

Cardiidae	Tr(Nori-l)	- R	
Cardiliidae	T (Than)	- R	(514)
Cardiniidae	O (Llde)	- R	
Carditidae	D (Loch-l)	- R	
Chamidae	K (Camp)	- R	
Condylocariidae	T (mEoc)	- R	
Cooperellidae	T (mMio)	- R	
Corbiculidae	J (Toar)	- R	(172)
Crassatellidae	D (Loch)	- R	
Cultellidae (= Pharidae)	J (Tith-u)	- R	(366)
Cyamiidae	T (Mi-m)	- R	
Dicerocardiidae	Tr(Anis-m)	- K (Maas)	
Donacidae	K (Apti-l)	- R	(336,821)
Erycinidae	K (Sant)	- R	
Euloxidae	T (Mi-u)	- R	
Fimbriidae	C (Tour)	- R	(301)
Gaimardiidae	T (uEoc)	- R	(894)
Galeommatidae	T (lEoc)	- R	(542)
Glossidae	K (Ceno)	- R	
Hippopodiidae	Tr(Nori)	- J (Plie-u)	(296,297)
Icanotiidae	K (Haut-l)	- K (Maas)	
Kelliellidae	T (Dani)	- R	(542)
Kelliidae	K (Camp)	- R	
Lahilliidae	K (Camp)	- T (Mi)	
Leptonidae	T (Dani)	- R	(514)
Lucinidae	D (Eife)	- R	(721)
Lymnocardiidae	T (lMio)	- R	
Mactridae	K (Barr)?	- R	
Mactromyidae	S (Wenl)	- R	
Mecynodontidae	D (Eife)	- R	
Mesodesmatidae	T (lEoc)	- R	(542)
Montacutidae	T (lEoc)	- R	(542)
Myophoricardiidae	Tr(Olen-u)	- Tr(Nori)	
Neoleptonidae	T (uOli)	- R	(50,589)
Neomiodontidae	J (Hett)	- K (Ceno)	(296,310)
Petricolidae	T (lEoc)	- R	(514)
Pollicidae	K (Ceno)	- K (Maas)	(514)
Psammobiidae	K (Camp)	- R	(336)
Ptychomyidae	J (Kimm)	- K (Maas)	(296,514)
Quenstedtiidae	J (Toar-u)	- J (Tith-u)	(258,295,296)
Rzehakiidae	T (lOli)	- T (uMio)	(275)
Scrobiculariidae	T (Than)	- R	(336,514)
Semelidae	T (Than)	- R	(336)
Solecurtidae	K (Camp-l)	- R	
Solenidae	T (Than)	- R	
Sowerbyidae	J (Toar-u)	- K (Berr-u)	(295,296,336)
Sportellidae	J	- R	
Tancrediidae	Tr(Carn-l)	- K (Maas-u)	(297,310,336)
Tellinidae	K (Haut-l)	- R	(336)
Thyasiridae	Tr(Ladi)	- R	(297)
Trapeziidae	K (Ceno)	- R	(1)
Tridacnidae	T (Dani)	- R	(514)
Turtoniidae	T (Mi)	- R	

Ungulinidae	K (Sant)	- R	
Unicardiopsidae	J (Toar-u)	- J (Kimm-l)	(336)
Veneridae	K (Vala)	- R	(194)
Vesicomysidae	T (uOli)	- R	
Or. MYOIDA			
Corbulidae	J (Toar)	- R	(296)
Erodonidae	T (uEoc)	- R	
Gastrochaenidae	J (Bath)	- R	(296)
Hiatellidae	P (Guad-u)	- R	
Myidae	T (Dani)	- R	(514)
Pholadidae	J (Plie-u)	- R	(367)
Pleurodesmatidae	T (lMio-l)	- T (lMio-u)	
Raetomyidae	T (mEoc)	- T (uEoc)	
Spheniopsidae	T (lOli)	- R	
Teredinidae	J (Tith-u)	- R	(367)
Or. HIPPURITOIDA			
Caprinidae	K (Barr)	- K (Maas-u)	
Caprotinidae	K (Haut)	- K (Ceno-u)	(562)
Diceratidae	J (Oxfo-l)	- K (Vala)	(295)
Hippuritidae	K (Turo-l)	- K (Maas-u)	(562)
Megalodontidae	S (Wenl-u)	- K (Apti)	
Monopleuridae	J (Kimm)	- K (Maas-u)	(312)
Radiolitidae	K (Barr)	- K (Maas-u)	
Requieniidae	J (Tith)	- K (Maas-u)	
Or. MODIOMORPHOIDA			
?Colpomyidae	O (Llvi)	- O (Ashg-m)	
Modiomorphidae	O (Trem-u)	- P (Guad)	
Or. ORTHONOTOIDA			
Orthonotidae	O (Llvi)	- D (Fras)	(493,576)
?Prothyridae	D (l)	- P (Guad)	(493)
Solenomorphidae	D (Emsi)	- P (Guad-u)	(49)
Or. PHOLADOMYOIDA			
?Burmesiidae	Tr(Nori-u)	- J (Hett)	(296,310)
Ceratomyidae	Tr(Nori-u)	- J (Tith-u)	(296,298,366)
Ceratomyopsidae	J (Toar)	- J (Kimm)	(296)
Chaenomyidae	C (Mosc)	- T (Eo)	(667)
Clavagellidae	K (Ceno)	- R	
Cleidothaeridae	T (lMio)	- R	(50)
Cuspidariidae	Tr(Ladi)	- R	(301)
Edmondiidae	D (Fras-u)	- Tr(Carn)	(301,493,504)
Grammysiidae	O (Cara-m)	- D (Fame)	(301,311)
Laternulidae	Tr(Carn)	- R	(297)
Lyonsiidae	T (Than)	- R	(514)
Margaritariidae	T (mMio)	- T (Plio)	(667)
Megadesmidae	C (Serp-l)	- P (Tatr-l)	
Myochamidae	T (uEoc)	- R	(181)
Myopholadidae	J (Toar)	- K (Albi-u)	(296)
Pandoridae	T (Eo-u)	- R	(667)
Periplomatidae	K (Apti)	- R	(310)
?Permophoridae	C (Vise)	- P (Tatr-l)	(493)
Pholadomyidae	C (Tour-u)	- R	
Pleuromyidae	Tr(Olen-u)	- K (Berr-u)?	(451)

Poromyidae	K (Apti-l)	-	R	(361)
Sanguinolitidae	D (Loch)	-	P (Tatr-l)	(311,493)
Sinodoridae	D (Emsi)	-	D (Eife)	(581)
Thraciidae	Tr(Olen-u)	-	R	
Vacunellidae	C (Vise)?	-	P (Tatr-l)	
Verticordiidae	K (Vala)	-	R	(361)

#### Cl. SCAPHOPODA

[Classification follows C.P. Palmer (1974).]

##### Or. DENTALIOIDA

Dentaliidae	D (Prag-l)	-	R	(301)
Laevidentalidae	O (Cara-m)	-	R	(579)

##### Or. SIPHONODENTALIOIDA

Cadulidae	K (l)	-	R	(489)
Siphonodontaliidae	P (Sakm)	-	R	(866,867)

#### ?MOLLUSCA

##### Cl. TENTACULITOIDEA

[Sources for classification and stratigraphic ranges are as listed. Yochelson and Lindeman (1986) argue that the Dacryoconarida are unrelated and should be treated as problematica.]

##### Or. TENTACULITIDA

Gotlandellitidae	S (Ldov-u)	-	S (Wenl-l)	(416)
Rossiitidae	S (Ldov-m)	-	D (Fras-u)	(416)
Tentaculitidae	O (Trem)	-	D (Fras-m)	(301,416)
Volynitidae	S (Wenl-u)	-	D (Fras-u)	(214,416)

##### Or. HOMOCTENIDA

Homoctenidae	D (Prag)	-	D (Fras-m)	(73)
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##### ?Or. DACRYOCONARIDA

Nowakiidae	S (Ldov-m)	-	D (Fras-m)	(301,800)
Striatostyliolinidae	D (Prag)	-	D (Fras-m)	(73,214,443)
Styliolinidae	S (Wenl)	-	D (Fame-l)	(301,489)

#### HYOLITHA

[Classification principally follows Missarzhevsky (1969) and Meshkova et al. (1985) with additional families and stratigraphic ranges as listed. Hyoliths are traditionally classified among the Mollusca but probably are distinct, possibly of phylum status.]

##### Cl. ORTHOTHECIMORPHA

##### Or. CIRCOTHECIDA

Circothecidae	V (N-Da)	-	O (Cara-l)	(82,455)
Spinulithecididae	Cm(Tomm-l)	-	Cm(Atda-l)	(81,82,746,774)

##### Or. EXILITHECIDA

Exilithecidae	Cm(Tomm-l)	-	Cm(Boto-u)	(82,746,774)
Gracilithecidae	Cm(Tomm-u)	-	Cm(mMid)	(746,774,811)
Obliquathecididae	Cm(Tomm-u)	-	Cm(Boto)	(746,774)

##### Or. GLOBORILIDA

Globorilidae	Cm(Tomm-u)	-	Cm(Tojo)	(36,364,385,442)
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Or. ORTHOTHECIDA

Allathecidae	Cm(Tomm-l) - Cm(Boto)	(82,666)
Ceratothecidae	S (Ludl) - D (Loch)	(301,489)
Chelsonellidae	Cm(m) - O (Trem)	(449)
Isitithecidae	Cm(Tomm-u)- Cm(Boto-u)	(746,774)
Novitatidae	Cm(Atda-l) - O (Cara)	(746,774)
Orthothecidae	Cm(Tomm-l) - D (m)	(82,489,666)
Tchuranothecidae	Cm(Tomm-l) - Cm(Atda-u)	(82,746)
Tetrathecididae	Cm(Atda-l) - O (l)	(82,746,774)

Cl. HYOLITHOMORPHA

Or. HYOLITHIDA

Aimitidae	Cm(Tomm-u)- Cm(Atda-u)	(36,442,746)
Altaicornidae	Cm(Boto-u)	(36,746)
Amydaicornidae	Cm(Atda) - Cm(mMid)	(811)
Angusticornidae	Cm(Atda-u) - Cm(Tojo-l)	(746)
Crestjahitidae	Cm(Tomm-u)- Cm(mMid)	(746)
Dorsojugatidae	Cm(Tomm-u)- Cm(Boto-u)	(666,746)
Galicornidae	Cm(Atda-u) - Cm(Boto-l)	(746,811)
Hylithidae		
(+ Camerothecidae		
+ Diplothecidae)	Cm(Tomm-u)- P (Guad-u)	(301,436,666,811)
Notabilitidae	Cm(Tomm-u)- Cm(Boto-l)	(81,746,811)
Pauxillitidae	Cm(Boto) - O (Ashg-m)	(450)
Pterygothecidae	O (l) - D (l)	(489,811)
Sulcavitidae	Cm(Tomm-u)- S (Ldov)?	(80,81,811)
Trapezovitidae	Cm(Tomm-u)- Cm(Boto-u)	(666,746)

Cl. INCERTAE SEDIS

Or. TOXEUMORPHORIDA

Toxeumorphoridae	C (Serp) - P (Tatr-l)	(555)
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SIPUNCULIDA

[Four extant marine families.]

Sipunculidae?	D (Give) - R	(143)
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ECHIURIDA

[Three extant marine families.]

? <i>Coprinosclex</i>	C (Mosc-u)	(357)
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ANNELIDA

Cl. POLYCHAETA

[Classification is from Clark (1969) with significant additions of extinct families from Kielan-Jaworowska (1966) and Kozur (1970a, 1971); stratigraphic ranges are from listed sources. Approximately 48 extant families without known fossil representatives are not listed.]

Or. AMPHINOMORPHA (= Amphinomida)

Amphinomidae	C (Mosc-u) - R	(686,794)
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Or. EUNICEMORPHA (= Eunicida)

Arabellidae	K (Camp-l) - R	(399,401)
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Atraktoprionidae	O (Llde-u) - Tr(Ladi-l)	(372,884)
Dorvilleidae	Tr(Anis-l) - R	(401)
Eunicidae	K (Sn) - R	(399)
Kallopriionidae	O (Llde-u) - Tr(Anis-l)	(372,401)
Lysaretidae	P (l) - R	(399)
Mochtyellidae	O (Llvi) - Tr(Ladi)	(401,781)
Muelleripriionidae	D (Fame) - J (Tith-l)	(399,401)
Onuphidae	K (u) - R	(399)
Paulinitidae	O (Trem) - Tr(Ladi-l)	(372)
Polychaetaspidae	O (Aren) - D (Fras-u)	(372,781)
Ramphoprionidae	O (Llde-u) - O (Ashg-m)	(372,401)
Rhytipriionidae	O (Llde-u) - O (Ashg)	(372,401,480)
Skalenoprionidae	O (Ashg) - P (l)	(372)
Symmetropriionidae	S (Wenl) - S (Ludl-l)	(372,401)
Tetrapriionidae	O (Cara-l) - S (Wenl)	(372,480)
Xanioprionidae	O (Llde-u) - D (Fras-u)	(372,776)
<i>Trentonia</i>	O (Cara-m)	(563)
Or. PHYLLODOCEMORPHA (= Phyllodocida)		
Aphroditidae	D (Fras) - R	(688,794)
Canadiidae	Cm(mMid-l) - Cm(uMid-u)	(114,148,640)
Fossundecimidae	C (Mosc-u)	(688,794)
Glyceridae	O (Aren) - R	(489,781)
Goniadidae	C (Vise) - R	(688)
Hesionidae	C (Mosc-u) - R	(688,794)
Nephtyidae	C (Vise) - R	(688,794)
Nereididae	O (Cara-m) - R	(489)
Palmyridae	C (Mosc-u) - R	(794)
Phyllodocidae	S (u) - R	(489)
Sigalionidae	O (Cara-m) - R	(489)
Tomopteridae	C (Vise-u) - R	(92)
?Wiwaxiidae	Cm(mMid-l) - Cm(mMid-u)	(114,155)
Or. SPIOMORPHA (= Spionida)		
Cirratulidae	K (Sant)? - R	
Spionidae	Cm(Boto)? - R	(271,272)
Or. DRILOMORPHA (= Capitellida)		
Arenicolidae	Tr(Nori-u) - R	(489)
Opheliidae	Cm(Boto)? - R	(271)
Or. TEREHELLOMORPHA (= Terebellida)		
Pectinariidae		
(= Amphictenidae)	C (Serp-l) - R	(212)
Sabellaridae	C (u) - R	(489)
Terebellidae	Cm(mMid-u) - R	(271)
Or. FLABELLIGERIMORPHA (= Flabelligerida)		
Flabelligeridae	C (Mosc-u) - R	(794)
Or. SERPULIMORPHA (= Sabellida)		
Sabellidae	C (l) - R	(532)
Serpulidae	O (Trem) - R	(489)
Or. INCERTAE SEDIS		
Burgessochaetidae	Cm(mMid-u)	(148)
Insilicoryphidae	Cm(mMid-u)	(148)
Peronochaetidae	Cm(mMid-u)	(148)

Stephenoscolecidae	Cm(mMid-u)	(148)
<i>Eopolychaetus</i>	O (Cara-m)	(489)
<i>Pontobdellepsis</i>	O (Cara-m)	(489)
<i>Ramesses</i>	C (Serp-l)	(689)
<i>Soris</i>	C (Serp-l)	(689)

#### Cl. MYZOSTOMARIA

[Seven extant families.]

Myzostomidae	D (Eife)? - R	(150)
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#### Cl. HIRUDINEA

[Two extant marine families.]

<i>Epitrachys</i>	J (Tith-u)	(400)
<i>Palaeohirudo</i>	J (Tith-u)	(400)
?incertae sedis	S (Ldov-u)	(481)

#### Cl. OLIGOCHAETA

[Three extant marine families.]

<i>Pronaidites</i>	C (Bash)	(489)
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#### ?Cl. PALAEOSCOLECIDA

[Established by Conway Morris and Robison (1985).]

Palaeoscolecidae	Cm(Atda-u) - S (Prid)	(148,271,327,489)
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#### ONYCHOPHORA

[Collection of fossil taxa as suggested by Ramskold and Hou (1991). The two modern families are nonmarine.]

Hallucigeniidae	Cm(mMid-u)	(94,151)
Microdictyonidae	Cm(Atda-l) - Cm(mMid)	(38)
<i>Aysheaia</i>	Cm(mMid-u) - Cm(uMid-l)	(151)
<i>Luolishania</i>	Cm(Atda-u)	(325,594)
? <i>Xenusion</i>	Cm(Atda)	(338)

#### ARTHROPODA

##### Cl. MARRELOMORPHA

[Classification is from Bergström (1980).]

##### Or. MIMETASTERIDA

Marellidae (+ <i>Mimetaster</i> )	Cm(mMid-u) - D (Emsi-l)	(301,489,850)
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##### Or. ACERCOSTRACA

Vachonisiidae	D (Emsi-l)	(301,489)
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##### Or. CYCLINA (= Cycloidea)

Cyclidae	C (Vise-l) - Tr(Nori)	(301)
Hemitrochiscidae	P (Leon-u) - Tr(Nori)	(301)
Mesoprosopidae	Tr(Nori)	(489)



Chelicerata

Cl. MEROSTOMATA

[Classification and stratigraphic ranges follow the *Treatise*, Pt. P, and the implications of the phylogenetic analysis of Briggs and Fortey (1989). Only marine taxa are listed.]

Or. XIPHOSURIDA

Archaeolimulidae	O (m)		(45)
Belinuridae	D (Loch)	- C (Step)	(228)
Bunodidae	S (Ludl)	- S (Prid)	(202)
Elleridae	D (Fras)		(228,229)
Kiaeriidae	S (Prid)		(301)
Limulidae	Tr(Olen-l)	- R	(228)
Mesolimulidae	Tr(Olen)	- K (Ceno)	(228)
Paleolimulidae	D (Fame)	- P (Leon)	(228,229)
Pseudoniscidae	S (Wenl)	- D (Prag)	(202,301)
Weinberginidae	D (Emsi-l)		(301)
incertae sedis	S (Ldov-u)		(481)

Or. LEANCHOILIIDA

?Burgessiidae	Cm(mMid-u)		(850)
Leancoiliidae	Cm(mMid-u)		(489,850)

Or. UNNAMED

Yohoiidae	Cm(Atda-u)	- Cm(mMid-u)	(322,489)
? <i>Actaeus</i>	Cm(mMid-u)		(850)
<i>Sarotrocercus</i>	Cm(mMid-u)		(95)

Or. INCERTAE SEDIS

?Eolimulidae	Cm(Atda)		(43,457)
<i>Alalcomenaeus</i>	Cm(Atda-u)	- Cm(mMid-u)	(151,322)
<i>Sanctacaris</i>	Cm(mMid-l)		(93)

Or. CHASMATASPIDIDA

Chasmataspidae	O (Llvi-l)		(301)
?Diploaspidae	D (Emsi-l)		(301)
?Heteroaspidae	D (Emsi-l)		(301)

Or. EURYPTERIDA

[Classification and stratigraphic ranges are from Plotnick (1983); marine families only.]

Carcinosomatidae	S (Ludl)	- D (Emsi-l)	
Eurypteridae	S (Ldov)	- D (Emsi-l)	
Hughmilleriidae	S (Ldov)	- S (Prid)	
Kokomopteridae	S (Prid)		
Mesolopteridae	D (Emsi)		
Mixopteridae	S (Wenl)	- S (Prid)	
Moselopteridae	D (Emsi-l)	- D (Eife)	
Pageidae	D (Loch-u)	- D (Prag)	
Parastylonuridae	O (Cara)	- D (Loch)	
Pterygotidae	S (Ldov)	- D (Fras)	
Rhenopteridae	D (Loch)	- D (Fras-u)	
Stylonuridae	S (Ldov)	- D (Fras)	

## Cl. ARACHNIDA

[Classification and stratigraphic ranges are from Kjellesvig-Waering (1986); only marine families are listed.]

### Or. SCORPIONIDA

Dolichophonidae	S (Wenl)	
Palaeophonidae	S (Wenl-l)	
Palaeoscorpidae	D (Emsi-l)	
Waeringoscorpionidae	D (Emsi-l)	

## Cl. PYCNOGONIDA

[Approximately 8 extant marine families.]

### Or. PALAEOPANTOPODA

Palaeopantopodidae	D (Emsi-l)	(47,301,489)
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### Or. PALAEOISOPODA

Palaeoisopidae	D (Emsi-l)	(47,301,489)
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### Or. PANTOPODA (extant)

<i>Palaeotheca</i>	D (Emsi-l)	(47)
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## Trilobitomorpha

## Cl. TRILOBITA

[Classification is from the *Treatise*, Pt. O, Öpik (1967), Fortey and Owens (1975), Fortey and Chatterton (1988), and Fortey (1990). Stratigraphic ranges are from the listed sources.]

### Or. NARAOIIDA (= Nektaspida)

Naraoiidae	Cm(Atda-u) - Cm(uMid-m)	(155,322,642)
Tegopeltidae	Cm(mMid-u)	(851)

### Or. OLENELLIDA

Daguinaspididae	Cm(Atda-l)	(82,301,330)
Olenellidae	Cm(Atda-l) - Cm(Tojo-u)	(82,256,431,601)

### Or. AGNOSTIDA (= Miomera)

Agnostidae	Cm(Boto) - O (Ashg-u)	(301,489)
Clavagnostidae	Cm(uMid-u) - Cm(Dres-l)	(301,344,431)
Condylomygidae	Cm(Boto-l) - Cm(uMid-m)	(256,301,489)
Diplagnostidae	Cm(mMid-u) - O (Trem)	(301,344,431)
Discagnostidae	Cm(Dres-l)	(528,718)
Eodiscidae	Cm(Atda-l) - Cm(uMid-u)	(256,301,431,718)
Pagetiidae	Cm(Atda-u) - Cm(mMid-u)	(82,301,344,718)
Phalacromidae	Cm(uMid-l) - Cm(Dres-u)	(334,384,385,793)
Sphaeragnostidae	O (Llde-l) - O (Ashg-u)	(301,528,799)
Trinodidae	Cm(Dres-l) - O (Ashg-u)	(489,718)

### Or. REDLICHIIIDA

Abadiellidae	Cm(Atda-u) - Cm(Tojo)	(82,330,865)
Archaeaspididae	Cm(Atda-l)	(603,746)
Bathynotidae	Cm(Boto) - Cm(lMid)	(344,431,489)
Chengkouidae	Cm(Boto)	(887)
Despujolsiidae	Cm(Atda-l)	(330)
Dolerolenidae	Cm(Boto-l)	(330)
Emuellidae	Cm(Tojo)	(386,572)

Gigantopygidae	Cm(Boto)	(330,386)
Hicksiidae	Cm(Boto)	(330)
Kueichowiidae	Cm(Boto-l)	(386,887)
Longduiidae	Cm(Boto-l)	(330,887)
Mayiellidae	Cm(Boto-l)	(82,122,386,887)
Neoredlichiidae	Cm(Atda-u) - Cm(Boto-l)	(82,330,386,601)
Paradoxididae	Cm(Atda-u) - Cm(uMid-u)	(256,386,600,602)
Redlichiidae	Cm(Atda-u) - Cm(Tojo-u)	(82,206,386,601)
Saukiandidae	Cm(Boto-l)	(330,601)
Yinitidae	Cm(Atda-u) - Cm(Boto-l)	(436,887)
Yunnanocephalidae	Cm(Atda-u)	(82,383,436,887)
<b>Or. CORYNEXOCHIDA</b>		
Balangiidae	Cm(Boto-u) - Cm(Tojo)	(386,436,887)
Cheilocephalidae	Cm(Dres-u) - Cm(Fran-l)	(256,301,489,540)
Corynexochidae	Cm(Boto-l) - Cm(Dres-u)	(431,529,601)
Dinesidae	Cm(Boto-l) - Cm(uMid)	(344,602)
Dolichometopidae	Cm(Boto-l) - Cm(Dres-l)	(431,602)
Dorypygidae	Cm(Atda-u) - Cm(Dres-l)	(82,256,431,600)
Edelsteinaspidae	Cm(Boto-u) - Cm(mMid)	(82,344,386,602)
Granulariidae	Cm(Boto-l) - Cm(mMid)	(344,600,602,603)
Illaeidae	O (Trem-u) - S (Ludl)	(489,725,853)
Jakutidae	Cm(Boto-l) - Cm(Tojo-u)	(344,386,602,746)
Kaolishaniidae	Cm(Dres-u) - Cm(Trep)	(431,436,520,718)
Leiostegiidae	Cm(uMid) - O (Aren-u)	(245,385,386,852)
Namanoiidae	Cm(Tojo-u) - Cm(uMid)?	(344,386,602)
Ogygopsidae	Cm(Tojo) - Cm(mMid-u)	(151,256,431)
Oryctocephalidae	Cm(Boto-l) - Cm(mMid-u)	(431,602)
Pagodiidae	Cm(uMid) - Cm(Trep)	(386,436,718,848)
Panderiidae	O (Aren-l) - O (Ashg-m)	(489)
Phillipsinellidae	O (Aren-l) - O (Ashg-u)	(301,535,848)
Styginidae	O (Aren-l) - O (Ashg-m)	(301,725)
Tsinaniidae	Cm(Fran) - Cm(Trep)	(386,436,718,858)
Zacanthoididae	Cm(Tojo) - Cm(uMid-m)	(256,431,600)
<b>Or. LICHIDA</b>		
Lichakephalidae	O (Trem-l)	(301,489)
Lichidae	O (Aren-u) - D (Give-l)	(301,489,793)
<b>Or. ODONTOPLEURIDA</b>		
Damesellidae	Cm(mMid) - Cm(Dres-u)	(256,386,436,529)
Eoacidaspidae	Cm(uMid-u) - O (Trem-l)	(109,663,787)
Eodontopleuridae	Cm(Boto-u)	(887)
Odontopleuridae	Cm(uMid) - D (Fras-u)	(4,109,301)
<b>Or. ASAPHIDA</b>		
Alastaspidae	O (Aren-l) - O (Llvi-l)	(244,301,489,743)
Anomocaridae	Cm(Boto-l) - Cm(Trep)	(344,429,602,718)
Asaphidae	Cm(uMid) - O (Ashg-u)	(386,535,602,718)
Auritamiidae	Cm(uMid-u) - Cm(Dres-l)	(528,718)
Bohemillidae	O (Trem-u) - O (Ashg)	(244,489)
Cattilicephalidae	Cm(uMid-u) - O (Trem-l)	(429,718)
Ceratopygidae	Cm(uMid-u) - O (Trem-u)	(301,386,489)
Cyclopygidae	O (Trem-l) - O (Ashg-u)	(301,793)
Dikelocephalidae	Cm(Fran-u) - O (Trem-u)	(301,429)
Dikelocephalinidae	O (Trem-l) - O (Ashg-l)	(431,793)

Dionididae	O (Aren-u) - O (Ashg-m)	(301)
Hapalopleuridae	Cm(Trep-u) - O (Cara-u)?	(301,793,852)
Housiidae	Cm(Dres-u) - Cm(Fran-l)	(301,431)
Hungaiidae	Cm(Trep) - O (Ashg)	(489,852)
Idahoiidae	Cm(Dres-u) - Cm(Trep)	(256,429,489,529)
Isocolidae	O (Aren-u) - S (Ldov-l)	(489,852)
Kainellidae	Cm(Fran) - O (Trem)	(848)
Liostracinidae	Cm(uMid) - Cm(Trep-u)	(385,386,489)
Myindidae	O (Trem)	(489,853)
Nileidae	Cm(Trep) - O (Ashg-u)	(535,793)
Opipeuteridae	O (Aren-l) - O (Aren-u)	(239)
Orometopidae	O (Trem-l) - O (Aren-l)	(301)
Parabolinoiidae	Cm(Dres-u) - O (Trem-l)	(280,386,663)
Plectriferidae	Cm(uMid-u) - Cm(Dres-l)	(528,529,718)
Pterocephalidae	Cm(Dres-u) - Cm(Trep-u)	(301,462,431,717)
Ptychaspidae	Cm(Fran-l) - O (Trem-l)	(256,436,718,848)
Raphiophoridae	O (Aren-l) - S (Ludl)	(301)
Remopleurididae	Cm(Fran-u) - O (Ashg-u)	(535,718,784)
Rhysometopidae	Cm(uMid-u) - Cm(Dres-l)	(528,718)
Saukiidae	Cm(Fran-u) - O (Trem-l)	(386,429,436,848)
Taihungshaniidae	O (Trem) - O (Llvi)	(301,489)
Trinucleidae	O (Aren-l) - O (Ashg-u)	(301,535,793,886)
<b>Or. PTYCHOPARIIDA</b>		
Agraulidae	Cm(Boto-u) - Cm(Dres-l)	(256,344,674)
Alokistocaridae	Cm(Boto-u) - Cm(Fran-l)	(256,429,858)
Andrarinidae	Cm(mMid-l) - Cm(Dres-u)	(256,431,663)
Annamitiidae	Cm(uMid)	(641)
Asaphiscidae	Cm(Tojo-l) - Cm(Trep)	(82,386,602,663)
Aulacodigmatidae	Cm(uMid-u) - Cm(Dres-l)	(528,718)
Avoninidae	Cm(uMid-u) - Cm(Fran-l)	(429,489,848)
Bestjubellidae	Cm(Fran-l)	(334)
Bolaspidae	Cm(mMid-l) - Cm(uMid-m)	(256,429,431)
Burlingiidae	Cm(mMid-u) - Cm(Dres-l)	(205,385,386,431)
Conocoryphidae	Cm(Atda-u) - O (Trem-u)	(82,256,386,556)
Coosellidae	Cm(uMid-u) - Cm(Dres-l)	(256,430,489)
Crepicephalidae	Cm(Tojo-l) - Cm(Dres-l)	(386,429,436,602)
Diceratocephalidae	Cm(Dres-l)	(256,301,489,887)
Dokimocephalidae	Cm(Dres-u) - O (Trem-l)	(429,520,784,848)
Ellipsocephalidae	Cm(Atda-u) - Cm(uMid-l)	(37,256,330,431)
Elviniidae	Cm(Dres-u) - O (Trem-l)	(301,386,489,719)
Emmrichellidae	Cm(Boto-u) - O (Trem)?	(601,852)
Endymioniidae	O (Aren-u) - O (Cara-u)	(301)
Entomaspididae	Cm(Trep-l) - Cm(Trep-u)	(429,489)
Erixaniidae	Cm(Dres-u)	(462,528,718)
Eurekiidae	Cm(Fran-l) - O (Trem-l)	(280,429)
Harpetidae	O (Trem-l) - D (Fras-u)	(301,489)
Harpidae	Cm(Fran) - S (Ldov-u)	(205,301)
Hypermeaspidae	Cm(Fran-u) - O (Aren-u)	(663,725)
Illaenuridae	Cm(Fran-u) - Cm(Trep-u)	(256,301,429,848)
Ityophoridae	O (Cara) - O (Ashg)	(301)
Kingstoniidae	Cm(uMid-l) - Cm(Trep-u)	(383,410,429)
Komaspididae	Cm(uMid) - O (Cara)	(301,385,714,852)
Lecanopygidae	Cm(Fran-l) - O (Aren)	(256,301,489)
Loganellidae	Cm(Fran-u) - Cm(Trep)	(205,429,489)

Lonchocephalidae	Cm(uMid-u) - Cm(Trep)	(256,429,489,529)
Marjumiidae	Cm(mMid-u) - O (Trem)	(429,431,489)
Menomoniidae	Cm(uMid-l) - Cm(Dres-l)	(256,429,718)
Missisquoiidae	Cm(Fran) - O (Trem-l)	(717,852,888)
Nepeidae	Cm(uMid-u) - Cm(Dres-l)	(256,301,529,718)
Norwoodiidae	Cm(uMid-u) - O (Trem)	(429,489,718)
Olenidae	Cm(Dres-l) - O (Ashg-u)	(439,535,718)
Papyriaspidae	Cm(Tojo) - Cm(Trep)	(205,386,784,858)
Placosematidae	Cm(uMid-u) - Cm(Dres-l)	(528,529,718)
Plethopeltidae	Cm(uMid-u) - O (Trem-l)	(256,386,431,852)
Polycyrtaspidae	Cm(Dres-l)	(528,529)
Prosopiscidae	O (Trem-u) - O (Cara)	(245,301)
Protolenidae	Cm(Atda-l) - Cm(mMid)	(330,386,431,601)
Ptychopariidae	Cm(Tojo) - O (Aren-l)	(82,256)
Rasettaspidae	Cm(Fran-l)	(334)
Raymondinidae	Cm(uMid-u) - Cm(Dres-l)	(256,429,431)
Shirakiellidae	Cm(Fran-u)	(385,386,436)
Shumardiidae	Cm(Fran-u) - O (Ashg-m)	(301,429,717,848)
Solenopleuridae	Cm(Boto-l) - O (Trem-l)	(556)
Thysanopeltidae	O (Llvi-l) - D (Fras)	(4,301)
Tricrepecephalidae	Cm(mMid-u) - Cm(Dres-l)	(356,429,529,718)
<b>Or. PROETIDA</b>		
Aulacopleuridae	O (Trem) - C (Bash-l)	(243,301)
Bathyruridae	O (Trem-u) - O (Cara-m)	(301,489,725,793)
Brachymetopidae	O (Aren) - P (Tatr-l)	(121,536)
Celmidae	O (Llvi-l)	(243,301)
Decoroproetiidae	O (Aren-u) - D (Eife)	(4,243)
Dimeropygidae	O (Aren-l) - O (Ashg-u)	(243,301,535)
Glaphuridae	O (Aren-u) - O (Ashg-m)	(243,301)
Holotrachelidae	O (Cara-m) - O (Ashg-u)	(301,535,725)
Phillipsiidae	D (Fame-l) - P (Tatr-u)	(301,387)
Proetidae	O (Aren-u) - P (Tatr-l)	(243,301)
Telephinidae	O (Aren-l) - O (Ashg-m)	(245,301)
<b>Or. PHACOPIDA</b>		
Calmoniidae	O (Llde) - D (Fras)	(4,489,793)
Calymenidae	O (Trem-l) - D (Eife)	(4,301,489)
Cheiruridae	Cm(Fran-u) - D (Give-u)	(4,301,489,663)
Dalmanitidae	O (Aren) - D (Fras-u)	(4,244,301)
Encrinuridae	O (Aren-l) - D (Loch)?	(4,301,853)
Homalonitidae	O (Trem) - D (Fras-l)	(4,301)
Monorakidae	O (Cara-l) - O (Ashg)	(301)
Phacopidae	S (Ldov-m) - D (Fame-u)	(4,301)
Pliomeridae	O (Trem-l) - O (Cara-u)	(663,715)
Pseudotrinitidae	D (Emsi) - D (Eife)	(4)
Pterygomtopidae	O (Aren-u) - O (Ashg-u)	(301,438,535)
Synphoriidae	S (Ldov-u) - D (Eife-u)	(301,315)
<b>Or. INCERTAE SEDIS</b>		
Amgaspidae	Cm(Tojo) - Cm(uMid)?	(344,386,602,787)
Hanburiidae	Cm(mMid)	(344)
Sarkiidae	O (Llde)	(489)
<b>Cl. MEROSTOMOIDEA</b>		

[Classification is modified from Bergstrom (1971, 1980).]

Cl. MEROSTOMOIDEA

[Classification modified from Bergström (1971, 1980).]

Or. LIMULAVIDA			
Sidneyiidae	Cm(mMid-u) -	Cm(uMid-l)	(151)
Or. EMERALDELLIDA			
Emeraldellidae	Cm(mMid-u)		(108,149)
Or. CHELONIELLIDA			
Cheloniellidae	D (Emsi-l)		(301,489)
Or. INCERTAE SEDIS			
Helmetiidae	Cm(mMid-u)		(850)
Paleomeridae	Cm(Atda-l)		(36,44)
Strabopidae	Cm(Fran)	- O (Ashg-l)	(301,592)
<i>Fuxianhuia</i>	Cm(Atda-u)		(323)
<i>Kuamaia</i>	Cm(Atda-u)		(323)
<i>Rectifacies</i>	Cm(Atda-u)		(326)
<i>Rhombicalvaria</i>	Cm(Atda-u)		(323)

Crustacea

Cl. REMIPEDIA

[One extant marine family.]

Or. ENANTIOPODA			
Cryptocaridae	C (Mosc-u)		(203,701)
Tesusocarididae	C (Serp-l)		(203)

Cl. INCERTAE SEDIS

Or. SKARACARIDA			
<i>Skara</i>	Cm(Dres-l)		(503)
Or. ORSTENOCARIDA			
<i>Bredocaris</i>	Cm(Fran-u)		(503)
Or. INCERTAE SEDIS			
<i>Cambropachycopes</i>	Cm(Dres-l)		(825)
<i>Goticaris</i>	Cm(Dres-l)		(825)
<i>Henningmoenicaris</i>	Cm(Dres-l)		(825)
<i>Martinssonina</i>	Cm(Dres-l)		(95)
<i>Oelandocaris</i>	Cm(Dres-u)		(503)
<i>Plenocaris</i>	Cm(mMid-l) -	Cm(mMid-u)	(151)
<i>Rehbachella</i>	Cm(Dres-u)		(503)
<i>Walossekia</i>	Cm(Dres-u)		(503)

Or. WAPTIIDA

Waptiidae	Cm(mMid-u)		(850)
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Cl. CEPHALOCARIDA (extant)

<i>Dala</i>	Cm(Fran-u)		(501)
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Cl. BRANCHIOPODA

[Only one or two extant families include marine species.]

?Or. INCERTAE SEDIS

Gilsonicarididae	D (Emsi-l)		(301)
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## Cl. OSTRACODA

[Classification and stratigraphic ranges are derived principally from the *Treatise*, Pt. Q, and Harland et al. (1967), with emmendations as indicated. Six extant marine families without known fossil representatives are not listed; exclusively nonmarine families also are not listed.]

### Or. ARCHAEOCOPIDA (= Bradoriida + Phosphatocopida)

Alutidae	Cm(Atda-l) - Cm(Tojo)	(82,359,530)
Beyrichonidae	Cm(Atda-l) - O (Trem)	(82,673,675)
Bradoriidae	Cm(Atda-l) - Cm(Fran)	(82,179,530,718)
Comptalutidae	Cm(Tojo) - Cm(uMid-u)	(359,530,718)
Falitidae	Cm(Dres-l) - Cm(Trep)	(411,502,674)
Hesslandonidae	Cm(Dres-l)	(502,503)
Indianidae	Cm(Atda-u) - Cm(mMid)	(359,442,673)
Monasteriidae	Cm(Atda-u) - Cm(mMid-u)	(37,359)
Oepikalutidae	Cm(mMid-u) - Cm(uMid-m)	(359)
Svealutidae	Cm(mMid-u) - Cm(Dres-l)	(359,530,674,718)
Vestrogothiidae	Cm(Tojo) - Cm(Dres-l)	(359,502)

### Or. LEPERDITICOPIDA

Isochilinidae	O (Llvi-u) - D (Fras)	(301)
Leperditiidae	O (Aren) - D (Fras)	(465,489)
? <i>Ushkarella</i>	Cm(Tojo)	(396)

### Or. PALAEOCOPIDA

Aechminellidae	S (Wenl) - P (Guad-u)	(335)
Aechminidae	O (Llde-l) - D (Fame-u)	(813)
Amphissitidae	D (Emsi) - P (Tatr-u)	(276,402)
Aparchitidae	O (Aren) - P (Tatr-l)	(125)
Arcyzonidae	D (Emsi-l) - D (Fame-m)	
Bassleratidae	O (Aren-u) - O (Cara-u)	(677)
Beyrichiidae	O (Cara) - C (Tour)?	(62)
Beyrichiopsidae	S (Prid) - P (Guad-l)	(276)
Bolliidae	O (Aren-u) - D (Fras-m)	(276,677)
Cardiniferellidae	C (Serp-l)	
Chilobolbinidae	O (Aren-u) - S (Wenl-u)	(677)
?Conchoprimitiidae	O (Aren-l) - O (Ashg)	(677,681)
Craspedobolbinidae	S (Ldov-u) - D (Fame)	(358)
Cryptophyllidae	O (Llde) - J (u)?	(681)
Ctenoloculinidae	S (Wenl) - C (Tour)	(63)
Drepanellidae	O (Cara-l) - D (Fame)	
Eridoconchidae	O (Llde-u) - D (Fame)	(356,358,681)
Eurychilinidae	O (Aren-l) - D (Give)	(163)
Geisinidae	D (Prag) - P (Tatr-l)	(125)
Glyptopleuridae	D (Give-u) - P (Leon-u)	(471)
Hollinellidae	S (Ludl) - Tr(Indu)	(63)
Hollinidae	O (Llde) - C (Step)	(63,163)
Jaanussoniidae	O (Llvi-u) - O (Ashg-u)	(681,813)
Judahellidae	Tr(Indu) - Tr(Nori)	(740)
Kellettinidae	C (Tour) - P (Tatr-u)	(402)
Kirkbyellidae	S (Ldov) - C (Mosc)	
Kirbyidae	D (Eife) - Tr(Indu)	(526,740)
Knightinidae	D (Fame) - Tr(Indu)	(740)
Leperditellidae	O (Aren-l) - P (Guad-l)	(677)
Lichwiniidae	S (Prid) - P (Guad)	

Lomatopisthiidae	O (Llde)	-	O (Cara-m)	
Miltonellidae	P (Leon)			
Nezamysliidae	D (Prag)	-	D (Give-u)	(885)
Nodellidae	D (Emsi)	-	D (Fame)	(276)
Oepikellidae	O (Llde-l)	-	O (Ashg-m)	(677)
Piretellidae	O (Aren-u)	-	O (Ashg-u)	(677,813)
Placideidae	D (Give-l)	-	P (Guad)	
Pribylitidae	S (Wenl)	-	D (Fame)	(276)
Primitiopsidae	O (Llde)	-	D (Give-u)	(23)
Quadrijugatoridae	O (Aren-l)	-	S (Ldov)	(677)
Richinidae	O (Llde-l)	-	D (Fras)	(23,276,813)
Sansabellidae	D (Fame-u)	-	C (Step-u)	
Schmidtellidae	O (Cara-l)	-	D (Eife)?	(677,681)
Scrobiculidae	D (Emsi)	-	P (Tatr-u)	(402)
Sigmoopsidae	O (Aren-l)	-	O (Ashg-u)	(677,813)
Tetradellidae	Cm(Tojo)?	-	S (Ldov-l)	(396)
Tvaerenellidae	O (Aren-u)	-	O (Ashg-l)	(677,813)
Youngiellidae	D (Loch)	-	C (Step-u)	(471)
Zygobolbidae	O (Cara)	-	S (Wenl)	
<b>Or. MYODOCOPIDA</b>				
Bolbozoidae	S (Ldov)	-	D (Fame)	
Cyprellidae	C (Vise)			
Cypridinellidae	D (Fras)	-	C (Vise)	
Cypridinidae	D (Fras)	-	R	
Cyprosinidae	D (Loch)	-	D (Fame)	
?Discoidellidae	C (Vise-l)	-	P (Tatr-u)	(402)
Entomoconchidae	D (Loch)	-	C (Step)	
?Entomozoidae	O (Llvi)	-	P (Asse)	
Halocyprididae	K (Albi-l)	-	R	(777)
Polycopidae	D (Fame)	-	R	
Rhombinidae	C (Tour)	-	C (Vise)	
Thaumatocyprididae	J (Bajo)	-	R	(812)
<b>Or. METACOPIDA</b>				
Bairdiocyprididae	O (Aren-u)	-	P (Tatr-u)	(402,677)
Barychilinidae	O (Cara)	-	D (Fame-u)	(358)
Bufinidae	D (Emsi-u)	-	C (u)	
Healdiidae	S (Wenl)	-	K (Albi)	
Krausellidae	O (Llde)	-	D (Fras-m)	(358)
Pachydomellidae	O (Llde)?	-	D (Fame)	(526)
Quasillitidae	D (Loch)	-	P (Guad-u)	(276)
Ropolonellidae	S (Ludl)	-	D (Fras-m)	(276)
Thilipsuridae	O (Ashg)	-	D (Fame)	(276,526)
<b>Or. PODOCOPIDA</b>				
Acronotellidae	O (Llde)	-	S (Ludl)	
Bairdiidae	O (Ashg-m)	-	R	(813)
Beecherellidae	O (Ashg-l)	-	D (Fame)	(276)
Berounellidae	S (Ludl)	-	D (Fame)?	
Brachyocytheridae	J (Bath-u)	-	R	(23)
Bythocytheridae	S (Ludl)	-	R	
Cyprideidae	J (Bajo)	-	R	(812)
Cytherettidae	K (Coni)	-	R	
Cytheridae	J (Hett-u)	-	R	(23)
Cytherideidae	D (Prag)	-	R	



Cytherissinellidae	Tr(Indu)	-	Tr(Olen-u)	(451)
Cytheruridae	J (Toar-l)	-	R	(23)
?Egorovitinidae	C (Vise-u)			
Eucytheridae	J (Call-l)	-	R	
Hemicytheridae	T (IEoc)?	-	R	(511)
Krithidae	K (Ceno)	-	R	(812)
Leguminocythereididae	K (Turo-l)	-	R	(511)
Leptocytheridae	T (mEoc-u)	-	R	
Loxoconchidae	J (Toar)	-	R	(812)
Macrocyprididae	J (Oxfo)	-	R	
Neocytherideididae	J (Oxfo-l)	-	R	
Paracyprididae	J (Hett)	-	R	
Paradoxostomatidae	K (Albi)	-	R	(9)
?Paraparchitidae	S (Prid)	-	P (Guad-l)	(276)
Pectocytheridae	K (Vala)	-	R	(777)
Permianidae	P (Tatr-l)			
Pontocyprididae	Tr(Nori-u)	-	R	(23)
Progonocytheridae	J (Sine)	-	T (Dani)	(747)
Protocytheridae	J (Hett-u)	-	R	
Schizocytheridae	K (Barr-u)	-	R	(23)
Sinusuellidae	P (Guad-l)	-	P (Tatr-l)	
Tomiellidae	P (Tatr)			
Trachyleberididae	J (Bajo)	-	R	
Xestoleberididae	K (Vala)	-	R	(777)

Or. PLATYCOPIIDA

Cavellinidae	S (Ludl-l)	-	Tr(Indu)	(740)
Cytherellidae	S (Wenl-l)	-	R	(335)
Kloendenellidae	S (Ldov)	-	P (Sakm)	(471)

Or. INCERTAE SEDIS

Buregiidae	D (Give)	-	D (Fras-u)	(885)
Janischewskyidae	C (Tour-u)	-	C (Vise)	(279)

Cl. COPEPODA

[Approximately 85 extant marine families but very few fossil representatives.]

Or. CALANOIDA

Dichelesthidae	K (Apti-u)	-	R	(173,174)
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Or. MONSTRILLOIDA

incertae sedis (parastic forms)	J (Call)	-	R	(301,648)
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Cl. CIRRIPIEDIA

[Classification is from the *Treatise* Pt. R; stratigraphic ranges emended with Harland et al. (1967) and other sources. Approximately 19 extant families without fossil representatives (including all in the Rhizocephala and Apoda) are not listed.]

Or. THORACICA

Archaeobalanidae	T (IEoc)	-	R	(111)
Balanidae	T (IEoc)	-	R	
Brachylepadidae	J (Tith)	-	T (mMio)	
Chthamalidae	T (Dani)	-	R	(111)
Coronulidae	T (lMio)	-	R	(111)

Cyprilepadidae	S (Ludl)		
Lepadidae	T (mEoc)	- R	
Oxynaspididae	T (mEoc)	- R	
Pachylasmidae	T (Dani)	- R	(111)
Poecilasmidae	T (mEoc-u)	- R	
Praeepadidae	C (Mosc-u)		
Scalpellidae	Tr(Olen)	- R	(111)
Stramentidae	K (Albi-m)	- K (Maas)	(111)
Tetraclitidae	T (mEoc)	- R	(111)
Verrucidae	K (Ceno)	- R	
? <i>Priscanermarinus</i>	Cm(mMid-u)		(94,139)
<i>Waiparaconus</i>	K (Camp)	- T (Eo)	(111)
Or. ACROTHORACICA			
Rogerellidae	J (m)	- R	
Trypetesidae	C (Step)	- R	
Zapfellidae	Tr(u)?	- R	
Or. ASCOTHORACICA			
Dendrogastridae	K (Turo)	- R	(407)

#### Cl. MALACOSTRACA

[Classification and stratigraphic ranges are based on the *Treatise*, Pt. R, with emendations as indicated. Only marine families are included, and at least 300 extant families without known fossil representatives are not listed.]

#### Or. CANADASPIDIDA

Canadaspididae	Cm(mMid-l)	- Cm(mMid-u)	(88,91,151)
?Odaraidae	Cm(Atda-u)?	- Cm(mMid-u)	(327,850)
?Perspicarididae	Cm(Atda-u)?	- Cm(uMid-l)	(89,324,644)

#### Or. LEPTOSTRACA (extant)

Rhabdouraeidae	P (Guad-l)		(696)
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#### ?Or. HYMENOSTRACA

Hymenocarididae	Cm(Boto)	- O (Aren)	(90,91,604)
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#### Or. HOPLOSTRACA

Sairocarididae	C (Vise-l)	- C (Mosc-u)	(685,688)
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#### Or. ARCHAEOSTRACA

Aristozoidae	S (Prid)	- D (Eife-u)	(649)
Ceratiocarididae	O (Trem-l)	- C (Mosc-u)	(132,301,688)
Dithyrocarididae	D (Give-l)	- C (Step-l)	(649)
Echinocarididae	S (Prid)	- C (Tour)	(649)
Ohiocarididae	D (Fame-l)	- D (Fame-u)	(649)
Pephricarididae	D (Fame-l)		(649)
Rhinocarididae	D (Emsi-l)	- C (Fame-m)	(649)

#### Or. INCERTAE SEDIS

Discinocarididae	O (Ashg)	- Tr(Carn)	
Peltocarididae	O (Cara-l)	- S (Prid)?	

#### Or. PALAEOSTOMATOPODA

Perimecturidae	D (Fame)	- C (Serp-l)	(301,684,690)
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#### Or. STOMATOPODA

Gonodactylidae	K (l)	- R	(684)
Lysiosquillidae	K (Maas)	- R	(237)

Sculdidae	J (Tith-l)	-	K (Sn)	
Squillidae	K (l)	-	R	
Tyrannophontidae	C (Serp-l)	-	C (Step-l)	(688,692,695)
Or. AESCHRONECTIDA				
Aenigmacarididae	C (Vise-l)	-	C (Step-u)	(695)
Aratidecthidae	C (Vise-l)	-	C (Mosc-u)	
Kallidecthidae	C (Bash)	-	C (Step)	(684,695,699)
Or. EOCARIDACEA				
Anthracophausiidae	C (Tour)	-	C (Step-l)	(345,684,688)
Eocarididae	D (Give-l)	-	D (Fame)	(684)
Essoidiidae	C (Mosc-u)			(688)
Or. BELOTELSONIDEA				
Belotelsonidae	C (Tour-u)	-	C (Mosc-u)	(688,695)
Or. WATERSTONELLIDEA				
Waterstonellidae	C (Tour)	-	C (Vise-u)	(92)
Or. DECAPODA				
Aeglidae	K (Maas)			(219)
Albuneidae	T (lOli)	-	R	(301)
Aristeidae	J (Call)	-	R	
Astacidae	J (u)	-	R	
Atelecyclidae	T (mEoc-l)	-	R	
Axiidae	J (Toar)	-	R	
Calappidae	K (Haut)	-	R	(863)
Callianassidae	J (Tith-l)	-	R	
Cancridae	T (mEoc)	-	R	
Cancrinidae	J (Tith-l)			(21)
Carcineretidae	K (Apti)	-	K (Maas)	(863)
Carpiliidae	K (Ceno)	-	R	(863)
Coenobitidae	T (lMio)	-	R	
Coleiidae	J (Sine-l)	-	K (l)	
Cymonomidae	K (Haut)	-	K (Maas)	(863)
Dakoticancriidae	K (Sant-u)	-	K (Maas-u)	(54,96)
Dorippidae	K (Albi-l)	-	R	(54)
Dromiidae	K (Albi)	-	R	(863)
Dynomenidae	J (Tith)	-	R	(863)
Eocarcinidae	J (Plie-l)			(301)
Erymidae	P (Guad)	-	T (Than)	(96,690)
Eryonidae	J (l)	-	K (l)	
Galatheidae	J (Bajo)	-	R	
Gecarcinidae	T (Plio)	-	R	
Geryonidae	T (lEoc)	-	R	
Glypheidae	P (Sakm)	-	R	(236,684)
Goneplacidae	T (Dani)?	-	R	(96)
Grapsidae	T (mEoc-l)	-	R	
Hexapodidae	T (Plio)	-	R	(496)
Homolidae	J (Tith-l)	-	R	
Homolodromiidae	T (uEoc)	-	R	(238)
Laomediidae	T (Mi)	-	R	
Latreilliidae	K (Ceno)	-	R	(863)
Leucosiidae	T (mEoc)	-	R	
Majidae	T (lEoc)	-	R	
Mecochiridae	Tr(u)	-	K (Camp-l)	(27)

Nephropidae	J (m)	- R	
Ocypodidae	T (mEoc-l)	- R	
Oplophoridae	J (Call)	- R	
Paguridae	J (Plie-l)	- R	(301)
Palaemonidae	T (lEoc)	- R	
Palaeopalaemonidae	D (Fame-u)		(220,684,694)
Palaeopemphicidae	P (Guad)		(301)
Palicidae	K (Albi)	- R	
Palinuridae	J (l)	- R	
Parastacidae	T (Eo)	- R	
Parthenopidae	T (mEoc)	- R	
Pemphicidae	Tr(Olen-u)	- Tr(Anis-m)	(451)
Penaeidae	Tr(Indu)	- R	(301)
Pinnotheridae	T (lEoc)	- R	(140)
Platychelidae	Tr(u)		
Polychelidae	J (m)	- R	
Porcellanidae	K (Ceno)	- R	
Portunidae	T (Than)	- R	
Prosopidae	J (Plie-l)	- R	
Raninidae	K (Albi-l)	- R	(53)
Retroplumidae	K (Coni)	- R	
Scyllaridae	K (Albi)	- R	
Tetrachelidae	Tr(Carn)		(301)
Thalassinidae	Q (Plei)	- R	
Tymolidae	K (Albi)	- R	
Udorellidae	J (Tith-l)		
Uncinidae	J (Toar-l)		(301)
Xanthidae	K (Apti)	- R	(863)
<i>Imocaris</i>	C (Serp-l)		(697)
Or. MYSIDACEA (marine families only)			
Eucopidae	J (Call)	- R	(708)
Jerometicenoriidae	P (Leon-u)		(687)
Lophogastridae	J (Call)	- R	(708)
Mysidae	J (Call)	- R	(708)
Notocarididae	P (Guad)		(489)
Pygocephalidae	C (Tour-l)	- P (Leon)	(301,690)
Or. CUMACEA (extant)			
<i>Nannastacus</i>	P (Guad-l)		(301)
<i>Palaeocuma</i>	J (Call)		(489)
Or. TANAIIDACEA (extant)			
Anthracocarididae	C (Vise-l)	- Tr(Nori-u)	(688,700)
Cretitanaidae	K (Haut-l)		(700)
Jurapseudidae	J (Aale)	- K (Haut-l)	(700)
<i>Palaeotanais</i>	J (Bajo)		(489)
Or. ISOPODA			
Amphisopidae	P (Guad-l)	- R	(301)
Archaeoniscidae	J (u)		
Cirolanidae	J (l)	- R	(495)
Palaeophreatoicidae	C (Mosc-u)	- P (Guad-u)	(688,690)
Sphaeromidae	K (u)	- R	
Urdidae	J (Bath)	- K (Apti)	(570)
<i>Anhelkocephalon</i>	Tr(Anis)		(702)

Or. AMPHIPODA			
Acanthogammaridae	T (Ioli)	- R	(77)
Corophiidae	Q (Plei)	- R	(77)
Gammaridae	T (uEoc)	- R	
Pontogammaridae	T (mMio)	- R	(77)

Uniramia

Cl. MYRIAPODA (extant, but nonmarine)

<i>Cambropodus</i>	Cm(uMid-l)		(643)
incertae sedis	S (Ldov-u)		(481)

Arthropoda incertae sedis

Cl. THYLACOCEPHALA

[Classification follows Schram (1990).]

Or. CONCAVICARIDA

<i>Dollocaris</i>	J (Call)	- J (Tith-l)	(647)
<i>Protozoe</i>	K (Ceno)?		(567,647)
incertae sedis	S (Ldov-u)		(481)

Or. CONCHYLIOCARIDA

Austriocarididae	D (Emsi-u)	- J (Plie-u)	(98,649,797)
<i>Clausia</i>	J (Call)	- J (Tith-l)	(301,647)
? <i>Pseuderichthus</i>	K (Ceno)?		(567,647)

Or. INCERTAE SEDIS

Tuzoiiidae	Cm(Atda-u)	- Cm(uMid-m)	(151,272,644)
Dioycaris	Cm(Boto)	- Cm(uMid-l)	(95,644)
<i>Notozoe</i>	Cm(Boto)	- O (Llde)	(489)
<i>Saccocaris</i>	Cm(u)	- O (l)	(489)

Cl. INCERTAE SEDIS

Or. AGLASPIDA

Aglaspididae	Cm(uMid)	- Cm(Trep)	(301,592)
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Or. BOSTRICHOPODIDA

Bostrichopodidae	C (Tour)		
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Or. MARRIOCARIDA

<i>Marria</i> + <i>Paramarria</i>	Cm(mMid-u)	- O (Ashg-m)	(489)
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Or. INCERTAE SEDIS

Corcoraniidae	O (Trem-l)		(345)
Isoxyidae	Cm(Atda-l)	- Cm(mMid-u)	(272,324)
Molariidae	Cm(mMid-u)		(850)
Mollisoniidae	Cm(mMid-u)	- Cm(uMid-l)	(151,155,850)
Protocarididae	Cm(Atda-u)	- Cm(uMid)	(105,324,644,850)
Pseudoarctolepididae	Cm(mMid-u)	- Cm(uMid-l)	(644)
<i>Branchiocaris</i>	Cm(mMid-u)	- Cm(uMid-m)	(87,644)
<i>Carnarvonia</i>	Cm(mMid-u)		(278)
<i>Combinivalvula</i>	Cm(Atda-u)		(324)
<i>Fieldia</i>	Cm(mMid-u)		(278)
? <i>Gdowia</i>	Cm(Tomm-u)		(745)
<i>Kablikia</i>	O (Llde)		(301,489)
? <i>Livia</i>	Cm(Tomm-u)		(363)

<i>Pahvantia</i>	Cm(uMid)	(644)
? <i>Pomerania</i>	Cm(Tomm-u)	(363,419)
<i>Serracaris</i>	Cm(Boto)	(90)
<i>Skania</i>	Cm(mMid-u)	(850)
<i>Vetulicola</i>	Cm(Atda-u)	(324)

#### PHORONIDA

[One extant family.]

Phoronidae	K (Maas) - R	(489)
? <i>Helicosyrinx</i>	O (m)	(150)

#### BRYOZOA

[Classification and stratigraphic ranges are based on the *Treatise*, Pt. G (and revised) and Harland et al. (1967), with emendations and additional references as listed. Approximately 37 extant marine families without fossil records are not listed.]

#### Cl. STENOLAEMATA

##### Or. CYCLOSTOMATA (= Tubuliporata)

Cavidae	J (Toar) - K (Maas-u)	(826)
Clausidae	J (Aale) - T (Dani)	(104,819)
Corymboporidae	K (Ceno) - R	
Corynotrypidae	O (Aren-u) - P (Guad)	(199)
Crisiidae	K (Ceno-l) - R	
Crownoporidae	O (Llvi-l) - S (Prid)	(10,199)
Cytididae	J (Oxfo-u) - R	(826)
Diaperoeciidae	J (Aale) - R	(569)
Diastoporidae	O (Cara-l) - R	(10)
Eleidae	J (Bath) - T (Than)	(819)
Entalophoridae	J (Plie-u) - R	(826)
Frondiporidae	J (Aale) - R	(826)
Hederellidae	S (Wenl) - C (Step)	(199)
Heteroporidae	Tr(Ladi-u) - R	(56)
Horneridae	K (Barr-l) - R	(814)
Leiosoeciidae	J (Bath) - T (uEoc)	(747)
Lichenoporidae	K (Vala-u) - R	(458,827)
Lobosoeciidae	K (Ceno)	
Multisparidae	J (Aale) - K (Haut-l)	(826,827)
Oncousoeciidae	J (Aale) - R	(569)
Petaloporidae	K (Vala-u) - T (Than)?	(104,827)
Phaceloporidae	O (Cara-m) - O (Ashg-u)	(10)
Plagioeciidae	J (Aale) - R	(826)
Reptariidae	O (Llvi) - D (Give)	(199)
Semiceidae	K (Barr) - K (Maas-u)	(747)
Siphoniotyphlidae	K (Turo) - K (Maas-u)	
Sulcocaviidae	K (Coni) - T (Dani)	(104,814)
Terviidae	K (Turo) - R	(819)
Theonoidae	J (Aale) - R	(826)
Tretocycloeciidae	K (Apti) - R	(569)
Tubuliporidae	D (Eife-l) - R	

##### Or. CYSTOPORATA

Actinotrypidae	C (Vise-l) - P (Guad-u)	(655,654,659)
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Anolotichiidae	O (Aren-u) - D (Give)	(10)
Botrylloporidae	D (Give-l) - D (Give-u)	
Ceramoporidae	O (Llvi-u) - D (Eife)?	(10,658)
Constellariidae	O (Llde-l) - O (Ashg-m)	(10)
Cystodictyonidae	D (Eife) - P (Tatr-l)	(654)
Etherellidae	P (Leon-l) - P (Guad-u)	(654,656,659)
Fistuliporidae	O (Ashg-m) - P (Tatr-u)	(10,654)
Gonioclaadiidae	C (Tour-l) - P (Tatr-u)	(654,657,659)
Hexagonellidae	D (Emsi) - P (Tatr-l)	(490,655,659)
Rhinoporidae	O (Cara-m) - S (Prid)	(10)
Xenotrypidae	O (Aren-u) - S (Prid)	(10,786)
Or. TREPOSTOMATA		
Aisenvergiidae	D (Give) - C (Tour-u)	(12,657)
Amplexoporidae	O (Aren-u) - C (Serp-l)	(12,657)
Anisotrypidae	S (Prid) - C (Serp-l)	(12)
Araxoporidae	P (Leon-u) - Tr(Indu)	(655,659)
Atactotoechidae	O (Aren-u) - C (Tour-l)	(12,51)
Bimuroporidae	O (Llvi-u) - O (Cara-m)	
Crustoporidae	S (Ludl) - C (Mosc-u)	(12,659)
Cycloporidae	C (Vise-l)	(656,657)
?Dianulitidae	O (Aren-u) - O (Ashg-m)	(467)
Dittoporidae	O (Aren-u) - O (Ashg-m)	(10,12)
Dyscritellidae	D (Give) - Tr(Nori-u)	(12)
Eridotrypellidae	S (Ldov) - P (Guad-u)	(490)
Esthonioporidae	O (Trem-u) - O (Cara-m)	(12)
Halloporidae	O (Aren-u) - D (Emsi-u)	(12)
Helenoporidae	C (Serp-l)	(659)
Heterotrypidae	O (Aren-u) - D (Fras)?	(12)
Leioclemidae	O (Llvi-l) - P (Guad-u)	(10,12,656)
Mesotrypidae	O (Llvi-l) - S (Wenl-u)	(10,12)
Monticuliporidae	O (Aren-u) - S (Ludl)	(10,786)
Orbiporidae	O (Aren-l) - D (Give)	(12,786)
Stenoporidae	D (Emsi-l) - Tr(Indu)	(10,656)
Trematoporidae	O (Aren-u) - C (Tour-l)	(12,786)
Ulrichotrypellidae	D (Give) - P (Guad-u)	(12,655)
Or. CRYPTOSTOMATA		
Arthrostylidae	O (Aren-u) - C (Step-u)	(659,786)
Bactroporidae	D (Give-l) - C (Vise-l)	(657)
Escharoporidae	O (Llvi-l) - S (Wenl-u)	(10)
Hyphasmoporidae	C (Tour-l) - P (Tatr-l)	(654,659)
Intraporidae	D (Eife-l) - C (Vise-u)	(657)
Nikiforovellidae	D (Eife-l) - P (Guad-u)	(654,655,659)
Phragmopheridae	C (Step-l) - C (Step-u)	(656,657)
Ptilodictyidae	O (Llde) - D (Prag)	(10)
Rhabdomesidae	O (Ashg-m) - P (Tatr-l)	(10,659)
Rhinidictyidae	O (Llvi) - S (Prid)	(10,199)
Rhomboporidae	D (Eife) - P (Guad-u)	(277,654)
Stictoporellidae	O (Aren-u) - S (Ludl)	(199)
Virgatellidae	O (Llde) - O (Cara-u)	(10)
Or. FENESTRATA		
Acanthoclaadiidae	O (Llvi)? - P (Tatr-u)	(231,656,659)
Fenestellidae	O (Llvi) - Tr(Indu)	(10)
Fenestraliidae	D (Fame) - P (Guad-u)	(490,655,659)

Girtyoporidae	C (Vise-u)	-	Tr(Indu)	(654,656)
Phylloporinidae	O (Llvi-l)	-	P (Leon-l)	(654,656)
Polyporidae	O (Cara-m)	-	Tr(Olen)	(490,655)
Septoporidae	C (Tour-l)	-	P (Tatr-l)	(490,655,659)
Timanodictyidae	P (Sakm-l)	-	P (Guad-u)	(654,656)
?Worthenoporidae	C (Tour-u)	-	C (Vise-u)	(657)

#### Cl. GYMNOLAEMATA

##### Or. CTENOSTOMATA

Arachnidiidae	J (Aale)	-	R	(785)
Ascodictyidae	S (Wenl)	-	P (Guad-u)	(654,659)
Buskiidae	K (Maas-u)	-	R	
Cookobryozoonidae	T (mMio)	-	T (Plio)	(573)
Immergentiidae	D (Give-l)?	-	R	(607)
Orbignyoporidae	S (Wenl-l)	-	T (Plio)	(10,573)
Penetrantiidae	Tr(Nori-u)	-	R	(573)
Ropalonariidae	O (Ashg-m)	-	K (Apti)?	(177)
Spathioporidae	J (Call-l)	-	R	(573)
Terebriporidae	K (Apti)	-	R	(820)
Valkeriidae	K (Camp)	-	R	(747)
Vesiculariidae	K (Maas)	-	R	(747)
Vinellidae	O (Aren)	-	K (Camp)	
Voigtellidae	K (Camp-u)	-	K (Maas-l)	(573)

##### Or. CHEILOSTOMATA

Adeonidae	T (lEoc)	-	R	(112,123)
Aeteidae	T (uEoc)	-	R	
Alysiidiidae	T (mMio)	-	R	
Andrioporidae	K (Ceno-l)	-	T (mEoc-l)	(49,816)
Arachnopusiidae	T (mEoc-l)	-	R	
Aspidostomatidae	K (Ceno-l)	-	R	(198,816)
Beaniidae	T (mEoc)	-	R	(409)
Bifaxariidae	T (uEoc)	-	R	(124)
Bitectioporidae	T (uOli)	-	R	
Calloporidae	K (Albi-l)	-	R	(336)
Calpensiidae	T (mEoc-l)	-	R	(123)
Calpidoporidae	K (Ceno-u)	-	K (Sant)	(819)
Catenicellidae	T (uEoc)	-	R	(267)
Cellariidae	K (Sant)	-	R	
Celleporidae	K (Camp)	-	R	
Chaperiellidae	T (lOli)	-	R	
Chaperiidae	T (lOli)	-	R	
Cheiloporinidae	T (Than)	-	R	
Conescharellinidae	T (uEoc)	-	R	(267)
Coscinopleuridae	K (Sant)	-	T (lEoc)	(818)
Cothurnicellidae	T (uEoc)	-	R	(409)
Crepidacanthidae	T (mEoc-l)	-	R	(123)
Cribrilinidae	K (Sant)	-	R	
Ctenoporidae	K (Ceno-l)	-	K (Ceno-u)	(819)
Cupuladriidae	T (Than)	-	R	(156)
Cycloporidae	K (Camp)	-	R	
Disheloporidae	K (Coni)	-	K (Sant)	(819)
Dysnoetoporidae	K (Camp-l)	-	K (Maas-u)	(815)
Electridae	J (Tith)?	-	R	
Epistomiidae	T (lMio)	-	R	(409)



Eurystomellidae	Q (Plei)	-	R	
Exochellidae	K (Sant)	-	R	
Farciminariidae	K (Maas)?	-	R	
Fusicellariidae	K (Turo)	-	T (Mi)	
Gigantoporidae	T (Dani)	-	R	
Hiantoporidae	T (Than)	-	R	
Hincksinidae	K (Ceno-l)	-	R	
Hippoporinidae	K (Maas)	-	R	
Hippothoidae	K (Ceno)	-	R	
Lagynoporidae	K (Coni)	-	T (Dani)	(49,819)
Lekythoporidae	T (uEoc)	-	R	
Lunulitidae	K (Coni-u)	-	R	(819)
Mamilloporidae	K (Coni)	-	R	(819)
Membranicellariidae	K (Maas)	-	R	
Membraniporidae	K (Ceno-m)	-	R	(336,819)
Microporellidae	T (IEoc)	-	R	(112)
Microporidae	K (Ceno-u)	-	R	(819)
Mucronellidae	K (Sant-u)	-	R	
Myagroporidae	K (Coni-l)	-	K (Sant-l)	
Myrizoidea	T (uEoc)	-	R	(267)
Nephroporidae	K (Maas-l)			
Onychocellidae	K (Ceno-l)	-	R	
Orbituliporidae	K (Camp)	-	R	
Otoporidae	K (Ceno-l)	-	K (Camp)	(336)
Parmulariidae	K (Camp)	-	R	
Pasytheidae	T (IEoc)	-	R	(112)
Pelmatoporidae	K (Turo)	-	R	
Petraliidae	T (uEoc)	-	R	
Phylactellidae	T (Dani)	-	R	
Phylactelliporidae	T (mEoc-l)	-	R	
Platyglenidae	K (Camp)	-	T (Dani)	
Porinidae	K (Turo-u)	-	R	(336)
Prostomariidae	T (IMio)			
Reteporidae	T (Dani)	-	R	
Rhacheoporidae	K (Coni)	-	K (Maas)	
Savignyellidae	T (mMio)	-	R	(409)
Schizoporellidae	K (Camp)	-	R	
Scrupariidae	T (IEoc)	-	R	
Scrupocellariidae	T (IEoc)	-	R	(124)
Setosellidae	T (Dani)	-	R	
Skyloniidae	T (Than)	-	T (uMio)	(362)
Steginoporellidae	T (mEoc-l)	-	R	(112)
Stomachetosellidae	T (Dani)	-	R	
Taractoporidae	K (Coni-l)	-	K (Sant-l)	
Thalamoporellidae	K (Camp-l)	-	R	
Thoracoporidae	K (Turo)	-	K (Maas-u)	
Tubucellariidae	T (mEoc-l)	-	R	(123)
Umbonulidae	T (mEoc-l)	-	R	(123)
Wiwalliidae	J (Tith-u)	-	R	(198)

## BRACHIOPODA

### Cl. INARTICULATA

[Classification is from the *Treatise*, Pt. H; sources of stratigraphic ranges are listed.]

Or. LINGULIDA			
Adensuidae	O (Cara-u)		(586)
Andobolidae	O (Ashg)		(168)
Craniopsidae	O (Cara-l)	- C (Tour)	(157,721)
Elkaniidae	Cm(Fran)	- O (Ashg-m)	(318,433)
Lingulasmatidae	O (Cara-l)	- O (Ashg-m)	(157,721)
Lingulidae	O (Trem)?	- R	(860)
Obolidae	Cm(Tomm-u)-	O (Ashg-u)	(317,457,862)
Paterulidae	O (Aren-u)?	- D (Prag)	(168,404,856)
Trimerellidae	O (Aren-u)?	- S (Ludl)	(168,301)
Zhantellidae	Cm(Boto)	- Cm(Fran)?	(397)
Or. ACROTRETIDA (probably polyphyletic.)			
Acrothelidae	Cm(Atda-l)	- O (Trem-u)	(82,168)
Acrotretidae	Cm(Atda)	- D (Emsi)	(157,437)
Botsfordiidae	Cm(Boto-l)	- Cm(mMid)	(82,364,718)
Craniidae	O (Aren-u)	- R	(489)
Curticiidae	Cm(Boto)	- Cm(Fran)	(301,430)
Discinidae	O (Aren-u)	- R	(855,856)
Eoconulidae	O (Aren-l)	- O (Ashg-m)	(314,404,856)
Siphonotretidae	Cm(lMid)	- O (Ashg-l)	(36,489)
Trematidae	O (Llvi-l)	- D (Loch)	(855)
Or. OBOLELLIDA			
Cryptotretidae	Cm(Tomm-u)-	Cm(Atda-u)	(82,746)
Obolellidae	Cm(Tomm-u)-	Cm(uMid)	(288,385,662,746)
Or. PATERINIDA			
Paterinidae	Cm(Tomm-l)	- O (Cara-l)	(82,404,746)
Ptychopeltidae	O (m)		(489)
Or. KUTORGINIDA			
Kutorginidae	Cm(Tomm-u)-	Cm(uMid)	(301,662,788)
Yorkiidae	Cm(Atda)	- Cm(Tojo)	(158,638)
incertae sedis	O (Aren)		(513)
Cl. ARTICULATA			
[Classification follows the <i>Treatise</i> , Pt. H, with additions from Cooper and Grant (1972-1977) and other sources; stratigraphic ranges are from the <i>Treatise</i> and other sources, as listed.]			
Or. ORTHIDA			
Angusticardiidae	O (Trem)	- O (Ashg)	(301)
Billingsellidae	Cm(Boto)	- O, (Aren)	(384,385)
Clitambonitidae	O (Aren)	- O (Ashg-u)	(168,301)
Cremnorthidae	O (Cara-l)	- O (Ashg-m)	(168,854)
Dalmanellidae	O (Aren-u)	- D (Fras-u)	(74,855)
Dicoelosiidae	O (Cara-u)	- D (Emsi)	(74,353)
Dolerorthidae	O (Aren)?	- D (Emsi)	(74)
Enteletidae	O (Llde)	- P (Tatr-u)	(281)
Eoorthidae	Cm(Boto)	- O (Aren-u)	(385,432,856)
Finkelnburgiidae	Cm(Fran)	- O (Llvi-l)	(457,673,675,855)
Gonambonitidae	O (Aren-u)	- O (Cara)	(168,855)
Harknessellidae	O (Llde-l)	- S (Ldov-l)	(74,157,855)
Hesperonomiidae	O (Trem-u)	- O (Aren-u)	(168,513,652,855)
Heterorthidae	O (Llde)	- D (Emsi-u)	(302,472)
Hypsomyoniidae	D (Give)	- D (Fras)	

MILWAUKEE PUBLIC MUSEUM

# Contributions

in

BIOLOGY

and

GEOLOGY

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**A Compendium of  
Fossil Marine Animal Families  
2nd edition**

**J. John Sepkoski, Jr.**

Kayserellidae	D (Emsi)	- D (Fras)	(74)
Kullervoidae	O (Llde-l)	- O (Ashg-u)	(855)
Leioriidae	Cm(Boto)		(158)
Linoporellidae	O (Llvi)	- S (Ludl-u)	(22,660)
Mystrophoridae	D (Emsi-l)	- D (Eife-u)	(74,558)
Nisusiidae	Cm(Atda-l)	- Cm(uMid)	(384,639,662)
Orthidae	Cm(lMid)	- D (Loch-u)	(74)
Orthidiellidae	O (Trem-u)	- O (Ashg-u)	(652)
Paurorthidae	O (Aren)	- O (Ashg)	(301,588)
Plaesiomyidae	O (Aren)?	- O (Ashg-u)	(721)
Plectorthidae	O (Trem)	- S (Wenl-u)	(74,168)
Polytoechiidae	O (Trem-u)	- O (Cara-l)	(301,652)
Protorthidae	Cm(Atda-u)	- Cm(uMid)	(158)
Rhipidomellidae	S (Ldov-l)?	- P (Tatr-l)	(168)
Saukrodictyidae	O (Llde-u)	- S (Ldov-l)	(74)
Sigmelasmatidae	O (Llde)	- O (Ashg)	(588)
Skenidiidae	O (Llvi-l)	- D (Fras-u)	(74,168,855)
Toxorthidae	O (Ashg-u)	- S (Ldov-l)	(74)
Triplesiidae	O (Llvi-l)	- S (Ludl-l)	(22,74)
Tropidoleptidae	D (Loch)	- D (Fras-m)	(74)
Tuvaellidae	S (Ldov-m)	- S (Ludl-l)	(164,168)
Wangyuiidae	S (Wenl-l)		(516)
<b>Or. STROPHOMENIDA</b>			
Adectorhynchidae	C (Serp-l)		(313)
Agelesiidae	P (Leon-l)		(162)
Anopliidae	S (Prid)?	- D (Emsi-u)	(74)
Anoptambonitidae	O (Llde)	- O (Ashg-m)	(137,303,309,557)
Aulostegidae	C (Step)	- P (Tatr-u)	(162)
Bimuriidae	O (Llde-l)	- O (Ashg-u)	(137,303)
Buxtoniidae	D (Fame-u)	- P (Guad-u)	(74)
Cadomellidae	J (Plie)	- J (Toar)	(301)
Chonetellidae	P (Sakm)	- P (Tatr-l)	(281)
Chonetidae	S (Ldov-l)	- P (Tatr-u)	(74)
Chonostrophiidae	S (Prid)?	- C (Tour-l)	(168)
Christianiidae	O (Aren-u)	- O (Ashg-u)	(157)
Cooperinidae	C (Mosc)	- P (Guad-u)	(162,168)
Cyclacanthariidae	P (Sakm-u)	- P (Guad-l)	(162)
Davidsoniidae	S (Prid)	- D (Fras-l)	(74,473)
Daviesiellidae	D (Eife)	- C (Serp-l)	(829,859)
Dictyoclostidae	D (Fame-u)	- P (Tatr-u)	
Dubioleptinidae	S (Wenl-l)		(74,137,309)
Echinoconchidae	C (Tour-l)	- P (Tatr-l)	(119,281)
Eichwaldiidae	O (Cara-l)	- S (Ludl-u)	(7,22,74,301)
Eocramatiidae	O (Llvi-l)		(855)
Eodevonariidae	D (Prag-u)	- D (Eife-l)	(74,75,721)
Foliomenidae	O (Cara-u)	- O (Ashg-u)	(303)
Gigantoproductidae	D (Fame-u)	- C (Serp-u)	(74,859)
Hercosiidae	P (Sakm)	- P (Leon-u)	(162)
Incisiidae	P (Leon-l)	- P (Tatr-l)	(282)
Institinidae	C (Vise-u)		(859)
Isogrammidae	C (Vise-u)	- P (Leon-u)	(162,301,859)
Leioproductidae	D (Eife-u)	- P (Leon-l)	(829,834)
Leptaenidae	O (Llvi-u)	- C (Serp-l)	(157,859)
Leptellinidae	O (Aren-l)	- S (Wenl-u)	(137)

Leptestiidae	O (Aren-u) - O (Ashg-m)	(137,168,303)
Linoproductidae	C (Tour-l) - P (Tatr-u)	(162,281,859)
Lytoniidae	C (Step-u) - P (Tatr-u)	(231,281)
Marginiferidae	C (Vise-l) - P (Tatr-u)	(281,859)
Meekellidae	O (Cara) - P (Tatr-u)	(74,162,281,301)
Oepikinidae	O (Llvi-u) - O (Ashg-m)	(157,301)
Orthotetellidae	P (Asse) - P (Tatr-l)	(162,281)
Orthotetidae	D (Prag-u) - P (Tatr-l)	(74,162)
Overtoniidae	D (Fame-m) - P (Tatr)	(74,161)
Plectambonitidae	O (Trem-u) - O (Cara-l)	(137)
Poikilosakidae	C (Step-l) - P (Tatr-l)	(281)
Productellidae	D (Emsi-l) - C (Serp-l)	(74)
Productidae	C (Vise-l) - C (Step-l)	(168,859)
Richthofeniidae	P (Sakm-l) - P (Tatr-u)	(231)
Scacchinellidae	C (Step) - P (Leon-l)	(162)
Scapharinidae	P (Guad-u)	(162)
Schuchertellidae	S (Ldov) - P (Tatr-l)	(84,281)
Sinuatellidae	C (Vise-u) - C (Serp-l)	(859)
Sowerbyellidae	O (Llvi-u) - D (Eife)	(137)
Spinolyttoniidae	P (u)	
Spyridiophoridae	C (Step) - P (Leon-l)	(162)
Strophalosiidae	D (Eife-u) - P (Tatr-u)	
Stropheodontidae	O (Ashg) - D (Fras-u)	(74)
Strophomenidae	O (Llvi-l) - D (Eife)	(74,168)
Taffiidae	O (Trem-u) - O (Cara-u)	(137,432)
Teguliferinidae	C (Mosc-u) - P (Guad-u)	
Thecospiridae	Tr(Carn) - Tr(Nori-u)	(168)
Tschernyschewiidae	P (Asse) - P (Tatr-u)	(162,281,836)

Or. PENTAMERIDA

Alimbellidae	O (Trem)	
Brevicameridae	O (Cara-l)	(157)
Camerellidae	O (Aren-u) - S (Ldov-u)	(74,168,856)
Clarkellidae	O (Trem-u) - O (Ashg)?	(432,721)
Enantiosphenidae	D (Give)	(74)
Eostrophiidae	Cm(mMid)	(301,539,718)
Gypidulidae	S (Ldov-u) - D (Fras-u)	(74)
Huenellidae	Cm(Fran-l) - O (Trem)	(280,663)
Lycophoriidae	O (Aren) - O (Llde)	
Parallelelasmatidae	O (Cara-l) - O (Cara-m)	(74,157)
Parastrophinidae	O (Cara-l) - D (Prag-l)	(74,157,855)
Pentameridae	O (Ashg-m) - D (Eife)	(74)
Porambonitidae	O (Aren) - S (Ldov-u)	(168,652)
Stricklandiidae	O (Ashg-m) - S (Wenl-u)	(74,136)
Syntrophiidae	O (Aren-l) - O (Ashg)?	(74,721,855)
Syntrophopsidae	O (Trem-u) - O (Llvi-l)	(432,652,721)
Tetralobulidae	Cm(Trep-l) - O (Aren-u)	(432,652,721)
Virgianidae	O (Ashg-m) - S (Ldov-m)	(74)

Or. THECIDEIDA

Bactryniidae	Tr(Nori-u)	
Hungarithecidae	Tr(Carn)	(168)
Thecideidae	Tr(Nori) - R	(168)
Thecidellinidae	Tr(Nori-u) - R	

Or. RHYNCHONELLIDA

Allorhynchidae	C (Tour-l) - P (Guad-u)	(162)
Amphipellidae	P (Leon-l) - P (Leon-u)	(162)
Ancistrorhynchidae	O (Llvi-u) - O (Cara-m)	(157)
Atriboniidae	D (Prag) - P (Tatr-u)	(168)
Austrirhynchiidae	Tr(Carn) - Tr(Nori-u)	
Basiliolidae	J (Tith-u) - R	(726)
Camarotoechiidae	O (Llde) - P (Guad-u)	(162,652)
Camerophorinidae	D (Eife-u) - D (Give-u)	(74)
Cardiarinidae	C (Vise-l) - P (Tatr-l)	(283)
Cryptoporidae	K (Ceno) - R	(55)
Dimerellidae	Tr(Anis-u) - K (Haut-u)	
Eatoniidae	S (Ldov-u) - D (Emsi)	(74)
Erymnariidae	T (IEoc) - T (uEoc)	
Frieleidae	T (Plio) - R	
Hemithyrididae	T (Dani) - R	(468)
Oligorhynchiidae	O (Llvi-u) - S (Ldov-l)	(74,157,652)
Petasmatheridae	P (Asse) - P (Guad-l)	(162)
Pontisiidae	P (Asse) - P (Leon-u)	(162)
Pugnacidae	D (Loch) - P (Tatr-l)	(836)
Rhynchonellidae	Tr(Olen) - T (Dani)	(168,352)
Rhynchoporidae	D (Fame) - P (Tatr-l)	(74,301)
Rhynchotetradidae	C (Tour-l) - P (Sakm-u)	(119)
Rhynchotrematidae	O (Cara-l) - D (Give-l)	
Rhynchotretidae	S (Ldov-m) - S (Ludl-u)	(22,74,516)
Septirhynchiidae	J (Call-l) - J (Kimm)	
Stenoscismatidae	D (Eife) - P (Tatr-l)	(74,281)
Tetracamerasidae	C (Tour-u) - C (Bash-l)	(859)
Trigonirhynchiidae	O (Llvi-l) - C (Vise-u)	(119,721)
Uncinulidae	S (Ldov-u) - P (Tatr-u)	(22,74,282)
Wellerellidae	C (Mosc-l) - K (Maas)	
Yunnanellidae	D (Eife-u) - D (Fame-m)	(74,215)

Or. SPIRIFERIDA (may be polyphyletic)

Ambocoellidae	S (Ldov-u) - Tr(Indu)	(281)
Anomaloriidae	P (Leon-l) - P (Guad-u)	(162,282)
Athyrididae	S (Wenl-u) - Tr(Nori-u)	(74,553)
Athyrisinidae	D (Eife) - Tr(Nori)?	(289)
Brachythyrididae	D (Fame-u) - P (Tatr-u)	(74,834)
Costispiriferidae	D (Prag-l) - D (Fame)	(7,78)
Crenispiriferidae	C (Step) - P (Tatr-l)	(162,281)
Cyrtidae	S (Ldov-l) - D (Eife)	(74,829)
Cyrtinidae	S (Wenl) - C (Serp-l)	(118,301,859)
Cyrtospiriferidae	D (Emsi-u) - P (Leon-l)	(74,282,829)
Delthyrididae	S (Ldov-u) - C (Vise-u)	(74)
Elythidae	D (Emsi-u) - P (Tatr-u)	(74,162)
Fimbrispiriferidae	D (Emsi-l) - D (Give-l)	(74)
Koninckinidae	Tr(Ladi) - J (Plie-u)	
Laballidae	Tr(Carn) - Tr(Nori-u)	(320,553)
Martiniidae	S (Ludl)? - P (Tatr-u)	(281)
Meristellidae	O (Ashg-m) - C (Tour-u)	(74,119)
Metathyrisinidae	O (Ashg) - D (Fras)	
Mucrospiriferidae	D (Emsi-l) - C (Vise-u)	(74,859)
Neoretziidae	C (Tour-l) - Tr(Nori-u)	(301,553,645)
Nucleospiriferidae	S (Ldov-m) - P (Leon-l)	(162,498)

Paraspiriferinidae	C (Step)	- P (Tatr-l)	(76,264,281)
Reticulariidae	S (Wenl-l)	- P (Tatr)	(74,516,836)
Reticulariidae	C (Vise-u)	- P (Tatr-l)	(162)
Retziidae	D (Loch-l)	- C (Serp-l)	(74)
Rhynchospirinidae	O (Ashg-m)	- D (Eife)	(74)
Saranostegidae	P (Leon-l)	- P (Tatr-l)	(162)
Spinocyrtiidae	D (Emsi)	- D (Fame-u)	(74)
Spiriferidae	D (Fame-u)	- Tr(Indu)	(836)
Spiriferinidae	D (Fame-u)	- J (Bajo-l)	(74,301)
Suessiidae	J (l)		
Syringothyrididae	D (Fame-u)	- P (Guad-u)	(74,762)
Verneuilliidae	D (Give)	- C (Vise-u)	(107)
Xenosariidae	P (Guad-u)		(162)
Xestotrematidae	P (Guad-l)	- P (Guad-u)	(76)
<b>Or. ATRYPIDA</b>			
Anoplothecidae	S (Wenl)?	- D (Eife-u)	(6,74)
Atrypidae	S (Ldov-l)	- D (Fras-u)	(74,164,166)
Dayiidae	O (Cara-l)	- S (Prid)	(74,167)
Kayseriidae	D (Eife-l)	- D (Eife-u)	(74)
Leptocoeliidae	S (Ldov-l)	- D (Eife-u)	(76)
Lissatrypidae	O (Cara-m)	- D (Fras-u)	(74,164,167)
Paliferellidae	S (Wenl)	- D (Give-u)	(74,164)
Punctatrypidae	D (Loch-u)	- D (Eife-u)	(74,829,830)
Uncitidae	D (m)		
Zygospiridae	O (Cara-l)	- S (Ldov-u)	(74,165,829)
<b>Or. TEREBRATULIDA</b>			
Cancellothyrididae	J (Hett)	- R	(168)
Centronellidae	D (Loch-l)	- P (Tatr-l)	(74)
Cheniothyrididae	J (Bajo-u)		
Cranaenidae	D (Emsi)	- P (Sakm)	(74)
Cryptonellidae	D (Emsi)	- Tr(Nori)	(74,319)
Dallinidae	Tr(Carn)	- R	(168)
Dictyothyrididae	J (Bath-u)		(160)
Dielasmatidae	C (Tour-u)	- J (Sine-u)	(119,553)
Dispheniidae	P (Tatr-l)		(283)
Dyscoliidae	K (Ceno)	- R	
Eudesiidae	J (Bajo-u)	- K (Barr)	(168)
Hercothyrididae	T (Eo)	- R	(159)
Heterelasminidae	D (Fras-u)	- P (Tatr-l)	
Kraussinidae	T (uEoc)	- R	(168)
Labaiidae	C (Mosc)	- Tr(Indu)	
Laqueidae	T (Mi)	- R	
Megathyrididae	K (Berr)	- R	(727)
Mutationellidae	S (Prid)	- P (Tatr-l)	(74,762)
Notothyrididae	C (Vise-u)	- P (Tatr-u)	
Orthotomidae	J (Plie-l)	- J (Plie-u)	(301,823)
Platidiidae	K (Ceno)	- R	(55)
Pseudodielasmatidae	P (Guad-l)	- P (Tatr)	(162)
Pygopidae	J (Sine)	- K (Albi-u)	(476,823)
Rhenorensaelaeridae	D (Loch-l)	- D (Emsi)	(74)
Rhipidothyrididae	D (Loch-u)	- D (Give-u)	(74)
Stringocephalidae	D (Eife)	- D (Give-u)	(74)
Tegulithyrididae	J (Bath)	- J (Call)	

Terebratellidae	K (Albi-u)	- R	(301)
Terebratulidae	Tr(Anis)	- R	(168)
Zeilleriidae	Tr(Olen)	- K (Ceno)	(168,559)

CHAETOGNATHA (extant)

[Five extant marine families.]

Or. UNCERTAIN

<i>Paucijaculum</i>	C (Mosc-u)		(144,686)
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?Or. "protocondonts"

Amphigeisinidae	V (N-Da)	- Cm(Dres-l)	(81,82,410)
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ECHINODERMATA

Cl. CTENOCYSTOIDEA	Cm(mMid-l)	- Cm(uMid-m)	(808)
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Cl. STYLOPHORA

[Classification and stratigraphic ranges are from Derstler (1979), with emendations.]

Or. CORNUTA

Amygdalothecidae	O (Aren-l)	- O (Llvi)	(342)
Ceratocystidae	Cm(mMid-u)	- Cm(Fran)	(730,751,808)
Cothurnocystidae	Cm(uMid-l)	- O (Ashg)	(809)
Phyllocystidae	Cm(uMid-m)	- O (Llvi)	(342)

Or. MITRATA

Allanicytidiidae	S (Ldov-u)	- D (l)	(120)
Anomalocystitidae	O (Cara-l)	- D (Emsi-l)	(192)
Diamphidiocystidae	O (Ashg-m)		(391)
Kirkocystidae	O (Aren-l)	- O (Ashg)	(244,544)
Lagynocystidae	O (Aren-u)	- O (Llvi-l)	(244)
Mitrocystitidae	O (Aren-l)	- D (l)?	(301,730)
Paranacystidae	O (Cara)	- D (Prag)	(192)
Placocystitidae	O (Cara-l)	- D (Emsi-l)	(544)
<i>Jaekelocarpus</i>	C (Bash-u)		(390)

Cl. HOMOSTELEA

[Classification are from the Treatise, Pt.S, with sources for stratigraphic ranges as listed.]

Or. CINCTA

Gyrocystidae	Cm(mMid-u)		(489,730,751)
Trochocystitidae	Cm(uMid)		(489,730,751)

Cl. HOMOIOSTELEA

[Classification and stratigraphic ranges are based on the *Treatise*, Pt. S.]

Or. SOLUTA

Belemnocystitidae	O (Cara-l)	- O (Cara-m)	(389)
Dendrocystitidae	Cm(Boto-l)	- D (Emsi-l)	(552,751)
Girvanicystidae	O (Ashg-m)		(489)
Iowacystidae	O (Cara-m)	- O (Ashg-m)	(392,550)
Minervaecystidae	Cm(Trep)	- O (Trem-u)	(751)
Rutroclypeidae	D (Loch)?	- D (Prag)?	(489)
Syringocrinidae	O (Cara-m)		(545)



Cl. HELICOPLACOIDEA

Helicoplacidae Cm(Atda-u) - Cm(Boto-l) (489,552,751)

Cl. EOCHRINOIDEA

[Classification and stratigraphic ranges are modified from Sprinkle (1973), with emendations as listed.]

Or. IMBRICATA (= Lepidocystoidea)

Lepidocystidae Cm(Boto-u) (552)

Or. GOGHIDA (= Order "Number 1")

Eocrinidae Cm(Atda-l) - Cm(uMid-m) (197,751,808)  
 Lichenoididae Cm(uMid-l) (489)  
 Palaeocystitidae O (Llde-u) - O (Cara-l) (102,550)  
 Rhopalocystidae O (Trem-u) (489)

Or. ASCOCYSTITIDA (= Order "Number 2")

Ascocystitidae O (Llvi) (550)  
 Macrocystellidae O (Trem-l) - O (Llde) (549,551)  
*Cambrocrinus*  
 + *Eocystites* Cm(Atda-l) - Cm(Dres-l) (384,808)  
*Eustypocystis*  
 + *Nolichuckia*  
 + *Pareocrinus* Cm(uMid-m) - Cm(uMid-u) (489)

Or. INCERTAE SEDIS

?Cryptocrinitidae O (Aren-u) - S (Wenl) (550,730)  
 Cymbionitidae Cm(Tojo-u) (718,728)  
 Lingulocystidae O (Trem-u) - O (Llvi) (489)  
 Peridionitidae Cm(Tojo-u) (718,728)  
 ?Rhipidocystidae O (Trem-u) - O (Cara-l) (730,753)  
 ?Trachelocrinidae Cm(mMid) - Cm(Fran-u) (750)

Cl. CRINOIDEA

[Classification and stratigraphic ranges are from the *Treatise*, Pt. T, with emendations as listed. Approximately 13 extant families without known fossil representatives are not listed.]

Or. ECHMATOCRINIDA

Echmatocrinidae Cm(mMid-u) (751)

Or. DIPLOBATHRIDA

Anthemocrinidae S (Ldov-m) - S (Ludl)  
 Anthracocrinidae O (Llvi-u) - O (Cara-l)  
 Archaeocrinidae O (Llde-u) - O (Ashg-m) (301,365,752)  
 Cleiocrinidae O (Llde-u) - O (Cara-m) (301)  
 Dimerocrinitidae O (Ashg-m) - D (Fras)  
 Elpidocrinidae S (Wenl) - S (Ludl-l) (252)  
 Emperocrinidae S (Wenl-l) - S (Ludl) (252)  
 Gazocrinidae S (Wenl-l)  
 Hirneocrinidae S (Ldov-u) - S (Ludl) (249,251)  
 Lamptocrinidae S (Wenl-l) - S (Wenl-u)  
 Nyctocrinidae S (Wenl-l)  
 Opsiocrinidae S (Ldov-m) - D (Give-l) (252)  
 Orthocrinidae D (Emsi-u) - D (Eife)?  
 Prokopocrinidae S (Wenl) - S (Ludl) (251)

Reteocrinidae	O (Cara-l) - O (Ashg-m)	
Rhodocrinitidae	O (Llvi-u) - C (Vise-u)	(301)
Spyridiocrinidae	D (Prag)	
Or. MONOBATHRIDA		
Abacocrinidae	S (Ludl)	
Acrocrinidae	C (Tour-l) - C (Step-l)	
Actinocrinidae	C (Tour-l) - C (Vise-l)	(843)
Amphipsalidocrinidae	S (Wenl-l) - P (l)	(415)
Amphoracrinitidae	C (Tour-l) - C (Serp-l)	
Batocrinidae	C (Tour-l) - C (Vise-u)	
Carpocrinidae	S (Ldov-m) - S (Ludl)?	(15)
Clonocrinidae	S (Ludl)? - D (Prag)	
Coelocrinidae	D (Give) - C (Vise-l)	
?Colpodecrinidae	O (Cara-l)	(752)
Dichocrinidae	C (Tour-l) - P (Guad-u)	(113,301)
Dolatocrinidae	D (Emsi) - D (Give)	
Eucalyptocrinitidae	S (Wenl) - D (m)	
Eutelecrinidae	P (Guad-u)	(251,301)
Glyptocrinidae	O (Cara-m) - S (Ludl)	
Hapalocrinidae	S (Ldov-m) - D (Give-u)	
Hexacrinitidae	S (Ludl)? - C (Tour-l)	
Marsupiocrinidae	S (Ldov-m) - D (l)	
Melocrinitidae	O (Ashg-m) - D (Fras)	
Paragaricocrinidae	C (Bash-l) - P (Guad-u)	(301)
Parahexacrinitidae	D (Emsi-u) - D (Give-l)	(418)
Paramelocrinidae	S (Wenl-u) - S (Prid)	
Patelliocrinidae	O (Ashg-m) - D (Eife)	
Periechocrinidae	S (Ldov-m) - C (Tour-u)	
Platycrininitidae	D (l) - P (Guad-u)	(301)
Polypeltidae	S (u) - D (Eife-l)	
Scyphocrinitidae	S (Prid) - D (Loch-u)	
Stelidiocrinidae	S (Ldov-m) - S (Wenl)	(14)
Tanaocrinidae	O (Ashg-m) - O (Ashg-u)	
Tunisiacrinitidae	P (Guad)	(413)
Xenocrinidae	O (Ashg-m)	
Or. DISPARIDA		
Acolocrinidae	O (Cara-l) - S (Wenl)	(85,752)
Allagecrinidae	D (Fame-u) - P (Guad-u)	
Anamesocrinidae	D (Give)	
Anomalocrinidae	O (Cara-l) - O (Ashg-l)	
Belemnocrinidae	C (Tour-u) - C (Vise-l)	(414)
Calceocrinidae	O (Cara-l) - P (Leon-l)	(13,309)
Catillocrinidae	O (Cara-l) - P (Guad-u)	
Cinnaticrinidae	O (Cara-l) - O (Ashg-m)	(254,833)
Eustenocrinidae	O (Trem-u)? - O (Ashg-u)	
Haplocrininitidae	D (m)	
Heterocrinidae	O (Cara-l) - S (Wenl)	
Holynocrinidae	D (Emsi-u)	
Homocrinidae	O (Llvi-u) - D (Fame)?	
Iocrinidae	O (Cara-l) - O (Ashg-m)	
Myelodactylidae	S (Ldov-l) - D (Loch)	
Paradoxocrinidae	P (Guad-u)	
Perissocrinidae	D (Give)	

Perittocrinidae	O (Aren-u)	(730)
Pisocrinidae	S (Ldov-m) - D (Fame)	
Pygmaeocrinidae	S (u) - D (m)	
Ramseyocrinidae	O (Aren-u) - O (Llvi-l)	(730)
Synbathocrinidae	S (Wenl)? - P (Guad-u)	
Tornatilicrinidae	O (Cara-l) - S (Ldov-m)	(290)
Zophocrinidae	S (Ludl) - D (m)	
<b>Or. HYBOCRINIDA</b>		
Baerocrinidae	O (Llvi-l) - O (Llde)?	(301)
Cornuocrinidae	O (Llvi-l) - S (Ldov)?	(301,750)
Hybocrinidae	O (Trem-u) - O (Cara-m)	(730)
Hybocystitidae	O (Llde)? - O (Cara)	
incertae sedis	Cm(Trep)	(730)
<b>Or. CLADIDA</b>		
Adinocrinidae	C (Vise-l)	
Aethocrinidae	O (Trem-u)? - O (Aren-l)	
Agassizocrinidae	C (Vise-u) - P (l)	
Ampelocrinidae	C (Vise-l) - P (Guad-u)	(414)
Anobasicrinidae	C (Bash-u) - P (Guad-u)	
Aphelecrinidae	C (Tour-l) - C (Serp-l)	
Apographocrinidae	C (Bash-u) - P (Guad-u)	
Arkacrinidae	C (Bash-u)	
Baryocrinidae	C (Tour-u) - C (Vise-l)	(464)
Blothrocrinidae	C (Tour-l) - P (Sakm)	
Botryocrinidae	S (Wenl-u) - C (Vise-l)	(464)
Bursacrinidae	C (Tour-u) - C (Vise-l)	(414)
Cadocrinidae	P (Guad-u)	
Calceolispongiidae	P (Sakm) - P (Guad-l)	
Carabocrinidae	O (Llde) - O (Ashg-m)	
Catacrinidae	C (Serp-l) - P (Guad-u)	
Cercidocrinidae	C (Tour-l) - C (Tour-u)	(414)
Clathrocrinidae	C (Mosc-l) - C (Step-l)	
Codiocrinidae	S (Wenl-l) - P (Guad-u)	
Corythrocrinidae	C (Vise-l)	(414)
Cricocrinidae	C (Mosc-u)	
Cromyocrinidae	C (Vise-l) - P (Sakm)	(842)
Crotalocrinitidae	S (Wenl) - D (Give)	
Cupressocrinitidae	D (l) - D (Fras)	
Cupulocrinidae	O (Cara-l) - O (Ashg-m)	(389)
Cyathocrinitidae	S (Wenl) - P (Guad-u)	
Cymbiocrinidae	C (Vise-u) - C (Step-u)	(414)
Decadocrinidae	D (Give-l) - C (Step-u)	
Dendrocrinidae	O (Cara-l) - D (Fras)	
Diphuicrinidae	C (Bash-u) - P (Asse)	
Encrinidae	Tr(Olen-u) - Tr(Nori-u)	(301,380)
Erisocrinidae	C (Vise-u) - P (Sakm)	(414)
Eupachyrcrinidae	C (Vise-u) - C (Serp-l)	
Euspiocrinidae	O (Cara-m) - C (Vise-l)	
Exocrinidae	C (Bash) - P (Sakm)	
Galateacrinidae	C (Mosc-u) - C (Step-u)	
Gasterocomidae	D (l) - D (Give)	
Graphiocrinidae	C (Tour-l) - P (Guad-u)	
Hydreionocrinidae	C (Vise-l) - C (Serp-l)	(414)

Indocrinidae	P (Leon-l) - P (Guad-u)	
Laudonocrinidae	C (Serp-l) - P (l)	(414)
Lecythocrinidae	D (Give) - C (Vise-l)	(414)
Lophocrinidae	C (Vise-u)	(414)
Manocrinidae	S (Wenl-u) - S (Prid)	(253)
Mastigocrinidae	O (m) - C (Vise-l)	(414)
Merocrinidae	O (Llde) - O (Ashg)	
Metabolocrinidae	O (m) - D (l)	
Mollocrinidae	C (Bash-u) - P (Guad-u)	
Ontariocrinidae	O (Cara)	
Ottawocrinidae	O (Cara-m)	
Pachylocrinidae	C (Tour-u) - P (l)	(414)
?Paractocrinidae	O (Aren)?	
Paradelocrinidae	C (Serp-l) - P (Guad-u)	
Pelecocrinidae	C (Tour-u) - P (Guad-u)	(414)
Petalocrinidae	S (Ldov-m) - S (Wenl)	
Phanocrinidae	C (Vise-u) - C (Serp-l)	(414)
Pirasocrinidae	C (Vise-u) - P (Guad)	
Porocrinidae	O (Cara-l) - O (Ashg-m)	
Poteriocrinidae	D (Emsi-l) - C (Step-l)	
Proctothylacocrinidae	D (Eife)	
Protencrinidae	C (Mosc-l) - P (Leon-l)	
Rhenocrinidae	D (Emsi-l) - C (Mosc-l)	
Scotiocrinidae	C (Vise-u) - C (Serp-l)	(414)
Scytalocrinidae	D (Give) - P (Guad-u)	
Sellardsicrinidae	C (Bash-u) - C (Mosc-u)	
Spaniocrinidae	C (Tour-u) - P (Guad-u)	(414)
Sphaerocrinidae	O (Llde) - D (Give)	
Stachyocrinidae	P (Guad-u)	
Staphylocrinidae	C (Tour-l) - P (Guad)	(113)
Stellarocrinidae	C (Vise-u) - P (Leon-l)	(414)
Streblocrinidae	D (Give)? - P (Guad-u)	
Sundocrinidae	P (Leon)? - P (Guad-u)	
Sycocrinidae	C (Vise-u) - P (Guad-u)	(414)
Texocrinidae	C (Bash) - P (Sakm)	
Thenarocrinidae	S (Wenl)	
Timorechinidae	P (Guad-u)	
Trimerocrinidae	P (Leon)? - P (Guad-u)	
Ulocrinidae	C (Vise-u) - P (Guad-u)	(414)
Zeacrinidae	C (Tour-u) - P (Guad-u)	(414)
Or. TAXOCRINIDA		
Synerocrinidae	C (Tour-u) - C (Step-l)	(414)
Taxocrinidae	O (Cara-m) - C (Serp-l)	
Or. SAGENOCRINIDA		
Calyocrinidae	D (Eife) - P (Guad-u)	
Dactylocrinidae	S (Wenl-u) - P (Guad-u)	
?Edriocrinidae	D (Loch) - D (Eife)?	
Euryocrinidae	D (Give) - C (Step-l)	
Gaulocrinidae	C (Vise-l)	
Homalocrinidae	O (Ashg-m) - S (Ludl)	(250)
Icthyocrinidae	O (Ashg-u) - C (Vise-l)	(301,414)
Lecanocrinidae	S (Ldov-u) - D (Eife)	
Mespilocrinidae	C (Tour-l) - P (Guad-u)	(414)

Nipterocrinidae	S (Wenl-u)	- C (Vise-l)	(463)
Palaeoholopodidae	P (Guad-u)		
Prophylocrinidae	P (Guad-u)		
Sagenocrinitidae	S (Wenl-l)	- P (l)	
Or. MILLERICRINIDA			
Apiocrinidae	J (Bajo)	- K (Nc)	
Cyclocrinidae	J (Sine-u)	- K (Albi)	(301,337)
Dadocrinidae	Tr(Anis-l)	- Tr(Anis-m)	
Hyocrinidae	K (Albi)	- R	
Millericrinidae	J (Sine)	- J (Kimm)	(337)
Or. CYRTOCRINIDA			
Eudesicrinidae	J (Plie-l)	- J (Toar-l)	(337)
Eugeniocrinidae	J (Plie-l)	- K (Camp-l)	
Hemibrachiocrinidae	K (Vala-l)	- K (Barr-l)	
Hemicrinidae	J (Tith)	- K (Albi)	
Holopodidae	J (Tith)	- R	
Phyllocrinidae	J (Bajo-l)	- K (Ceno)	(733)
Plicatocrinidae	J (Plie)	- J (Tith-u)	
Sclerocrinidae	J (Oxfo)	- K (Haut)	
Or. BOURGUETICRINIDA			
Bathycrinidae	K (Sant-u)	- R	(336)
Bourgueticrinidae	K (Turo-l)	- T (Than)	(336)
Porphyocrinidae	T (uMio)	- R	
Or. ISOCRINIDA			
Eomatulidae	J (Plie-l)	- J (Plie-u)	(337)
Holocrinidae	Tr(Olen-u)	- Tr(Ladi-u)	(336,733)
Isocrinidae	Tr(Anis-u)	- R	(379)
Pentacrinidae	Tr(Nori)	- J (Bath)	(379)
Or. COMATULIDA			
Antedonidae	K (Albi)	- R	
Asterometridae	T (Plio)	- R	
Atelecrinidae	K (Camp)	- R	
Comasteridae	T (Eo)	- R	
Conometridae	K (Ceno)	- T (Mi)	
Decameridae	K (Vala)	- K (Albi)	
Himerometridae	T (Eo)	- R	
Notocrinidae	J (Bath)	- R	
Paracomatulidae	Tr(Nori-u)	- J (Bajo-u)	(337)
Pterocomidae	J (Tith-l)	- T (uEoc)	
Solanocrinitidae	J (Hett-u)	- K (Coni)	(337)
Thalassometridae	T (lMio)	- R	
Thiolliericrinidae	J (Bath)	- K (Haut)	(301)
Or. UINTACRINIDA			
Marsupitidae	K (Sant-u)		
Uintacrinidae	K (Sant-u)		
Or. ROVEACRINIDA			
Ainigmacrinitidae	Tr(Ladi-u)	- K (Apti-l)	
Roveacrinidae	Tr(Ladi-u)	- K (Sant)	(733)
Saccocomidae	J (Kimm)	- K (Maas)	

Cl. RHOMBIFERA

[Classification is based on the *Treatise*, Pt. S, and Paul (1968); stratigraphic ranges are from Harland et al. (1967), with emendations as listed.]

Or. DICHOPORITA

Callocystitidae	O (Aren-u) - D (Fras)	
Caryocrinidae	O (Llde) - D (Loch)	(551)
Cheirocrinidae	O (Trem-u) - O (Ashg-m)	(549)
Cystoblastidae	O (Llde-l) - O (Cara-l)	(549)
Echinoencrinidae	O (Aren-u) - O (Ashg-l)	(103,730)
Glyptocystitidae	O (Cara-l) - O (Cara-m)	(550)
Hemicosmitidae	O (Aren-u) - O (Ashg-m)	
Heterocystitidae	S (Wenl)	
Pleurocystitidae	O (Cara-l) - D (Give)	(290,551)
Rhombiferidae	O (Cara-u)	
Thomacystidae	O (Ashg-m)	(550)

Or. FISTULIPORITA

Caryocystitidae	O (Aren-u) - O (Ashg-m)	
Echinosphaeritidae	O (Aren-u) - O (Ashg-m)	(730)
Hemicocystidae	D (l)	(347)
Hillocystidae	D (l)	(347)
Polycosmitidae	O (Llvi)	
Stichocystidae	O (Llde) - O (Cara-m)	

Cl. DIPLOPORITA

[Classification is based on the *Treatise*, Pt. S; stratigraphic ranges are from Harland et al. (1967), with emendations as listed.]

Or. GLYPTOSPHAERITIDA

Dactylocystidae	O (Cara-l) - O (Cara-m)	
Eumorphocystidae	O (Trem-u) - O (Cara-u)	(550,752,753)
Glyptosphaeritidae	O (Aren-u) - O (Cara-l)	(730)
Gomphocystitidae	O (Llvi) - S (Wenl)	
Protocrinitidae	O (Aren-u) - O (Cara-m)	(68,730)

Or. SPHAERONITIDA

Sphaeronitidae	O (Trem-u) - D (Eife)	(730)
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Or. ARISTOCYSTITIDA

Aristocystitidae	O (Trem) - O (Ashg-u)	
Holocystidae	O (Ashg) - S (Wenl-u)	

Or. ASTEROBLASTIDA

Asteroblastidae	O (Aren-u) - O (Llvi-l)	
Mesocystidae	O (Aren-u) - O (Llvi-l)	
Parasphaeronitidae	O (Ashg-u)	(68)

Cl. PARABLASTOIDEA

Blastocystidae	O (Aren-u) - O (Llde-u)	(301,730,750,751)
Meristoschismatidae	O (Cara-l)	(550)

Cl. EDRIOBLASTOIDEA

Or. PENTACYSTIDA

Astrocystitidae	O (Cara-l) - O (Ashg-l)	(489,752)
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Cl. PARACRINOIDEA

[Classification follows Parsely and Mintz (1975); sources of stratigraphic ranges are as listed.]

Or. COMAROCYSTITIDA

Amygdalocystitidae	O (Llvi)	-	O (Cara-m)	(546,550)
Comarocystitidae	O (Llvi)	-	S (Ldov-u)	(255,550)

Or. PLATYCYSTITIDA

Bistomiacystitidae	O (Cara)			(752)
Malocystitidae	O (Llvi)?	-	O (Cara-l)	(301,546,550)
Platycystitidae	O (Llvi)	-	O (Cara-l)	(254,301,752)

Or. INCERTAE SEDIS

Springerocystidae	O (Cara-l)			(750)
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Cl. CORONOIDEA

Or. CORONATA

Stephanocrinidae	O (Cara-l)	-	S (Ludl-l)	(86,195)
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Cl. BLASTOIDEA

[Classification is based on the *Treatise*, Pt. S, and Breimer and Macurda (1972); sources for stratigraphic ranges are listed.]

Or. INCERTAE SEDIS

<i>Macurdablastus</i>	O (Cara-l)			(100,101)
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Or. FISSICULATA

Codasteridae	C (Vise-u)	-	P (Guad-u)	(84,301)
Neoschismatidae	C (Tour-l)	-	P (Guad-u)	(84,301)
Nymphaeoblastidae	D (Emsi)	-	P (Sakm)	(84,301)
Orophocrinidae	D (Emsi)	-	P (Guad-u)	(84,301)
Phaenoschismatidae	S (Wenl-l)	-	C (Serp-l)	(84,837)

Or. SPIRACULATA

Amblostomatidae	C (Vise-u)			(837,838)
Diploblastidae	C (Vise-u)	-	C (Serp-u)	(837)
Granatocrinidae	C (Tour-l)	-	C (Vise-u)	(301,754,837,838)
Nucleocrinidae	D (Emsi-l)	-	D (Give-l)	(301,321)
Orbitrematidae	D (Fame)	-	P (Guad-u)	(321,837)
Penetrematidae	D (Prag-u)	-	P (Guad-u)	(301,321)
Schizoblastidae	C (Tour-l)	-	P (Guad-u)	(837,838)
Troosticrinidae	S (Wenl)	-	C (Vise-l)	(835,837)

Cl. CAMPTOSTROMATOIDEA

Camptostromatidae	Cm(Boto)			(552)
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Cl. EDRIOASTEROIDEA

[Classification and stratigraphic ranges are modified from Bell (1976) with emendations as listed.]

Or. STROMATOCYSTITIDA

Stromatocystitidae	Cm(Tojo)	-	Cm(mMid)	(29,552)
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Or. CYATHOCYSTIDA

Cyathocystidae	O (Llvi-l)	-	O (Ashg-m)	(69)
Pyrgocystidae	O (Llvi)	-	D (Fras)?	

?Rhenopyrgidae	O (Ashg-m) - D (Emsi-l)	(316)
Or. EDRIOASTERIDA		
Edrioasteridae	Cm(mMid-u) - O (Cara-m)	(290)
Totiglobidae	Cm(mMid-u) - Cm(u)	(29,730)
Or. ISOROPHIDA		
Agelacrinitidae	D (Loch) - C (Step-u)	
Cambrasteridae	Cm(lMid) - Cm(uMid)	(552,730)
Carneyellidae	O (Llde) - O (Ashg-m)	
Cyclocystoididae	Cm(lMid) - D (Fras)	
Isorophidae	O (Cara-l) - S (Ludl-l)	(316)
?Lebetodiscidae	O (Cara-l) - S (Ludl-u)	
Lispidecodidae	C (Tour)	(369)
Cl. ECHINOIDEA		
[Classification is from Smith (1984), with stratigraphic ranges from the <i>Treatise</i> , Pt. U, and other sources. Five extant families without known fossil representatives are not listed.]		
Or. BOTHRIOCIDAROIDEA		
Bothriocidaridae	O (Llvi)? - S (Ludl)	(290,729)
Or. ECHINOCYSTITOIDA		
Archaeocidaridae	D (Fras) - P (Guad-u)	(377)
Echinocystitidae	S (Ludl-l) - P (Asse)?	(729)
Hyattechinidae	C (Tour-l) - C (Serp)	(729)
Lepidocentridae	D (Emsi-l)? - P (Tatr-l)	(729,733)
Palaechinidae	D (Emsi) - C (Serp-l)	(595,729)
Or. CIDAROIDA		
Cidaridae	J (Bajo) - R	(734)
Miocidaridae	P (Asse) - J (Oxfo)	(377,729,733)
Rhabdocidaridae	J (Plie-u) - R	(377,734)
Or. ECHINOTHURIOIDA		
Echinothuriidae	K (Sant-l) - R	(301,337)
Or. DIADEMATOIDA		
Diadematidae	J (Bath) - R	(729)
Pelanechinididae	J (Bajo-u) - J (Oxfo-l)	(301,729)
Or. PEDINOIDA		
Pedinidae	Tr(Nori-m) - R	(337,731)
Or. PYGASTEROIDA		
Pygasteridae	J (Sine-l) - K (Ceno)	(373,377,733)
Or. SALENOIDA		
Acrosaleniidae	J (Aale) - K (Maas-u)	(337,733,747)
Saleniidae	J (Oxfo-u) - R	(377)
Or. HEMICIDAROIDA		
Hemicidaridae	J (Hett) - K (Apti)	(377,733)
Pseudodiadematidae	Tr(Nori-u) - K (Camp)	(374,377,731,733)
Or. PHYMOSOMATOIDA		
Arbaciidae	J (Bath) - R	(374)
Phymosomatidae	J (Hett-l) - R	(337)
Stomechinidae	J (Plie-u) - R	(377)



Or. TEMNOPLEUROIDA			
Glyphocyphidae	K (Haut-l)	- T (uEoc)	(337,377)
Temnopleuridae	K (Ceno)	- R	(377)
Or. ECHINOIDA			
Echinidae	T (mEoc-l)	- R	(337,892)
Echinometridae	T (mEoc-l)	- R	(337)
Parasaleniididae	T (uEoc)	- R	(301)
Strongylocentrotidae	T (uOli)	- R	(373)
Toxopneustidae	T (lMio)	- R	(729)
<i>Spaniocyphus</i>	K (Vala)	- K (Maas)	(747)
Or. PLESIOCIDAROIDA			
Tiarechinidae	Tr(Carn-u)		(733)
Or. ORTHOPSIDA			
Orthopsidae	J (Bajo)	- K (Maas)	(301,374,731,733)
Or. HOLECTYPOIDA			
Anorthopygidae	K (Albi)	- K (Turo)	(733)
Conulidae	K (Barr)	- T (Dani)	(377,729)
Discooididae	K (Haut)	- K (Maas-u)	(377,733)
Echinoneidae	J (Call)	- R	(729)
Galeritidae	K (Camp)	- K (Maas-u)	(301,729,733)
Holectypidae	J (Plie-l)	- K (Maas-u)	(377,452,733)
Neoglobatoridae	T (Dani)	- T (lMio)	(729,733,747)
Or. OLIGOPYGOIDA			
Oligopygidae	T (mEoc-l)	- T (uEoc)	(337,377,729,733)
Or. CLYPEASTEROIDA			
Arachnoididae	T (lOli)	- R	(709)
Astriclypeidae	T (uOli)	- R	(709)
Clypeasteridae	T (uEoc)	- R	
Dendrasteridae	T (uMio)	- R	(377)
Echinarachniidae	T (uEoc)	- R	(709)
Eoscutellidae	T (uEoc)		(709,733)
Fibulariidae	T (Than)	- R	(337)
Laganidae	T (mEoc)	- R	(377,709)
Mellitidae	T (lMio)	- R	
Monophorasteridae	T (mEoc)	- T (lMio)	(709)
Neolaganidae	T (mEoc-u)	- T (uOli)	(733)
Protoscutellidae	T (mEoc)	- T (uEoc)	(733)
Rotulidae	T (lMio)	- R	(709)
Scutellidae	T (uEoc)	- T (uMio)	(377,709,733)
Or. CASSIDULOIDA			
Archiaciidae	K (Vala)	- K (Ceno-u)	(377)
Cassidulidae	K (Albi)	- R	(377)
Clypeidae	J (Bajo)	- K (Sant)	(377)
Clypeolampadidae	K (Ceno)	- K (Maas-u)	(733)
Conoclypidae	T (mEoc-l)	- T (mMio)	
Echinolampadidae	K (Albi-u)	- R	
Faujasiiidae	K (Albi-u)	- T (uEoc)	(377,733)
Galeropygidae	J (Toar-u)	- J (Kimm)	(377,733)
Nucleolitidae	J (Bajo-l)	- R	(729)
Pliolampadidae	K (Camp)	- R	(377)

Or. DISASTEROIDA

Collyritidae	J (Bajo-l)	-	K (Vala)	(337,733)
Disasteridae	J (Bath)	-	K (Albi)	(377)

Or. HOLASTEROIDA

Holasteridae	K (Berr-u)	-	R	(337)
Stenonasteridae	K (Turo-u)	-	K (Camp)	(733)
Urechinidae	T (uEoc)	-	R	

Or. SPATANGOIDA

Asterostomatidae	T (Than)	-	R	
Brissidae	K (Ceno)	-	R	
Hemiasteridae	K (Barr-l)	-	R	(377)
Loveniidae	T (mEoc)	-	R	(747)
Micrasteridae	K (Ceno)	-	T (uEoc)	(376,377,733)
Palaeostomatidae	K (Ceno)	-	R	
Pericosmidae	T (lEoc)	-	R	(301)
Schizasteridae	K (Ceno)	-	R	(377)
Somaliasteridae	K (Camp)	-	T (Than)	(733)
Spatangidae	T (mEoc-l)?	-	R	(377)
Toxasteridae	K (Berr-u)	-	R	(337)
<i>Plesiechinus</i>	J (Sine)			(375,733)

Or. NEOLAMPADOIDA

Neolampadidae	T (uEoc)	-	R	
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Or. INCERTAE SEDIS

Eodiadematidae	J (Hett-u)	-	J (Toar)	(301,373,729)
Heterocidaridae	J (Plie)	-	J (Oxfo)	(733)

Cl. OPHIOCISTIOIDEA

[Classification and stratigraphic ranges are based on the *Treatise*, Pt. U, and Harland et al. (1967).]

Eucladiidae	S (Ludl-l)			
Rhenosquamidae	D (Eife)			
Rotasacciidae	D (Give)			(307)
Sollasinidae	S (Wenl)	-	D (l)	(347)
Volchoviidae	O (Aren-l)	-	O (Ashg-u)	

Cl. HOLOTHUROIDEA

[Classification and stratigraphic ranges are based on the *Treatise*, Pt. U, Frizzell and Exline (1955), and Deflandre-Rigaud (1962). Names in quotes indicate sclerite taxa (for discussion, see Smith and Patterson, 1989). Approximately 25 families have been erected for extant holothurians.]

Or. DENDROCHIROTIDA

"Calclamnidae"	O (Cara-m)?	-	R	(257)
Heterothyonidae	Tr(Ladi-l)	-	R	(732)
"Priscopeditidae"	C (Tour)	-	R	(291)
Psolidae	Tr(Ladi-l)	-	R	(732)
"Schlumbergitidae"	Tr(Nori-u)	-	J (Oxfo)	(188,883)

Or. ASPIDOCHIROTIDA

Holothuriidae	J (Kimm-u)	-	R	(732)
"Stichopitidae"	C (Vise-u)	-	R	(257,301)

Or. ELASIPODIDA (extant)			
"Paleochiridotidae"	C (Tour-l)	P (Guad)	(257)
"Protocaudinidae"	D (Give)?	- J (Oxfo)	(257,301)
Or. APODIDA			
"Achistridae"	C (Tour)	- K (Barr)	(291,301)
Chiridotidae	K	- R	
Myriotrochidae	D (Give)	- R	(301)
Synaptidae	J (Oxfo)	- R	(301)
Or. MOLPADIIDA			
Caudinidae	J (Bath)	- R	(403)
Molpadiidae	J (u)	- R	
Or. ARTHROCHIROTIDA			
"Etheridgellidae"	C (Step-u)	- K (Barr)	(257,301)
Palaeocucumariidae	D (Emsi-l)		(732)
Or. INCERTAE SEDIS			
"Calclyridae"	C (u)	P (Tatr-l)	(257,301)

#### Asterozoa

[Classification is from the *Treatise*, Pt. U, Blake (1987, 1989), and Gale (1987); stratigraphic ranges are from the *Treatise* and Harland et al. (1967), with emendations as indicated. 23 extant families without known fossil representatives are not listed.]

#### Cl. SOMASTEROIDEA

##### Or. GONIACTINIDA

Archegonasteridae	O (Aren-u)		
Archophiactrinidae	O (Ashg-m)	- D (Fras)?	
Chinianasteridae	O (Aren-l)		(730)
Villebrunasteriidae	O (Trem-u)	- O (Aren-l)	(730)

#### Cl. ASTEROIDEA

##### Or. PLATYASTERIDA

Palasteriscidae	O (Aren)	- D (Emsi-l)	
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##### Or. PUSTULOSIDA

Hudsonasteridae	O (Aren-u)	- S (Ludl-l)	
Mesopalaeasteridae	O (Cara-u)	- D (Fras)	
Monasteridae	C (u)	- P (Leon)	
Neopalaeasteridae	C (Vise-l)		
Palaeasteridae	S (Wenl-l)		
Petrasteridae	O (Aren-l)	- S (Ludl)	
Schuchertiidae	O (Cara-l)	- S (Wenl)	
Xenasteridae	D (Emsi-l)		

##### Or. HEMIZONIDA

?Arkonasteridae	D (Give)		(371)
Helianthasteridae	D (Emsi-l)	- C (Serp-l)	
Lepidasteridae	S (Wenl-u)	- D (u)	
Lepyriactinidae	S (Wenl)		
Palasterinidae	S (Ldov)	- D (Emsi-l)	
Taeniactinidae	O (Cara)	- C (Serp-l)	

Or. URACTINIDA			
Cnemidactinidae	O (Llvi)	- O (Ashg-m)	
Compsasteridae	D (Emsi-l)	- C (Serp-l)	
Eoactinidae	S (Ldov)		
Promopalaeasteridae	O (Llde)	- O (Ashg-m)	(752)
Protarthrastridae	C (Tour)		
Urasterellidae	O (Llvi)	- C (Mosc)	(389,407)
Or. TRICHASTEROPSIDA			
Trichasteropseidae	Tr(Anis-u)	- Tr(Ladi-l)	(58,337)
Or. FORCIPULATIDA			
Asteriidae	J (Hett-l)	- R	(61)
Brisingidae	T (Mio-u)	- R	(337)
Heliasteridae	T (Plio)	- R	
Zoroasteridae	J (Call)	- R	(61)
Or. VALVATIDA			
Asterinidae	J (Sine)	- R	
Asteropseidae			
(+ Valvasteridae)	J (Hett-u)	- R	(337)
Chaetasteridae	K (Haut-u)	- R	(58)
Goniasteridae	J (Plie)	- R	
Odontasteridae	J (Bath)	- R	
Ophidiasteridae	K (Ceno)	- R	
Oreasteridae	T (Eo)	- R	(58)
Solasteridae	J (Plie-l)	- R	(337)
Sphaerasteridae	J (Bath)	- R	
Stauranderasteridae	J (Bath)	- T (Dani)	(733)
Tropidasteridae	J (Plie-l)		(337)
Or. NOTOMYOTIDA			
Benthopectinidae	J (Hett-u)	- R	(58,337)
Or. PAXILLOSIDA			
Astropectinidae	J (Bajo-l)	- R	(337)
Ctenodiscidae	K (Camp)	- R	(59)
Luidiidae	T (Mi)?	- R	
Or. SPINULOIDA			
Echinasteridae	T (Than)	- R	(337)
Cl. OPHIUROIDEA			
Or. STENURIDA			
Actinetasteridae	D (Give)		(370)
Bdellacomidae	S (Ludl-l)	- D (Emsi-l)	
Eophiuridae	O (Aren-u)		
Klasmuridae	D (Fras)	- C (Serp)	(306)
Palaeuridae	O (Aren-u)	- D (Emsi-l)	
Phragmactinidae	O (Ashg-m)		
Pradesuridae	O (Aren-l)	- D (Emsi-l)	(730)
Rhopalocomidae	S (Ludl-l)	- D (Fras-u)	
Stenasteridae	O (Cara-l)	- S (Ldov-u)	(348)
Or. OEGOPHIURIDA (possibly extant)			
Encrinasteridae	O (Cara)	- C (Step-l)	(304)
Furcasteridae	O (Ashg)	- C (Tour)	
Lapworthuridae	O (Aren-u)	- D (Emsi-l)	

Protasteridae	O (Llde)	-	C (Tour)	
Or. PHRYNOPHIURIDA				
Eospondylidae	D (Prag-l)	-	D (Emsi-l)	
Gorgonocephalidae	T (Ol)	-	R	
Onychasteridae	D (Fame)	-	C (Vise-l)	(308)
Or. OPHIURIDA				
Amphiuridae	K (Haut-u)	-	R	
Ophiacanthidae	J (Plie)	-	R	
Ophiocomidae	K (Ceno)	-	R	
Ophiodermatidae	J (Hett)	-	R	
Ophiuridae	C (Vise-l)	-	R	
Ophiurinae	S (Ldov)	-	C (Tour)	(407)

#### POGONOPHORA

[Six extant marine families.]

##### Or. THECANEPHRA

Polybrachiidae	T (Ioli)	-	R	
incertae sedis	O (Trem-u)	-	T (Plio)	(741)

#### HEMICHORDATA

##### Cl. GRAPTOLITHINA

[Classification and stratigraphic ranges are based on the *Treatise*, Pt. V (revised), and Fortey and Cooper (1986), with emendations as listed.]

##### Or. DENDROIDEA

Acanthograptidae	Cm(Dres-u)	-	D (Prag)	(135,301,610)
Anisograptidae	Cm(Dres-u)	-	S (Ludl-u)	(610)
Dendrograptidae	Cm(uMid)	-	C (Serp-l)	(301,609)
Ptilograptidae	O (Aren-u)	-	S (Prid)	(135,301,432)

##### Or. TUBOIDEA

Idiotubidae	O (Trem-l)	-	S (Ludl)	(40,479)
Tubidendridae	O (Trem)	-	S (Wenl)	

##### Or. CAMEROIDEA

Bithecocamaridae	O (Trem)			
Cysticamaridae	O (Trem)	-	O (Aren)	(301)

##### Or. STOLONOIDEA

Stolonodendridae	O (Trem-u)			(40,135,609)
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##### Or. CRUSTOIDEA

Hormograptidae	O (Llde-u)	-	O (Cara)	(135)
Wimanicrustidae	O (Llvi)	-	S (Ludl-l)	(477,479)
<i>Xenocyathus</i>	O (Cara-m)	-	S (Wenl)	(477)

##### Or. DITHECOIDEA

Bulmanidendridae	Cm(uMid)			(521)
?Chaunograptidae	Cm(mMid-u)	-	D (Loch)	(301,532,707)
Dithecodendridae	Cm(uMid)	-	Cm(u)	(532,707)
Siberiograptidae	Cm(u)	-	S (Ldov)	(532)

##### Or. ARCHAEODENDRIDA

Archaeodendridae	Cm(uMid)			(521,609)
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Or. GRAPTOLOIDEA

Abrograptidae	O (Aren-u) - O (Cara-l)	
Anisograptidae	O (Trem-l) - O (Aren-l)	(242)
Climacograptidae	O (Aren-u) - O (Ashg-m)	(485)
Dichograptidae	O (Trem-u) - O (Llde-u)	(225,242)
Dicranograptidae	O (Llde-u) - O (Ashg-u)	(135,485)
Diplograptidae	O (Aren-u) - S (Ldov-m)	(489)
Glossograptidae	O (Aren-u) - O (Cara-u)	(242)
Glyptograptidae	O (Llde-l) - S (Ldov-u)	(242)
Isograptidae	O (Aren-u) - O (Llvi-u)	(242)
Monograptidae	O (Llvi-l) - D (Emsi-l)	(485)
Orthograptidae	O (Aren-u) - O (Ashg-m)	(485)
Phyllograptidae	O (Aren-l) - O (Aren-u)	(242)
Pseudoclimacograptidae	O (Aren-u) - S (Ldov-m)	(242)
Pseudotriconograptidae	O (Aren-u) - O (Llde-l)	(242,244)
Sigmagraptidae	O (Trem-u) - O (Llvi-l)	(242)
Sinograptidae	O (Aren-u) - O (Llvi-l)	(489)

Or. INCERTAE SEDIS

Acanthastida	O (Trem)	
Graptoblasti	O (Trem) - O (Llde)	

Cl. PTEROBRANCHIA

[One extant family without fossil representatives is not listed.]

Or. RHADDOPLEURIDA

Rhabdopleuridae	O (Aren) - R	(407,478,606)
Rhabdopleuritidae	O (m)	(478)
Rhabdopleuroididae	O (Llvi) - O (Ashg)	(301,478)
? <i>Graptovermis</i>	O (Trem-u) - O (Llvi-l)	(40)
<i>Rhabdotubus</i>	Cm(mMid-u) - Cm(uMid-u)	(40,149)

Or. CEPHALODISCIDA

Cephalodiscidae	O (Llde) - R	
Eocephalodiscidae	O (Trem-u)	(606)

Cl. ENTEROPNEUSTA

[Four extant marine families.]

<i>Megaderaion</i>	J (Sine-l)	(565)
? " <i>Ottoia</i> " <i>tenuis</i>	Cm(mMid-u)	(149)

CONODONTA

[Assemblage classification follows Sweet (1988) with sources of stratigraphic ranges as listed. Conodonts may belong within the Chordata.]

?Or. PARACONODONTIDA (may be unrelated to true conodonts)

Furnishinidae	Cm(mMid-u) - O (Trem)	(489)
Westergaardodinidae	Cm(mMid-u) - O (Llde)	(32,33,422,489)

Or. PROCONODONTIDA

Cordylododontidae	Cm(Trep-l) - O (Trem-u)	(5,773)
Fryxellodontidae	Cm(Trep) - O (Aren-l)	(5)
Proconodontidae	Cm(Dres) - O (Trem-l)	(773)
Pygodontidae	O (Trem-u) - O (Ashg-u)	(5)

Or. BELODIELLIDA			
Ansellidae	O (Llvi-l)	- O (Ashg-m)?	(773)
Belodellidae	O (Aren-l)	- D (Fras-m)	(5,773)
Dapsilodontidae	O (Llvi-u)	- S (Ludl-u)	(5,772)
Or. PROTOPANDERODONTIDA			
Acanthodontidae	O (Trem-l)	- O (Cara-u)	(5)
Clavohamulidae	Cm(Trep-u)	- O (Aren-u)	(5,482)
Drepanoistodontidae	O (Trem-l)	- O (Ashg-u)	(773)
Protopanderodontidae	Cm(mMid-u)?	- D (Prag)?	(5,772)
Or. PANDERODONTIDA			
Panderodontidae	O (Aren-u)	- D (Give-u)	(5)
Or. PRIONIODONTIDA			
Balognathidae	O (Aren-l)	- O (Ashg-m)	(5,773)
Cyrtoniodontidae	O (Llvi-l)	- O (Ashg-m)	(5,772,773)
Distomodontidae	S (Ldov-l)	- S (Prid)	(5,773)
Icriodellidae	O (Cara-l)	- D (Give-u)	(5,773)
Icriodontidae	S (Ludl-u)?	- D (Fame-u)	(773)
Multioistodontidae	O (Aren-u)	- O (Cara-m)	(5,773)
Oistodontidae	O (Trem-l)	- O (Llvi-l)	(5,773)
Palmatolepidae	D (Give-u)	- D (Fame-u)	(5,773)
Periodontidae	O (Aren-l)	- O (Cara-u)	(772,773)
Plectodinidae	O (Aren-u)?	- O (Ashg-m)	(5,773)
Polyplacognathidae	O (Aren-u)	- O (Cara-u)	(772,773)
Prioniodontidae	O (Aren-l)	- O (Llvi-l)	(773)
Rhipidognathidae	O (Aren-l)	- O (Ashg-m)	(5,773)
Or. PRIONIODINIDA			
Bactrognathidae	C (Tour-l)	- C (Vise-l)	(489,773)
Chirognathidae	O (Aren-u)	- O (Cara-u)	(5)
Ellisoniidae	C (Bash-u)	- Tr(Nori-u)?	(5,773)
Gondolellidae	C (Bash-u)	- Tr(Nori-u)	(5,773)
Prioniodinidae	O (Cara-m)	- C (Step-u)	(5,773)
Or. OZARKODINIDA			
Anchignathodontidae	C (Tour-l)	- Tr(Indu-u)	(773)
Cavusgnathidae	D (Fame-u)	- P (Sakm-u)	(773)
Elictognathidae	D (Fame-m)	- C (Vise-l)	(489,773)
Gnathodontidae	D (Fame-u)	- C (Serp-l)	(5,773)
Idiognathodontidae	C (Serp-u)	- P (Sakm-u)	(5,489,773)
Kockelellidae	S (Ldov-u)	- S (Ludl-u)	(773)
Mestognathidae	S (Prid)	- C (Serp-l)	(773)
Polygnathidae	D (Prag-u)	- C (Vise-l)	(773)
Pterospathodontidae	S (Ldov-u)	- S (Wenl-l)	(5,773)
Spathognathodontidae	O (Cara-l)?	- C (Step-l)	(773)
Sweetognathidae	C (Mosc-l)	- Tr(Indu-l)	(773)
Or. INCERTAE SEDIS			
Coleodontidae	O (Llvi-l)	- O (Cara-m)	(5,773)

#### CHORDATA

Tunicata (= Urochordata)

[17 extant families without fossil representatives, including all in the Thaliacea and Appendicularia, are not listed.]

Cl. ASCIDIACEA

Didemnidae	T (Eoc)	- R	(487)
Polycitoridae	T (mEoc-l)	- R	(487)

Cephalochordata

Cl. ACRANIA

[Two extant marine families.]

? <i>Palaeobranchiostoma</i>	P (l)		(523)
? <i>Pikaia</i>	Cm(mMid-u)		(146,149)

"Agnatha"

[Classification is based on Nelson (1976) with stratigraphic ranges from *Osnovy Paleontologii*, Harland et al. (1967), and other sources. Two extant marine families without known fossil representatives are not listed; exclusively freshwater fossil families also are not listed.]

Cl. PTERASPIDOMORPHI

Or. PTERASPIDOMORPHES (= Heterostraci)

Amphiaspidae	D (Prag)	- D (Eife)	(299)
?Arandaspididae	O (Aren)	- O (Llvi)	(637)
Astraspidae	O (Cara-l)	- O (Ashg-m)	
Cardipeltidae	D (Prag-l)		
Corvaspididae	S (Wenl-l)	- D (Loch-u)	(780)
Cyathaspidae	S (Ldov)	- D (Prag-l)	
Drepanaspidae	S (Ludl-l)	- D (Fras-u)	
Eriptychiidae	O (Llvi)	- O (Cara-u)	(534,683)
Obliaspididae	D (Prag)		
Pteraspidae	S (Prid)	- D (Give)	

Or. THELODONTIFORMES (= Coelolepida)

Apalolepididae	D (Loch)		(117,802)
Katoporidae	S (Ludl-l)	- D (l)	
Loganiidae	S (Wenl-l)	- D (Eife)	(802)
Turiniidae	D (Loch-l)	- D (Fras-l)	(447,802,803)

Or. GALEOASPIDA

Dayongaspidae	S (Ldov-u)		(117)
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Or. INCERTAE SEDIS

<i>Palaeospondylus</i>	D (Give)		(497)
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Cl. CEPHALASPIDOMORPHI

Or. CEPHALASPIDIFORMES (= Osteostraci) (mostly freshwater)

Kiaeraspididae	D (Prag-u)		(341)
Tremataspidae	S (Wenl-u)	- D (Loch-l)	(341)

Or. PETROMYZONIFORMES (extant family inhabits freshwater)

Mayomyzontidae	C (Serp-l)	- C (Mosc-u)	(20)
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Or. MYXINIFORMES (1 extant family)

<i>Myxinikela</i>	C (Mosc-u)		(19)
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Cl. PLACODERMI

[Classification and stratigraphic ranges are from Denison (1978). Only families



with marine representatives are listed.]

Or. STENSIOELLIDA			
Stensioellidae	D (Emsi-l)		
Or. PSEUDOPETALICHTHIDA			
Paraplesiobatidae	D (Emsi-l)		
Or. RHENANIDA			
Asterosteidae	D (Emsi-l)	-	D (Fras-u)
Or. PTYCTODONTIDA			
Ptyctodontidae	D (Prag)	-	C (Tour-l)
Or. ACANTHOTHORACI			
Palaeacanthaspidae	D (Loch-l)	-	D (Prag-l)
Or. PETALICHTHYIDA			
Macropetalichthyidae	D (Prag)	-	D (Fras-u)
Or. ARTHRODIRA			
Actinolepidae	D (Emsi-l)		
Brachydeiridae	D (Fras-m)	-	D (Fras-u)
Buchanosteidae	D (Emsi)		
Bungartiidae	D (Fame-u)		
Cocosteidae	D (Eife)	-	D (Fame)
Dinichthyidae	D (Eife-u)	-	D (Fame-u)
Gemuendenaspidae	D (Emsi-l)		
Heterosteidae	D (Give)		
Holonematidae	D (Prag-u)	-	D (Fame-u)
Homosteidae	D (Prag-l)	-	D (Give)
Leiosteidae	D (Fras-u)		
Leptosteidae	D (Fras-u)		
Mylostomatidae	D (Fras-l)	-	D (Fame-u)
Pholidosteidae	D (Fras-u)		
Rachiosteidae	D (Give-u)	-	D (Fras-l)
Selenosteidae	D (Fras-u)	-	D (Fame-u)
Titanichthyidae	D (Fame-l)	-	D (Fame-u)
Trematosteidae	D (Fras-u)		
Williamsaspidae	D (Emsi)		
Or. ANTIARCHA			
Bothriolepidae	D (Fras-u)		

#### CI. CHONDRICHTHYES

[Classification is based on Zangerl (1981) and Cappetta (1987a), with sources of stratigraphic ranges as listed. Approximately two extant marine families without fossil representatives and four fossil freshwater families are not listed.]

Or. INCERTAE SEDIS			
<i>Elegestolepis</i>	S (u)		(117)
Or. DESMIODONTIDA			
<i>Desmiodus</i>	C (Vise-u)		(882)
<i>Heteropetalus</i>	C (Serp-l)		(882)
Or. CLADOSELACHIDA			
Cladoselachidae	D (Eife)	-	D (Fame-u) (301,882)

Or. CORONODONTIDA			
Coronodontidae	D (Fras-l)	- D (Fame-u)	(301,435,882)
Or. SYMMORIIDA			
Falcatae	C (Tour-l)	- C (Mosc-u)	(882)
Stethacanthidae	D (Fame-m)	- C (Mosc-u)	(435,882)
Symmoriidae	D (Fame-u)	- C (Mosc-u)	(301,435,882)
Or. EUGENEODONTIDA			
Agassizodontidae	C (Serp-l)	- P (Guad-u)	(733,882)
Caseodontidae	C (Mosc-u)	- P (Guad-u)	(882)
Edestidae	C (Serp-l)	- Tr(Indu)	(733,882)
Eugenodontidae	C (Mosc-u)	- C (Step-l)	(882)
<i>Campodus</i>	C (Vise-u)	- C (Mosc)	(117,882)
<i>Chiastodus</i>	C (Mosc)		(117,882)
Or. ORODONTIDA			
Orodontidae	D (Fame)	- C (Mosc-u)	(882)
Or. SQUATINACTIDA			
<i>Squatina</i>	C (Serp-l)		(117,882)
Or. "CTENACANTHIDA"			
Acrodontidae	Tr(Indu-u)	- K (Maas)	(115)
Ctenacanthidae	D (Give)	- P (Guad)	(301,435,882)
Hybodontidae	Tr(Anis)	- K (Maas)	(115,792,882)
Phoebodontidae	D (Eife-u)	- C (Mosc-u)	(435,882)
Polyacrodontidae	Tr(Indu-u)	- K (Maas)	(115)
Pseudodalaatiidae	Tr(Nori-u)		(115,598,733)
Ptychodontidae	K (Barr)	- K (Camp)	(115,301)
Steinbachodontidae	Tr(Carn-l)		(115)
Tamiobatidae	D (m)	- C (u)?	(882)
?Tristychiidae	C (Vise)	- C (Serp)	(301,882)
Or. HEXANCHIFORMES			
Chlamydoselachidae	K (Camp)	- R	(115,116)
Hexanchidae	J (Sine)	- R	(115,301)
Heptranchidae	T (IEoc)	- R	(115,116)
Orthacodontidae	J (Sine)	- T (Dani)	(115,117)
Or. SQUALIFORMES			
Echinorhinidae	K (Camp)	- R	(115,116)
Squalidae	J (Tith-l)	- R	(115)
Or. PRISTIOPHORIFORMES			
Pristiophoridae	K (Sant-u)	- R	(115,792)
Or. SQUATINIFORMES			
Squatinae	J (Oxfo-u)	- R	(115,680)
Or. HETERODONTIFORMES			
Heterodontidae	J (Aale)	- R	(115)
Or. ORECTOLOBIFORMES			
Brachaeluridae	J (Aale)	- R	(115)
Ginglymostomidae	K (Albi)	- R	(115,116,792)
Hemiscylliidae	K (Ceno)	- R	(115,116)
Orectobidae	J (Call)	- T (IEoc)	(115)
Parascylliidae	K (Ceno)	- R	(115,116)
Rhincodontidae	T (IEoc)	- R	(115)

Or. LAMNIFORMES			
Alopiidae	K (Ceno)	- R	(115,116)
Anacoracidae	K (Albi)	- K (Maas)	(115,116)
Cetorhinidae	T (Eo)	- R	(115)
Cretoxyrhinidae	K (Apti-u)	- T (IEoc)	(115,116)
Lamnidae	T (Dani)	- R	(831)
Mitsukurinidae	K (Apti-u)	- R	(115,792)
Odontaspidae	K (Apti)	- R	(115,116)
Otodontidae	T (Than)	- T (Plio)	(115,116)
Or. CARCHARHINIFORMES			
Carcharhinidae	T (IEoc)	- R	(115,116)
Hemigaleidae	T (mEoc)	- R	(115,116)
Scyliorhinidae	J (Tith-l)	- R	(115)
Triakidae	K (Turo-l)	- R	(115,792)
Sphyrnidae	T (Mio)	- R	(115)
Or. RAJIFORMES			
Cyclobatidae	K (Ceno-u)		(115,301)
Platyrrhinidae	T (IEoc)	- R	(115,116)
Pristidae	K (Ceno-l)	- R	(115,116)
Rajidae	K (Ceno-u)	- R	(115,301)
Rhinobatidae	J (Toar-u)	- R	(115,650,680)
Rhynchobatidae	T (IEoc)	- R	(115,116)
Sclerorhynchidae	K (Apti)	- K (Maas)	(115,792)
Or. TORPEDINOIDEA			
Narcinidae	T (IEoc)	- R	(115,116)
Torpedinidae	T (Than)	- R	(115,650)
Or. MYLIOBATIFORMES			
Dasyatidae	K (Ceno-l)	- R	(115)
Gymnuridae	T (Than)	- R	(115,116)
Mobulidae	T (Than)	- R	(115,116)
Myliobatidae	K (Camp)	- R	(115,116)
Rhinopteridae	T (Than)	- R	(115)
Rhombodontidae	K (Camp-u)	- K (Maas)	(115,116)
Urolophidae	T (IEoc)	- R	(115,116)
Or. EUSELACHII INCERTAE SEDIS			
Palaeospinacidae	Tr(l)	- T (Than)	(115)
Protospinacidae	J (Tith-l)		(115,792)
Or. CHONDRENCHELYIFORMES			
Chondrenchelyidae	C (Vise-l)	- C (Serp-l)	(301,440,882)
Or. COPODONTIFORMES			
Copodontidae	D (Fras-l)	- C (Mosc)	(301)
Or. PSAMMODONTIFORMES			
Psammodontidae	C (Tour-l)	- C (Mosc-u)	(117,301)
Or. HOLOCEPHALI INCERTAE SEDIS			
Acanthorhinidae	J (Toar)		(117)
Chimaeropsidae	J (Tith-l)		(301,680)
Deltoptychiidae	C (Vise)	- C (Serp-l)	(882)
Menaspidae	P (Guad-l)		(301,733,882)
Myriacanthidae	Tr(Nori-u)	- J (Tith-l)	(301,733)
?Polysentoridae	C (Mosc-u)		(882)

Squalorajidae	J (Sine-l)		(301,565,733)
Or. CHIMAERIFORMES			
Callorhynchidae	K (u)	- R	(650)
Chimaeridae	C (Mosc-u)	- R	(882)
Echinochimaeridae	C (Serp-l)?		(117,570)
Rhinochimaeridae	J (u)	- R	(650)
<i>Delphyodontos</i>	C (Serp-l)?		(117,570)
Or. INIOPTERYGIA			
Iniopterygidae	C (Mosc-u)		(882)
Sibyrrhynchidae	C (Mosc-u)		(882)
incertae sedis	C (Serp-l)		(882)
Or. PETALODONTIDA			
Belantseidae	C (Tour-l)	- P (Guad-l)	(301)
Janassidae	C (Vise)?	- P (Tatr-l)	(733)
Petalodontidae	C (Tour-l)	- P (Tatr-l)	(301,733,882)
Pristodontidae	C (Vise-u)	- P (Tatr-l)	(733,883)

#### Cl. ACANTHODII

[Classification and stratigraphic ranges are from Denison (1979). Nonmarine families are not listed.]

#### Or. CLIMATIFORMES

Climatiidae	S (Ldov-u)	- D (Eife-l)	
Gyracanthidae	D (Loch-l)	- C (Mosc-l)	(447)

#### Or. ISCHNACANTHIFORMES

Ischnacanthidae	S (Ludl)	- C (Vise-u)	
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#### Or. ACANTHODIFORMES

Acanthodidae	D (Emsi-u)	- C (l)	
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#### Cl. OSTEICHTHYES

[Classification and stratigraphic ranges are based on Carroll (1987), Patterson (1992), and other sources, as listed. At least 120 families that have marine species are not represented by fossils and thus not listed; exclusively nonmarine families also are not listed.]

#### Or. DIPTERIFORMES (= Dipnoi) (only a few marine families)

Dipnorhynchidae	D (Emsi-l)	- D (Fame)	(189,263,301)
Dipteridae	D (Eife)	- D (Fame)	(301)

#### Or. COELACANTHIFORMES (= Crossopterygii)

Coelacanthidae	C (Vise-u)	- Tr(Ladi)	(301,795)
Diplocercidae	D (Fras-m)	- D (Fame)	(301,795)
Euporosteidae	D (Give)	- D (Fras)	(301,795)
Eusthenopteridae	D (Give-u)	- D (Fame-u)	(301,795,847)
Hadronektoridae	C (Serp-l)		(441)
Holoptychidae	D (Give-u)	- D (Fame-u)	(301,795,847)
Laugiidae	Tr(Indu-l)		(568,733)
Osteolepidae	D (Eife-u)	- D (Fame-u)	(301,795,847)
Porolepidae	D (Prag-u)	- D (Give)	(301,795,847)

#### Or. PALAEOONISCIFORMES (only a few marine families)

Centrolepidae	J (Sine)		(301,680,733)
Palaeoniscidae	D (Eife)	- J (Tith-l)?	(532)

Stegotrachelidae	D (Give)	- C (Tour)	(301)
Or. TARRASIIFORMES			
Tarrasiidae	C (Vise)	- C (Serp-l)	(301)
Or. PTYCHOLEPIFORMES			
Ptycholepidae	Tr(Ladi)	- J (Toar)	(680,733)
Or. PHOLIDOPLEURIFORMES			
Pholidopleuridae	Tr(Indu)	- Tr(Carn)	(262,301)
Or. PERLEIDIFORMES (only a few marine species)			
Perleididae	Tr(Indu)	- Tr(Nori-u)	(262,301)
Or. PELTOPLEURIFORMES			
Peltopleuridae	Tr(Ladi)	- J (Sine-l)	(301,565)
Or. ACIPENSERIFORMES (only a few marine species)			
Acipenseridae	K (Camp)	- R	(301)
Or. SEMIONOTIFORMES			
Hadrodontidae	K (Sant)		(796)
Semionotidae	P (Tatr-l)	- K (Maas)	(301,733)
Or. LEPISOSTEIFORMES			
Lepisosteidae	K (Apti)	- R	
Or. PYCNODONTIFORMES			
Brembodontidae	Tr(Nori)		
Pycnodontidae	Tr(Nori)	- T (mEoc-u)	(733)
Or. AMIIFORMES (= Protospondyli)			
Caturidae	Tr(Ladi)	- K (Ceno)?	(301)
Parasemionotidae	Tr(Indu)	- Tr(Carn)	(301,733)
Or. MACROSEMIIFORMES			
Macrosemiidae	Tr(Carn)	- K (Apti)	(733)
Or. PACHYCORMIFORMES			
Allothrissopidae	J (Kimm-u)	- J (Tith-l)	(301,548,733)
Aspidorhynchidae	J (Bath)	- T (Than)	(301,733)
Ichthyodectidae	J (Kimm-u)	- K (Camp)	(548,733)
Ichthyokentemidae	Tr(Carn)	- J (Tith-u)	(301,733)
Leptolepididae	J (Sine-l)	- K (Apti)	
Pachycormidae	J (Toar-l)	- K (Camp)	(733)
Pholidophoridae	Tr(Carn)	- K (Apti)	(733)
Pleuropholidae	J (Kimm-u)	- K (Haut-u)	
Sauroidontidae	K (Ceno)	- K (Maas)	(584,733)
Or. OSTEOGLOSSIFORMES			
"Osteoglossidae"	J (Bath)	- T (lEoc)	(519)
Or. ELOPIFORMES			
?Anaethaliontidae	J (Kimm-u)	- K (Vala-l)	(680)
Elopidae	K (Ceno)	- R	
?Protostomiatidae	K (Ceno-l)	- K (Sant)	(301)
Or. MEGALIFORMES			
Megalopidae	K (Albi-u)	- R	
Or. ANGUILLIFORMES			
Albulidae	K (Ceno)	- R	

Anguillavidae	K (Ceno-u)	-	K (Sant)	(733)
Anguillidae	T (mEoc-l)	-	R	
Anguilloididae	T (mEoc-l)			
Chlopsidae				
(= Xenocongridae)	T (mEoc-l)	-	R	
Congridae	K (Camp)	-	R	
"Encheliidae"	K (Ceno-u)			(733)
Halosauridae	K (Ceno)	-	R	
Heterenchelyidae	T (IEoc)	-	R	
Milananguillidae	T (mEoc-l)			
Muraenesocidae	T (IEoc)	-	R	(519,767)
Muraenidae	T (IEoc)	-	R	(767)
Myrocongridae	T (IOli)	-	R	
Nemichthyidae	T (IMio-l)	-	R	
Nettastomatidae	T (IEoc)	-	R	
Notacanthidae	T (mEoc-l)	-	R	(519)
Ophichthidae	T (IEoc)	-	R	
Paranguillidae	T (mEoc-l)			
Parechelidae	T (IEoc)	-	R	
Patavichthyidae	T (mEoc-l)	-	T (IOli)	
Phyllodontidae	K (Albi)	-	T (uEoc)	
Proteomyridae	T (mEoc-l)			
Pterothrissidae	K (Ceno-u)	-	R	
Urenchelyidae	K (Ceno-u)	-	K (Sant)	(733)
<i>Brannerion</i>	K (Apti-u)			
<b>Or. CROSSAGNATHIFORMES</b>				
Crossognathidae	K (Barr)	-	K (Camp-l)	
Notelopidae	K (Apti-u)			
Pachyrhizodontidae	K (Apti-l)	-	T (mEoc-l)	(733)
Plethodidae				
(+ Tselfatiidae)	K (Albi)	-	K (Sant)	(733)
<b>Or. CLUPEIFORMES</b>				
Chirocentridae	T (mEoc-l)	-	R	
Clupeidae	T (Than)	-	R	
Engraulidae	T (IMio)	-	R	
<b>Or. GONORHYNCHIFORMES</b>				
Chanidae	T (Than)	-	R	
Gonorhynchidae	K (Ceno-u)	-	R	
<i>Aetthalionopsis</i>	K (Berr)			
<b>Or. SILURIFORMES (only a few marine species)</b>				
Ariidae	K (Camp)	-	R	
<b>Or. OSMERIFORMES</b>				
Alepocephalidae	T (uOli)	-	R	
Argentinidae	K (Berr)	-	R	
Bathylagidae	T (uEoc)	-	R	
Galaxiidae	T (Plio)	-	R	
Osmeridae	T (Than)	-	R	
Platyroctidae	T (mMio)	-	R	(71)
<b>Or. SALMONIFORMES</b>				
Salmonidae	T (Dani)?	-	R	

Or. STOMIIFORMES

Gonostomatidae	T (IOli)	-	R
Photichthyidae	T (lEoc)	-	R
Sternoptychidae	T (lEoc)	-	R
Stomiidae	T (mEoc)	-	R

Or. ALEPISAUROIDIFORMES

Alepisauridae	T (mMio)	-	R
?Cheirothricidae	K (Ceno)	-	K (Camp-u) (733)
Cimolichthyidae	K (Ceno)	-	K (Maas) (733)
Dercetidae	K (Apti-l)	-	K (Maas)
Enchodontidae	K (Ceno)	-	T (Dani) (733)
Eurypholidae	K (Ceno)	-	K (Turo)
Evermannellidae	T (Plio)	-	R (519)
Halecidae	K (Ceno)	-	K (Sant) (733)
Ichthyotringidae	K (Albi)	-	K (Maas-l)
Paralepididae	T (mEoc-l)	-	R
Prionolepididae	K (Ceno)	-	K (Sant)
Synodontidae	K (Camp)	-	R

Or. AULOPIIFORMES

Aulopadidae	K (Ceno)	-	R
Chlorophthalmidae	K (Ceno)	-	R
Notosudidae	T (uEoc)	-	R (519)
Scopelarchidae	T (uOli)	-	R (763)

Or. "CTENOTHRISSIFORMES"

Aulolepididae	K (Ceno-u)		(301,733)
Ctenothrissidae	K (Ceno-u)	-	K (Turo) (301,733)
Pateroperidae	K (Ceno)		(301)
Pattersonichthyidae	K (Ceno-u)		

Or. MYCTOPHIFORMES

Myctophidae	K (Camp)	-	R
Neoscopelidae			
(= Sardinioiidae)	K (Ceno-l)	-	R

Or. ACANTHOMORPHA INCERTAE SEDIS

Asineopidae	K (Camp)	-	T (mEoc-l)
Blochiidae	K (Ceno-u)	-	T (uEoc)
Omosomopsidae	K (Ceno)		
Palaeorhynchidae	T (lEoc)	-	T (uOli)
Pharmacichthyidae	K (Ceno-u)		(733)
Sphenocephalidae	K (Camp)		

Or. POLYMIXIIFORMES

Aipichthyidae	K (Ceno-l)		
Polymixiidae	K (Ceno-l)	-	R (301)

Or. OPHIDIIFORMES

Bythitidae	K (Camp)	-	R
Carapidae	T (lEoc)	-	R (519)
Ophidiidae	K (Sn)	-	R (519)

Or. BATRACHOIDIFORMES

Batrachoididae	T (lEoc)	-	R
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Or. LOPHIIFORMES

Antennariidae	T (lEoc)	-	R (519)
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Brachionichthyidae	T (IEoc)	-	R	
Chaunacidae	T (mEoc-1)	-	R	
Lophiidae	T (IEoc)	-	R	
Ogcocephalidae	T (IEoc)	-	R	
Or. GADIFORMES				
Bregmacerotidae	T (IEoc)	-	R	
Euclichthyidae	T (uEoc)	-	R	(519)
Gadidae	T (IOli)	-	R	
Lotidae	T (IOli)	-	R	
Macrouridae	T (Than)	-	R	
Melanonidae	T (Than)	-	R	(301)
Merlucciidae	T (Than)	-	R	
Moridae	T (uEoc)	-	R	
Phycidae	T (IOli)	-	R	(519)
Ranicipitidae	T (Than)	-	R	(519)
Or. ATHERINIFORMES				
Atherinidae	T (IEoc)	-	R	(301,767)
Or. BELONIFORMES				
Belonidae	T (mEoc-1)	-	R	
Exocoetidae	T (IEoc)	-	R	
Forcidae	T (Mi)			
Hemiramphidae	T (IEoc)	-	R	
Scomberesocidae	T (uMio-u)	-	R	
Or. BERYCIFORMES				
Alloberycidae	K (Sant)			
Anomalopidae	T (mMio)	-	R	
Berycidae	K (Camp)	-	R	
Caproberycidae	K (Turo)			
Digoriidae	T (IOli)			
Dinopterygidae	K (Sant)			
Diretmidae	T (IOli)	-	R	
Holocentridae	T (IEoc)	-	R	
Lissoberycidae	K (Ceno)			
Melamphidae	T (IOli)	-	R	
Monocentridae	T (mEoc-1)	-	R	
Myripristidae	T (IEoc)	-	R	
Pycnosteroididae	K (Ceno)			(733)
Stichocentridae	K (Ceno)			
Trachichthyidae	T (IEoc)	-	R	
Or. LAMPRIDIFORMES				
Ateleopodidae	T (mMio)	-	R	(519)
Lampridae	T (uMio)	-	R	(301)
Lophotidae	T (mEoc)	-	R	
Veliferidae	T (Dani)	-	R	
Or. ZEIFORMES				
Caproidae	T (IEoc)	-	R	
Zeidae	T (Than)	-	R	
Zeniontidae	T (Plio)	-	R	
<i>Palaeocyttus</i>	K (Ceno)			
Or. GASTEROSTEIFORMES				
Aulorhynchidae	T (mEoc-1)	-	R	(301)



Aulostomidae	T (mEoc-1)	- R	
Centriscidae	T (mEoc-1)	- R	
Fistulariidae	T (mEoc-1)	- R	
Gasterosteidae	T (uMio)	- R	
Ramphosoidae	T (Than)	- T (mEoc-1)	(733)
Solenostomidae	T (mEoc-1)	- R	(301)
Syngnathidae	T (mEoc-1)	- R	(301)
Urosphenidae	T (Than)	- T (mEoc-1)	
<i>Gasterorhamphosus</i>	K (Camp)?		
Or. DACTYLOPTERIFORMES			
Dactylopteridae	T (uEoc)	- R	(767)
?Pterygocephalidae	T (mEoc-1)		
Or. SCORPAENIFORMES			
Agonidae	T (mEoc-u)	- R	
Cottidae	T (mEoc-1)	- R	
Cyclopteridae	T (IOli)	- R	(519)
Hexagrammidae	T (uMio)	- R	
Hoplichthidae	T (mEoc-1)	- R	
Platycephalidae	T (lEoc)	- R	
Scorpaenidae	T (lEoc)	- R	(301,767)
Synanceiidae	T (lEoc)	- R	(301,767)
Triglidae	T (uEoc)	- R	
Zaniolepididae	Q (Plei)	- R	(519)
Or. PERCIFORMES			
Acanthuridae	T (mEoc-1)	- R	(301)
Acropomatidae	T (Than)	- R	
Ambassidae	T (Than)	- R	
Ammodytidae	T (mEoc-1)	- R	(519)
Anarhichadidae	T (Plio)	- R	
Apogonidae	K (Coni)	- R	(519)
Ariommatidae	T (lMio)	- R	(519)
Bathyclupeidae	K (Camp)	- R	
Blenniidae	T (mEoc-1)	- R	(301)
Bramidae	T (lEoc)	- R	
Caesionidae	T (mEoc-1)	- R	
Callionymidae	T (lEoc)	- R	(301)
Carangidae	T (Than)	- R	
Caristiidae	T (Than)	- R	
Centracanthidae	T (lEoc)	- R	
Centrolophidae	T (lEoc)	- R	
Centropomidae	T (lEoc)	- R	(519,767)
Cepolidae	T (lEoc)	- R	(519)
Chaetodontidae	T (mEoc-1)	- R	
Chiasmodontidae	T (IOli)	- R	
Clinidae	T (Mi)	- R	
Coryphaenidae			
(= Rachycentridae)	T (mEoc-1)	- R	
Cryptacanthodidae	T (Plio)	- R	
Echeneidae	T (IOli)	- R	
Eleotridae	T (IOli)	- R	
Embiotocidae	T (uMio)	- R	
Emmelichthyidae	T (mEoc-1)	- R	(519)
Enoplosidae	T (mEoc-1)	- R	

Ephippidae	T (mEoc-1)	-	R	
Epigonidae	T (lEoc)	-	R	
Euzaphlegidae	T (Than)	-	T (uMio)	
Gempylidae	T (Dani)	-	R	
Gerreidae	T (lEoc)	-	R	
Glaucosomatidae	T (uEoc)	-	R	(519)
Gobiidae	T (lOli)	-	R	
Haemulidae				
(= Pomadasyidae)	T (Than)	-	R	(519)
Kuhliidae	T (lEoc)	-	R	(519)
Kushlukidae	T (Than)			
Kyphosidae	T (lEoc)	-	R	
Labridae	T (mEoc-1)	-	R	
Labrisomidae	T (uMio)	-	R	
Lactariidae	T (lEoc)	-	R	
Leiognathidae	T (mEoc-1)	-	R	(519)
Leptoscopidae	T (uOli)	-	R	
Lutjanidae	T (mEoc-1)	-	R	
Luvaridae	T (Than)	-	R	
Malacanthidae				
(= Branchiostegidae)	T (uMio)	-	R	
Menidae	T (Than)	-	R	
Monodactylidae	T (mEoc-1)	-	R	
Moronidae	T (mEoc-1)	-	R	(519)
Mugilidae	T (uEoc)	-	R	(519)
Mullidae	T (mEoc-1)	-	R	
Nomeidae	T (lOli)	-	R	
Opistognathidae	T (mEoc-1)	-	R	(519)
Oplegnathidae	T (lMio)	-	R	
Ostracoberycidae	T (lEoc)	-	R	
Pempheridae	T (mMio)	-	R	
Pentacerotidae				
(= Histiophoridae)	T (mMio)	-	R	
Percichthyidae	T (Than)	-	R	
Percophidae	T (mEoc-1)	-	R	(519)
Pinguipedidae				
(= Mugiloididae)	T (lOli)	-	R	(519)
Polynemidae	T (lMio-u)	-	R	(763)
Pomacanthidae	T (mEoc-1)	-	R	(519)
Pomacentridae	T (lMio)	-	R	
Pomatomidae	T (mEoc-1)	-	R	
Priacanthidae	T (lEoc)	-	R	(767)
Pseudochromidae				
(= Congrogadidae)	T (mEoc)	-	R	
Scatophagidae	T (mEoc-1)	-	R	(67)
Sciaenidae	T (mEoc-1)	-	R	
Scombridae	T (Dani)	-	R	
Scombropidae	T (lEoc)	-	R	
Serranidae	T (Than)	-	R	
Siganidae	T (Than)	-	R	
Sillaginidae	T (lOli)	-	R	
Sparidae	T (Than)	-	R	
Sphyraenidae	T (lEoc)	-	R	(301)
Stichaeidae	T (Plio)	-	R	(519)

Stromateidae	T (mEoc-1)	- R	
Teraponidae	T (mEoc-1)	- R	
Tetragonuridae	T (Plio)	- R	
Toxotidae	T (mEoc-1)	- R	(519)
Trachinidae	T (lEoc)	- R	(301)
Tripterygiidae	T (uMio)	- R	
Uranoscopidae	T (mEoc-1)	- R	
Zaproridae	T (uMio)	- R	
Zoarcidae	T (Plio)	- R	
Or. PLEURONECTIFORMES			
Amphistiidae	T (mEoc-1)		(67)
Bothidae	T (lEoc)	- R	(134,301)
Citharidae	T (lEoc)	- R	(301,519)
Cynoglossidae	T (lMio-u)	- R	(763)
Paralichthyidae	T (lOli)	- R	
Pleuronectidae	T (uEoc)	- R	
Psettodidae	T (lEoc)	- R	
Scophthalmidae	T (lEoc)	- R	(301)
Soleidae	T (mEoc-1)	- R	
Or. TETRAODONTIFORMES			
Aranaridae	T (mEoc-1)	- R	
Balistidae	T (lOli)	- R	
Diodontidae	T (lEoc)	- R	
Eotrigonodontidae	K (Maas)	- T (mEoc-1)	(301,733)
Molidae	T (uMio)	- R	
Monacanthidae	T (lEoc)	- R	
Ostraciidae	T (Than)	- R	
Tetraodontidae	T (mEoc-1)	- R	
Triacanthidae	T (mEoc-1)	- R	
Triacanthodidae	T (mEoc-1)	- R	
Trigonodontidae	T (mMio)	- T (Plio)	(733)
Triodontidae	T (lEoc)	- R	(301)
<i>Pletocretacicus</i>	K (Ceno)		
Or. INCERTAE SEDIS			
Chongichthyidae	J (Oxfo)		(11,733)

#### Cl. REPTILIA

[Classification is from Romer (1966), with stratigraphic ranges from Romer (1966), Harland et al. (1967), and other sources, as listed. Marine families only.]

#### Or. CHELONIA

Cheloniidae	K (Albi)	- R	
Dermochelyidae	T (lEoc)	- R	
Protostegidae	K (Albi-u)	- T (uOli)	(41,486)
Toxochelyidae	K (Albi)	- T (uEoc)	

#### Or. SQUAMATA

Acrochordidae	T (mMio)	- R	(593)
Aigialosauridae	J (Tith-1)	- K (Albi)?	(41)
Anomalopheididae	T (lEoc)		(537,593)
Dolichosauridae	K (Albi)?	- K (Camp)?	(41)
Elapidae	T (lMio)	- R	(301,650)
Mosasauridae	K (Ceno)	- K (Maas-u)	
Nigeropheididae	T (Dani)	- T (mEoc-1)	(537,593)

Palaeophidae	K (Maas)	-	T (uEoc)	(537,593)
Russellopheidae	T (IEoc)			(537,593)
Simoliophidae	K (Ceno)			
Or. NOTHOSAURIA				
Nothosauridae	Tr(Olen)	-	Tr(Carn)	(41)
Pachypleurosauridae	Tr(Anis)	-	Tr(Ladi)	
Simosauridae	Tr(Anis)	-	Tr(Carn)	(41)
Or. PLESIOSAURIA				
Cryptocleididae	J (Call)	-	K (Maas)	(106)
Cymatosauridae	Tr(Ladi)	-	Tr(Carn)	(41,106)
Elasmosauridae	J (Toar)	-	K (Maas-u)	(106)
Leptocleididae	J (Hett)	-	K (Barr)	
Pistosauridae	Tr(Ladi-l)			(301)
Plesiosauridae	J (Hett)	-	J (Toar)	(106)
Pliosauridae	J (Hett)	-	K (Maas)	(106)
Polycotylidae	K (Apti)	-	K (Maas)	
Or. PLACODONTIA				
Helveticosauridae	Tr(Anis-u)	-	Tr(Ladi-l)	
Henodontidae	Tr(Carn-l)	-	Tr(Nori)	(566)
Placochelyidae	Tr(Anis-l)	-	Tr(Nori-u)	(566)
Placodontidae	Tr(Olen)	-	Tr(Ladi-l)	(566)
Or. ICHTHYOSAURIA				
Ichthyosauridae	J (Hett)	-	J (Tith)	(460)
Leptopterygiidae	Tr(Nori-u)	-	K (Ceno)	
Mixosauridae	Tr(Anis-l)	-	Tr(Ladi-l)	(460)
Omphalosauridae	Tr(Anis)			(460)
Protoichthyosauridae	J (Hett-l)			(460)
Shastasauridae	Tr(Ladi)	-	Tr(Nori)	
Stenopterygiidae	J (Plie)?	-	J (Toar-l)	
<i>Utatusaurus</i>	Tr(Olen)			(117)
Or. CROCODILIA				
Dyrosauridae	K (Maas)	-	T (uEoc)	
Metriorhynchidae	J (Bath)	-	K (Haut-l)	
Pholidosauridae	J (Bath)	-	K (Ceno)	(41)
Teleosauridae	J (Toar)	-	K (Vala)	
Cl. MAMMALIA				

[Marine or principally marine families only. Classification is from Romer (1966) with stratigraphic ranges from Romer (1966), Harland et al. (1967), Lipps and Mitchell (1976), and other sources, as listed.]

Or. CETACEA				
Acrodelphidae	T (lMio)	-	T (Plio)	
Agorophiidae	T (uOli)			(234)
Balaenidae	T (mMio)	-	R	(41)
Balaenopteridae	T (lMio)	-	R	(41)
Basilosauridae	T (mEoc-u)	-	T (lOli)	(41)
Cetotheriidae	T (lOli)	-	T (Plio)	(41)
Delphinidae	T (lMio)	-	R	(41)
Dorudontidae	T (mEoc)	-	T (lOli)	(41)
Eurhinodelphidae	T (lMio)	-	T (uMio)	(117)
Hemisyntrachelidae	T (mMio)	-	T (Plio)	

Kentriodontidae	T (uOli)	-	T (mMio)	(235)
Monodontidae	T (uMio)	-	R	(41)
Patriocetidae	T (uOli)			(41)
Phocoenidae	T (lMio)	-	R	
Physeteridae	T (lMio)	-	R	
Protocetidae	T (mEoc-l)			
Squalodontidae	T (uOli)	-	T (uMio)	(234,235)
Ziphiidae	T (lMio)	-	R	
Or. SIRENIA				
Dugongidae	T (lEoc)	-	R	
Manatidae	T (lMio)	-	R	
Or. DESMOSTYLIA				
Desmostylidae	T (uOli)	-	T (uMio)	
Or. CARNIVORA (Pinnipedia)				
Desmatophocidae	T (lMio-u)	-	T (uMio)	(117,235)
Enaliarctidae	T (lMio-u)			(41)
Odobenidae	T (lMio)	-	R	(41)
Otariidae	T (lMio-u)	-	R	
Phocidae	T (mMio)	-	R	

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