

MILWAUKEE PUBLIC MUSEUM

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# Contributions

in  
BIOLOGY  
and  
GEOLOGY

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Number 51

November 29, 1982

**A Compendium of Fossil Marine Families**

**J. John Sepkoski, Jr.**

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### ABSTRACT

A comprehensive listing of the stratigraphic ranges of all established fossil marine animal families is presented. This listing summarizes previous compilations and provides updated taxonomic classifications and enhanced stratigraphic resolution. Other special features are coverage of both invertebrates and vertebrates, inclusion of problematica, and incorporation of previously unavailable stage-level data for the Vendian and Cambrian Systems.

### INTRODUCTION

This compendium lists approximately 3300 animal families and their known stratigraphic ranges in the marine fossil record. It summarizes and informally updates information available in the *Treatise on Invertebrate Paleontology* (Moore et al. 1953-1981), *The Fossil Record* (Harland et al 1967), and *Vertebrate Paleontology* (Romer 1966), providing a comprehensive listing at a consistent taxonomic level of all animals known through all time within a single large-scale ecosystem, the world ocean. This information was originally compiled for my studies of the evolution of taxonomic diversity through the Phanerozoic (Sepkoski 1978, 1979, 1981a, b). By publishing this compendium, I hope to make these data widely available for other studies of diversity and evolutionary rates as well as provide a concise reference on the classification and ages of marine animals and a starting point for further revision of data from the fossil record.

There are several important features of this compendium that warrant its publication at this time:

1. The classification employed is both comprehensive and consistent. An attempt has been made to compile all currently accepted families of marine protozoans, invertebrates, and vertebrates that have documented fossil records. Thus, this compendium includes information on several taxonomic groups not covered in other summaries, including coeno- and opisthobranch gastropods and coleoid cephalopods. Also, many problematical taxa (e.g. Burgess Shale soft-bodied organisms and Tommotian phosphatic shells) are listed in their most probable phyla.

2. The classification is up-to-date. Revised classifications of fossil classes published since the *Treatise* have been substituted wherever feasible. Groups affected include the Sclerospongia (Stromatoporoidea), Priapulida, Monoplacophora, Rostroconchia, Hyolitha, Polychaeta, Edrioasteroidea, Eocrinoidea, and Placodermi. In addition, numerous recently erected families and orders have been included in this compendium.

3. The stratigraphic information is of the highest resolution presently available. Nearly 85% of the data on first and last occurrences of families are listed in terms of 84 internationally recognizable stratigraphic stages (Table 1); these include 10 stage-level subdivisions of the Cambrian and 4 of the Vendian which have not been available in previous compilations. Most of the remaining data are resolved to one of 30 stratigraphic series. Much of the enhanced stratigraphic resolution of this

compendium is based on monographs and secondary sources published subsequent to the previous summaries (see Bibliography).

The particular qualities of this compendium must, of course, be balanced against the shortcomings characteristic of this and other such compilations. Despite all attempts to be current, some of the data presented here are undoubtedly obsolescent. A number of class and ordinal classifications are in need of major revision, including, most notably, those for the Porifera, Trilobita, Bryozoa, and Osteichthyes. I have attempted to incorporate partial revisions of these and other groups wherever possible but, I am sure, have missed many pertinent publications and have misunderstood taxonomic subtleties in others. Clearly, the classifications presented here should in no way be considered authoritative. The stratigraphic data, too, must be considered an approximation of the truth at best. New discoveries extending the stratigraphic ranges of established families and altering understanding of intra- and inter-continental correlations are being published continuously, keeping data on the fossil record in constant flux. (In one year alone while preparing this compilation, I needed to change my information on nearly 10% of the families as a result of new publications.)

The format used to present the data is rather simple. With few exceptions, the families are arranged in an abbreviated classification with only phyla, classes, and orders listed. The ordering of these higher taxa generally follows that used by Kukalov&Peck (1973). The principal sources of information on the classification and stratigraphic ranges of the families are given, along with miscellaneous notes, under each class. More specific sources of taxonomic and/or stratigraphic information are indicated for individual families by numbered codes in parentheses which refer to numbered entries in the bibliography.

Families are listed in alphabetic (and not "evolutionary") arrangement beneath each taxonomic order. Only families with marine fossil records are listed, and nonmarine families and approximately 1000 extant families without documented fossil occurrences are excluded. (The approximate number of these extant-only families is indicated for most classes.) Occasionally, distinctive genera that probably merit familial status or very early genera of uncertain familial relationships are listed in addition to the established families.

A pair of stratigraphic codes indicating the documented times of first and last appearance in the marine fossil record are given with each family. These codes consist generally of a single letter indicating geologic system followed, when known, either by a four-symbol code for stage or by a one- or two-letter code for series, both enclosed in parentheses. A complete listing of these stratigraphic codes is given in Table 1.

		Stage	Series	System
QUATERNARY		Recent (= Holocene) Pleistocene	R Q (Plei)	
TERTIARY	Pliocene		T (Plio)	
	Miocene	upper (= Messinian) middle (= Tortonian) lower (= Aquitanian)	T (Mi-u) T (Mi-m) T (Mi-l)	T (Mi)
	Oligocene	upper (= Chattian) lower (= Rupelian)	T (Ol-u) T (Ol-l)	T (Ol)
	Eocene	upper (= Bartonian) middle (= Lutetian) lower (= Ypresian)	T (Eo-u) T (Eo-m) T (Eo-l)	T (Eo)
	Paleocene	"Paleocene" (= Thanetian) Danian	T (Pale) T (Dani)	
CRETACEOUS	Upper	Senonian Campanian Santonian Coniacian Turonian Cenomanian	K (Maes) K (Camp) K (Sant) K (Coni) K (Turo) K (Ceno)	K (Seno) K (u)
	Lower	Albian Aptian Barremian Hauterivian Valangian Berriasian	K (Albi) K (Apti) K (Barr) K (Haut) K (Vala) K (Berr)	K (Neoc) K (l)
JURASSIC	Upper	Tithonian (= Portlandian) Kimmeridgian Oxfordian	J (Tith) J (Kimm) J (Oxfo)	J (u)
	Middle	Callovian Bathonian Bajocian (+ Aalenian)	J (Call) J (Bath) J (Bajo)	J (m)
	Lower	Toarcian Pliensbachian Sinemurian Hettangian	J (Toar) J (Plie) J (Sine) J (Hett)	J (l)
TRIASSIC	Upper	Rhaetian Norian Carnian	Tr (Rhae) Tr (Nori) Tr (Carn)	Tr (u)
	Middle	Ladinian Anisian	Tr (Ladi) Tr (Anis)	Tr (m)
	Lower	Olenekian Induan	Tr (Olen) Tr (Indu)	Tr (l)
PERMIAN	Upper	Dzhulfian (= Tartarian, Ochoan) Guadelupian (= Kazanian)	P (Dzhu) P (Guad)	P (u)
	Lower	Leonardian (= Artinskian) Sakmarian (= u. Wolfcampian) Asselian (= l. Wolfcampian)	P (Leon) P (Sakm) P (Asse)	P (l)

				Stage	Series	System
CARBONI-FEROUS	Upper	Pennsylvanian	Stephanian (= Uralian) Moscovian (= Westphalian C & D) Bashkirian (= Westphalian A & B)	C (Step) C (Mosc) C (Bash) C (Namø)	C (Penn)	C (u)
	Low.	Mississippian	Namurian Visean Tournaisian	C (Vise) C (Tour)	C (Miss)	C (l)
DEVONIAN	Upper		Famennian Frasnian	D (Fame) D (Fras)		D (u)
	Middle		Givetian Eifelian	D (Give) D (Eife)		D (m)
	Lower		Emsian Siegenian Gedinnian	D (Emsi) D (Sieg) D (Gedi)		D (l)
SILURIAN	Upper Middle Lower		= Ludlovian + Pridolian = Wenlockian = Llandoveryan	S (u) S (m) S (l)		S
ORDOVICIAN	Upper		Ashgillian	Θ (Ashg)		Θ (u)
	Middle		Caradocian Llandeilian Llanvirnian	Θ (Cara) Θ (Llde) Θ (Llvi)		Θ (m)
	Lower		Arenigian Tremadocian	Θ (Aren) Θ (Trem)		Θ (l)
CAMBRIAN	Upper		U3 (= Trempealeuan) U2 (= Franconian) U1 (= Dresbachian)	€ (Trep) € (Fran) € (Dres)		€ (u)
	Middle		M3 M2 (= Templetonian) M1 (= Ordian, = Elankian)	€ (uMid) € (mMid) € (lMid)		€ (m)
	Lower		L3 (= "Botomian" or Lenian s.s.) L2 (= Atdabanian) L1 (= Tommotian)   L1b (= Kenyadan) L1a (= Sunnagin)	€ Boto € (Atda) € (uTom) € (lTom)		€ (l)
VENDIAN	upper   up. middle   lo. lower		= Nemakit-Daldyn	V (N-Da) V (u) V (m) V (l)		V
RIPHEAN		upper		u Riph		

**Table 1.** Stratigraphic subdivisions and codes used in this compendium. Each code listed in the three right hand columns signifies a specific stage, series, or system as listed in the equivalent, mirror-image column on the left. The stratigraphic subdivisions of the Ordovician through Quaternary Systems are essentially the same as those used by Harland et al. (1967) in *The Fossil Record*; the subdivisions of the Vendian and Cambrian Systems are explained in Sepkoski (1979, Fig. 2 and Appendix 1).



## COMPENDIUM

## PROTOZOA

## Cl. Rhizopodea

[Classification and stratigraphic ranges from the *Treatise*, Pt. C, and *The Fossil Record*. Approximately 13 extant free-living marine families (including all in the Amoebida) without known fossil representatives are not listed.]

## Or. Gromiida

Amphitrematidae	Q (Plei)	— R
Gromiidae	Q (Plei)	— R

## Or. Foraminiferida

Acervulinidae	T (Eo)	— R
Allogromiidae	€ (Fran)	— R
Alveolinidae	K (Albi)	— R
Ammodiscidae	Θ (Aren)	— R
Amphisteginidae	T (Pale)	— R
Annulopatulidae	T (Mi-l)	— R
Anomalinidae	Tr (Rhae)	— R
Archaeodiscidae	C (Tour)	— P (Dzhu)
Asterigerinidae	K (Camp)	— R
Astrorhizidae	Θ (Aren)	— R
Ataxophragmiidae	C (Step)	— R
Barkerinidae	K (Albi)	— K (Turo)
Biseriamminidae	C (Tour)	— P (Dzhu)
Bolivinitidae	J (Plie)	— R
Buliminidae	T (Dani)	— R
Calcarinidae	K (Turo)	— R
Caligellidae	D (Fras)	— C (Tour)
Cassidulinidae	K (Camp)	— R
Caucasinidae	K (Turo)	— R
Ceratobuliminidae	Tr (Carn)	— R
Cibicididae	K (Haut)	— R
Colaniellidae	D (Fras)	— P (Dzhu)
Cymbaloporidae	Tr (Ladi)	— R
Dicyclinidae	J (Sine)	— T (Eo-m)
Discocyclinidae	T (Pale)	— T (Eo-u)
Discorbidae	Tr (Ladi)	— R
Elphidiidae	K (Maes)	— R
Endothyridae	D (Give)	— P (Dzhu)
Eostaffellidae	C (Vise)	— C (Step)
Eouvigerinidae	K (Albi)	— R
Epistomariidae	K (Sant)	— R
Eponididae	T (Pale)	— R
Fischerinidae	S (u)	— R
Fusulinidae	C (Namu)	— P (Guad)

Glabratellidae	T (Eo-u)	— R	
Glandulinidae	J (Hett)	— R	
Globigerinidae	K (Maes)	— R	
Globorotaliidae	T (Pale)	— R	
Globotruncanidae	K (Turo)	— K (Maes)	
Hantkeninidae	T (Pale)	— R	
Heterohelicidae	J (Bajo)	— T (Ol)	
Homotrematidae	K (Sant)	— R	
Hormosinidae	C (Tour)	— R	
Involutinidae	Tr (Ladi)	— K (Turo)	
Islandiellidae	T (Pale)	— R	
Lasiodiscidae	C (Vise)	— P (Dzhu)	
Lepidocyclinidae	T (Eo-m)	— T (Mi-m)	
Lituolidae	C (Tour)	— R	
Loxostomidae	K (Coni)	— Q (Plei)	
Miliolidae	J (Hett)	— R	
Miogypsinidae	T (Ol-l)	— T (Mi-m)	
Moravaminidae	Ø	— C (Mosc)	
Nodosariidae	P (Guad)	— R	
Nodosinellidae	S (l)	— P (Dzhu)	
Nonionidae	J (Bajo)	— R	
Nubeculariidae	C (Namu)	— R	
Nummulitidae	K (Maes)	— R	(361a)
Orbitoididae	K (Camp)	— T (Pale)	
Orbitolinidae	K (Barr)	— T (Eo-u)	
Osangulariidae	K (Barr)	— R	
Ozawainellidae	P (l)	— P (Dzhu)	
Palaeotextulariidae	C (Tour)	— P (Dzhu)	
Parathuraminidae	D (Give)	— C (Tour)	
Pavonitinae	J (Bath)	— R	
Planomalinae	K (Apti)	— T (Dani)	
Planorbulinae	T (Pale)	— R	
Pleurostomellidae	K (Albi)	— R	
Polymorphinidae	Tr (Carn)	— R	
Pseudorbitoididae	K (Ceno)	— K (Maes)	
Ptychocladidae	K (Fras)	— P (Sakm)	
Robertinidae	K (Camp)	— R	
Rotaliidae	K (Coni)	— R	
Rotaliporidae	K (Haut)	— K (Maes)	
Rzehakinidae	K (Berr)	— R	
Saccaminidae	Ø (Aren)	— R	
Schackoinidae	K (Apti)	— K (Maes)	
Schizamminidae	Tr (Rhae)	— R	
Schubertellidae	C (Namu)	— P (Dzhu)	
Schwagerinidae	C (Step)	— P (Guad)	
Semitextulariidae	D (Give)	— D (Fras)	
Siphoninidae	T (Pale)	— R	

Soritidae	Tr (Rhae)	— R
Sphaeroidinidae	K (Camp)	— R
Spirillinidae	C (Vise)	— R
Staffellidae	C (Bash)	— P (Dzhu)
Tetrataxidae	C (Tour)	— Tr (Rhae)
Textulariidae	C (Tour)	— R
Tournayellidae	D (Give)	— P (Dzhu)
Trochamminidae	S (m)	— R
Turrilinidae	J (Bajo)	— R
Uvigerinidae	K (Turo)	— R
Verbeekiniidae	P (Sakm)	— P (Dzhu)

## Cl. Radiolaria

[Classification and stratigraphic ranges from Kling (1978), the *Treatise*, Pt. D, and *The Fossil Record*; 18 extant marine families without known fossil representatives are not listed.]

Or. Tripylea		
Challengeriidae	T (Mi-m)	— R
Or. Spumellaria		
Actinommidae	Tr	— R
Coccodiscidae	K (Maes)	— T (Ol-l)
Collosphaeridae	T (Mi-l)	— R
Entactinidae	€ (m)	— C (Namu) (217)
Litheliidae	C (Bash)	— R
Orosphaeridae	T (Eo)	— R
Phacodiscidae	C (Vise)	— R
Pseudoaulophacidae	K (Coni)	— K (Camp)
Pyloniidae	T (Eo)	— R
Spongodiscidae	D (Give)	— R
Tholoniidae	T (Plio)	— R
Or. Nassellaria		
Acanthodesmiidae	T (Pale)	— R
Amphipyndacidae	K (Apti)	— K (Maes)
Artostrobiidae	K (Camp)	— R
Cannobotrydidae	T (Eo-u)	— R
Carpocaniidae	T (Eo-u)	— R
Plagoniidae	K (Sant)	— R
Pterocorythidae	T (Eo-m)	— R
Rotaformidae	K	
Theoperidae	Tr (Anis)	— R
Or. Incertae sedis		
Albaillellidae	S	— C (Namu)
Palaeosceniidae	D (Fame)	— R

## Cl. Acantharia

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

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

## Cl. Ciliata

[Classification from Tappan and Loeblich (1968) and the *Treatise*, Pt. D; stratigraphic ranges from *The Fossil Record*. More than 27 extant marine families without known fossil representatives are not listed.]

Or. Spirotrichia (including Tintinnina)			
Codonellidae	Θ (Ashg)	— R	(181)
Codonellopsidae	J (Tith)	— R	
Coxliellidae	K (Berr)	— R	
Heterotrichina	T (Dani)	— R	(181)
Hypotrichina	T (Eo)	— R	(181)
Xystonellidae	J (u)	— R	

## Cl. Incertae sedis

Or. Calpionellida			
Calpionellidae	J (Tith)	— K (Vala)	(258)
Colomiellidae	K (Apti)	— K (Albi)	(258)
?Or. Chitinozoa			
Ancyrochitinidae	Θ (Aren)	— D (Fame)	(344)
Conochitinidae	Θ (Aren)	— D (Fame)	(344)
Desmochitinidae	Θ (Aren)	— C (Tour)	(344)
Hoegispharidae	Θ (Aren)	— D (Fras)	(344)
Lagenochitinidae	Θ (Aren)	— D (Fame)	(344)
?incertae sedis	u Riph		(28)
?Or. Reitlingerillida			
Reitlingerellidae	€ (l)	— Θ (Cara)	(208)

## PORIFERA

[Taxa listed below are based principally on the somewhat antiquated but comprehensive classification of DeLaubenfels in the *Treatise*, Pt. E, with numerous additions and emendations.]

## Cl. Demospongia

[Classification and stratigraphic ranges from the *Treatise*, Pt. E., with emendations from *The Fossil Record* and other sources, as listed; approximately 13 extant families without known fossil representatives are not listed.]

Or. Monaxonida			
Acarniidae	K	— R	
Amphilectidae	Q (Plei)	— R	

Choiidae	€ (mMid)	— C (Mosc)	(272)
Cladorhizidae	Q (Plei)	— R	
Clionidae	S	— R	
Corralioidae	€		
Desmacidontidae	Q (Plei)	— R	
Dysideidae	J	— R	
Haliclonidae	Θ (l)	— R	
Hamptoniidae	€ (mMid)		
Hazeliidae	€ (mMid)		
Heliospongiidae	C (u)	— P (Leon)	(94)
Myxillidae	K	— R	(229)
Piraniidae	€ (mMid)	— S	
Sollasellidae	Θ (m)	— R	
Spirastrellidae	Q (Plei)	— R	
Spongiidae	C	— T (Eo)	
Suberitidae	K (l)	— R	
Takakkawiidae	€ (mMid)		
Tedaniidae	Q (Plei)	— R	
Wapkiidae	€ (mMid)		
Or. Choristida (= Astrophorida)			
Ancorinidae	J	— R	
Craniellidae	K (u)	— R	
Geodiidae	C (Vise)	— R	
Halinidae	C (u)	— R	
Ophiraphiditidae	J (u)	— R	
Scolioraphididae	J	— K (u)	
Or. Lithistida			
?Anomoclonellidae	Θ (m)	— S (m)	
Anthaspidellidae	Θ (Aren)	— P (Dzhu)	
Anthracosyconidae	P (Leon)	— P (Guad)	(94)
Astroboliidae	J	— T (Mi)	
Astrocladiidae	P (Sakm)	— T	
Astylospongiidae	Θ (Cara)	— P (l)	(267)
Aulaxiniidae	K (l)	— K (u)	
Chenendoporidae	J (m)	— K (Seno)	(213)
Chiastoclonellidae	S (m)	— P (Guad)	
Chonellidae	J (u)	— T (Mi)	
Cnemidiastriidae	C (l)	— J (u)	
Cylindrophymatidae	J (Bajo)	— J (Kimm)	(132)
Discodermiidae	K (l)	— R	
Dorydermatidae	C (l)	— K (Seno)	
Gignouxiiidae	J (Oxfo)	— R	
Hallirhoidae	J (m)	— T	
Haplistiidae	Θ (m)	— P (Leon)	(273)
Helobrachiidae	K (u)		
Hindiidae	Θ (Llde)	— P (Dzhu)	(95)

Isoraphiniidae	J	— K (Maes)	
Jereicidae	J (u)	— R	
Jereidae	P (Leon)	— K (u)	(94)
Kaliapsidae	K (Turo)	— R	(142)
Leiodorellidae	J (Oxfo)	— R	(213)
Microspongiidae	Θ (Cara)	— P (Dzhu)	
Neopeltidae	K (u)	— R	
Phymaraphiniidae	K (Ceno)	— T	
Pleromidae	J (u)	— R	
Plinthodermatiidae	K (u)		
Plinthosellidae	K (Ceno)	— K (Maes)	
Pseudoverruculinidae	K (u)		
Roanespongiidae	P (Leon)		(273)
?Saccospongiidae	Θ (Cara)	— S (u)	
Scleritodermatidae	K	— R	
Scytaliidae	J	— K (Camp)	(142)
?Vauxiidae	€ (uMid)		(270)
Vetulinidae	J (Oxfo)	— R	(94)

## Cl. Calcarea (= Calcispongia)

[Classification and stratigraphic ranges principally from the *Treatise*, Pt. E, and *The Fossil Record*; 9 extant families without known fossil representatives are not listed.]

## Or. Heteractinida

Astraeospongiidae	Θ (Cara)	— D (Give)	(269)
Wewokellidae	C (Tour)	— P (Leon)	(269)

## Or. Calcaronea (= Lebetida, Syconosa)

Grantiidae	J (u)	— R	
Leuconiidae	C (Vise)	— R	

## Or. Pharetronida

Bactronellidae	J (u)	— T (Eo)	
Discocoeliidae	Tr (m)	— K (Maes)	(133)
Elasmocoeliidae	J (Oxfo)	— K (l)	(142)
Elasmotomatidae	P (Leon)	— K (Ceno)	(101)
Lelapiidae	P (Sakm)	— R	
Pharetrospongiidae	K (l)	— K (Maes)	
Porosphaeridae	K (l)	— R	
Sestrostomellidae	Tr (m)	— R	
Stellispongiidae	P (Sakm)	— K (Ceno)	(96)

## Or. Sphinctozoa (= Thalamida)

Celyphiidae	Θ (Ashg)	— Tr (Carn)	(271)
Cryptocoeliidae	Tr (Anis)	— K (Maes)	(133)
Cystothalamiidae	Θ (Ashg)	— Tr (Carn)	(96,112,271)
Fissispongiidae	C (Mosc)	— P (Leon)	(96)
Guadalupiidae	P (Sakm)	— P (Guad)	(95,133)

Maendrostiidae	C (Mosc)	— C (Step)	(96)
Phragmocoeliidae	Tr (Carn)		
Polytholosiidae	Tr (Anis)	— Tr (Carn)	(112,133)
Sebargasiidae	Θ (Ashg)	— Tr (u)	(271)
Sphaerocoeliidae	J (u)	— K (Ceno)	(133)
Thaumastocoeliidae	C (u)	— Tr (Carn)	(133)
Verticillitidae	P (Asse)	— K (Maes)	(133)

## Cl. Hexactinellida (= Triaxonida, Hyalospongea)

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

## Or. Hexactinosida (= Dictyida)

Aphrocallistidae	K (Coni)	— R	(142)
Botryosellidae	J (u)	— K (Sant)	(229,256)
Craticulariidae	K (Apti)	— R	(142)
Dactylocalycidae	K (Sant)	— R	(229)
Emplocidae	J (m)		
Eubrochididae	K (Albi)	— K (Maes)	(256)
Euretidae	J (u)	— R	
Hexactinellidae	J	— R	
Leptophragmatidae	J (u)	— T (Mi)	
Myliusiidae	J (m)	— R	
Pleurostomatidae	Tr (Anis)	— T (Eo)	
Polystigmatiidae	K (u)		
Polythyrididae	K (u)		
Porospongiidae	J (u)	— K (u)	
Staurodermatidae	Tr (Anis)	— T (Mi)	
Wapkiosidae	K (u)	— R	

## Or. Lychniscosida (= Lychniskida)

Becksiidae	J	— K (Maes)	(256)
Calodictyidae	K (Albi)	— K (Maes)	(256)
Calyptrellidae	J	— K (Ceno)	(256)
Camerospongiidae	J (u)	— R	
Coeloptychiidae	K (Coni)	— K (Maes)	(142,229)
Coeloscyphiidae	K (u)		
Coscinoporidae	K (Sant)	— K (Maes)	(256)
Cypelliidae	J (u)	— R	(229,256)
Oncotoechidae	K (u)		
Polyblastidiidae	J	— K (u)	
Sporadosciniidae	K (Camp)		(142)
Ventriculitidae	J (u)	— T (Mi)	(142)
incertae sedis	Tr (Carn)		

## Or. Lyssacosida (= Lyssakida)

Brachiospongiidae	Θ (Cara)	— S (u)	(269)
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Caulophacidae	T (Eo)	— R	
Dictyospongiidae	S (l)	— P (Leon)	
?Dierespongiidae	€ (uMid)	— Ø (m)	(269)
Docodermatidae	C (Mosc)	— J (u)	(133)
Euplectellidae	J (l)	— R	(133)
Malumispongiidae	S		(133)
Mattaspongiidae	D (Fras)		(269)
Multivasculatidae	€ (Fran)	— € (Trep)	(223)
Pelicaspongiidae	Ø (Ashg)	— D (Fras)	(267,268)
Pileolitidae	P (Sakm)	— P (Leon)	(96)
Protospongiidae	€ (lTom)	— S (l)	(269,395)
Rossellidae	T (Eo)	— R	
Stauractinellidae	J (Call)	— J (Oxfo)	
Stereodictyiidae	C (Step)	— P (Leon)	(94)
Stiodermatidae	C (Vise)	— P (Guad)	(94)
Stromatidiidae	P (Guad)		(94,96)
Teganiidae	€ (uMid)	— P (Leon)	(269)
Titusvilliidae	D (Fras)	— C (Tour)	
Or. Amphidiscophora			
Hyalonematidae	C (l)	— R	
Pheronematidae	K (Camp)	— R	

## Cl. Sclerospongiae

## ?Or. Stromatoporoidea

[Classification based on Stearn (1980) with additions from the *Treatise*, Pt. F; stratigraphic ranges from Stearn (1980), Bogoyavlenskaya (1974), and the *Treatise*.]

Actinostromatidae	S (l)	— D (Fame)	
Amphiporidae	D (Sieg)	— D (Fras)	
Aulaceridae	Ø (Cara)	— S (l)	
Clathrodictyidae	Ø (Llde)	— D (Fame)	
Cliefdenellidae	Ø (Cara)	— Ø (Ashg)	(370)
Densastromatidae	S (l)	— D (Gedi)	
Diplostromatidae	S (u)		(187)
?Disjectoporidae	P (Guad)	— Tr (Carn)	(112)
Ecclimadictyidae	Ø (Cara)	— D (Fame)	(370)
Hermatostromatidae	S (u)	— D (Fras)	
Labechiidae	Ø (Cara)	— D (Fame)	
Lophiostromatidae	Ø	— S	
?Milleporellidae	J (u)	— K (Maes)	
?Milleporidiidae	J (u)	— K (Maes)	
Pseudolabechiidae	S (l)	— S (u)	
Rosenellidae	Ø (m)	— D (Fame)	
Stachyoditidae	D (Eife)	— D (Fras)	
Stictostromatidae	Ø (Cara)	— D (Fame)	



Stromatoporidae	S (m)	— K (u)	
Syringostromatidae	S (u)	— J (Tith)	
Syringostromellidae	S (m)	— D (Fras)	
Tienodictyidae	S (l)	— D (Fras)	(187)
?incertae sedis	€ (Atda)		(310)
Or. Ceratoporellida			
Ceratoporellidae	P	— R	(133)
Or. Tabulospongida			
Acanthochaetetidae	J (Oxfo)	— T (Eo-m)	(208)
Chaetetidae	Θ (Ashg)	— Tr (Carn)	(208)
?Cryptolichenariidae	Θ (Trem)	— Θ (Ashg)	(208)
?Desmidoporidae	Θ (Ashg)	— D (Eife)	(208)
?Lamottiidae	Θ (Llde)		(208)
Tabulospongidae	J (Oxfo)	— R	(133)
?Tiverinidae	S (m)	— D (l)	(208)
Or. Muranida			
Muranidae	K (Haut)		(161)

## ARCHAEOCYATHA

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

## Cl. Regulares

Or. Monocyathida			
Capsolythidae	€ (Atda)	— € (Boto)	
Capsulocyathidae	€ (uTom)	— € (Boto)	(288)
Cryptoporocyathidae	€ (lTom)	— € (Atda)	(288)
Ethmolythidae	€ (Atda)	— € (Boto)	
Fransuasaecyathidae	€ (uTom)	— € (Boto)	(178,288)
Globosocyathidae	€ (Boto)		
Monocyathidae	€ (lTom)	— € (lMid)	(288)
Rhabdocyathellidae	€ (Atda)	— € (mMid)	(288,362)
Tumuliolythidae	€ (uTom)	— € (Boto)	(288)
Uralocyathellidae	€ (Boto)		(288)
Uralocyathidae	€ (uTom)	— € (Boto)	
Or. Putapacyathida			
Aptocyathidae	€ (Atda)	— € (Boto)	(288)
Gerbicanicyathidae	€ (Boto)		
Putapacyathidae	€ (Atda)		
Or. Ajacicyathida			
Acanthinocyathidae	€ (Boto)		
Agyrekocyathidae	€ (lMid)		
Ajacicyathidae	€ (lTom)	— € (lMid)	(76,288)
Alataucyathidae	€ (Atda)	— € (Boto)	(288)

Anaptyctocyathidae	€ (Atda) — € (Boto)	
Annulocyathidae	€ (Boto)	(288)
Bosceculcyathidae	€ (Boto) — € (lMid)	
Botomocyathidae	€ (Atda) — € (Boto)	(178,288)
Bronchocyathidae	€ (uTom) — € (Boto)	(288)
Calyptocoscinidae	€ (Atda)	
Carinacyathidae	€ (uTom) — € (Boto)	(288)
Chankacyathidae	€ (Boto)	
Clathricoscinidae	€ (Atda) — € (lMid)	(288)
Compositocyathidae	€ (uTom) — € (Boto)	
Coscinocyathellidae	€ (Boto)	(288)
Coscinocyathidae	€ (uTom) — € (Boto)	(76,178,288)
Cyclocyathellidae	€ (Atda) — € (Boto)	(76,288)
Dokidocyathidae	€ (lTom) — € (Boto)	
Erboocyathidae	€ (Atda) — € (lMid)	(178,288)
Ethmocoscinidae	€ (Atda) — € (Boto)	
Ethmocyathidae	€ (Boto)	
Ethmopectinidae	€ (Boto)	
Ethmophyllidae	€ (Atda) — € (lMid)	(288)
Falocyathidae	€ (Atda)	
Fansycyathidae	€ (Atda)	
Formosocyathidae	€ (uTom) — € (Boto)	
Geocyathidae	€ (uTom) — € (Boto)	
Gloriosocyathidae	€ (Atda) — € (Boto)	
Hupecyathellidae	€ (Boto)	(288)
Hyptocyathidae	€ (Boto)	(180)
Kaltatocyathidae	€ (uTom) — € (Boto)	(288)
Kasyricyathidae	€ (Atda) — € (Boto)	(178,288)
Kidrjasocyathidae	€ (Atda) — € (Boto)	(288)
Kijacyathidae	€ (Atda) — € (Boto)	(288)
Kordecyathidae	€ (Atda) — € (Boto)	(288)
Lenocyathidae	€ (Atda) — € (Boto)	(288)
Mrassucyathidae	€ (Boto)	(178,288)
Nochoroicyathidae	€ (lTom) — € (lMid)	
Peregrinicyathidae	€ (Boto)	(288)
Piamaecyathidae	€ (Boto)	(288)
Polycoscinidae	€ (Atda) — € (Boto)	
Porocoscinidae	€ (Boto)	(180)
Porocyathidae	€ (Atda) — € (Boto)	(288)
Pretiosocyathidae	€ (Atda) — € (Boto)	(288)
Robertocyathidae	€ (Atda) — € (Boto)	
Robustocyathidae	€ (lTom) — € (Boto)	
Rozanovicyathidae	€ (Boto)	
Sajanocyathidae	€ (Boto) — € (lMid)	
Sanarkocyathidae	€ (Boto)	
Schidertycyathidae	€ (Boto) — € (lMid)	
Sigmocoscinidae	€ (Boto)	

Sigmocyathidae	€ (Boto)		
Soanicyathidae	€ (Boto)		(288)
Stillicidocyathidae	€ (Atda)	— € (Boto)	(288)
Tannuolacyathidae	€ (Boto)		
Tennericyathidae	€ (Atda)	— € (Boto)	(288)
Tercyathidae	€ (Boto)		(288)
Tumulocyathidae	€ (Atda)	— € (Boto)	(288)
Vologdinocyathidae	€ (Atda)	— € (lMid)	(288)
Wrighticyathidae	€ (Boto)		(180)

## Cl. Irregulares

Or. Thalassocyathida (= Rhizacyathida)			
Bacatocyathidae	€ (uTom)	— € (mMid)	(362)
Or. Archaeocyathida			
Anthomorphidae	€ (Atda)	— € (lMid)	
Archaeocyathidae	€ (Boto)	— € (mMid)	
Archaeofungiidae	€ (Atda)	— € (Boto)	(288)
Archaeopharetridae	€ (l)		
Archaeosyconidae	€ (uTom)	— € (lMid)	
Bicyathidae	€ (uTom)	— € (Boto)	
Copleicyathidae	€ (l)		
Dictyocoscinae	€ (Boto)		
Dictyocyathidae	€ (uTom)	— € (Boto)	(76)
Flindersicyathidae	€ (Boto)	— € (lMid)	
Metacoscinidae	€ (Boto)	— € (lMid)	
Metacyathidae	€ (uTom)	— € (lMid)	(288)
Prismocyathidae	€ (Boto)		
Protocycloocyathidae	€ (l)		
Protopharetridae	€ (uTom)	— € (lMid)	(76)
Pycnoidocoscinae	€ (l)		
Sigmofungiidae	€ (Boto)		
Tabellaecyathidae	€ (Boto)	— € (lMid)	
Tabulacyathidae	€ (Atda)	— € (Boto)	
Or. Syringocnemidida			
Syringocnemididae	€ (Boto)		(288)
Syringocoscinae	€ (l)		

## Cl. Incertae sedis

Or. Kazakhstanciyathida			
Kazakhstanciyathidae	€ (Boto)	— € (lMid)	
Or. Archaeophyllida			
Archaeophyllidae	€ (Atda)		
Insertae sedis			
Acanthopyrgidae	€ (Boto)		
Korovinellidae	€ (Boto)		

Manacyathidae	€ (Atda)
Mattewcyathidae	€ (m)

## COELENTERATA

## Cl. "Protomedusae" (= Brooksellida)

[Artificial taxon incorporating Vendian and lower Paleozoic medusoids of uncertain taxonomic affinities; includes approximately 22 "Eldiacaran" genera (including all listed as "medusae of uncertain affinities" by Glaessner in the *Treatise*, Pt. A), as well as other medusae from the Cambrian, Ordovician, and Silurian.]

incertae sedis	V (m)	— S (l)	(132,155,231,327)
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## Cl. "Petalonamae"

[The "petal organisms" of Pflug (1970-1972), considered pennatulaceans by Glaessner in various pre-1975 publications. Classification follows the *Treatise*, Pt. A.]

?Charniidae	V (m)	— V (u)	(162,328)
Erniettidae	V (u)		(114,241)
?Pteridiniidae	V (m)	— V (u)	(162,163,231,241)
?Rangeidae	V (m)	— V (u)	(122,124,241,328)
incertae sedis ( <i>Arumberia</i> , <i>Baikalina</i> , <i>Inkrylovia</i> , <i>Namalia</i> , <i>Nasepia</i> )	V (m)	— V (N-Da)	(114,124,231,328)

## Cl. Hydrozoa

[Basic classification and stratigraphic ranges follow the *Treatise*, Pt. F, and *The Fossil Record*; approximately 25 extant marine families without known fossil representatives are not listed.]

## Or. Trachylinida

Cuninidae	J (Tith)	— R	
?Kirklandiidae	J (Bajo)	— T (Pale)	
? <i>Velumbrella</i>	€ (m)		(310)

## Or. Hydroida

Calyptoblastina	€ (mMid)	— R	
Hydractiniidae	J (Tith)	— R	
Oceaniidae	C (Step)	— R	
Sertulariidae	K (Maes)	— R	(360)

## Or. Siphonophorida

Chondroplidae	V (u)		(364,365)
Porpitidae	V (u)	— R	(118,365)
Veilellidae	D (Gedi)	— R	(118,310)

## Or. Spongiomorphida

Spongiomorphidae	Tr (Olen)	— J (Tith)	
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Or. Milleporina			
Axoporidae	T (Eo)	— T (Ol)	
Milleporidae	T (Dani)	— R	
Or. Stylasterina			
Stylasteridae	T (Dani)	— R	
Or. Sphaeractinida			
Heterastridiidae	Tr (m)	— Tr (Nori)	
Sphaeractinidae	C (Step)	— K (Ceno)	
Incertae sedis			
<i>Beltanelliformis</i>	V (u)		(231)
<i>Nemiana</i>	V (u)	— V (N-Da)	(231)
<i>Tirasiana</i>	V (u)		(231)

## Cl. Scyphozoa

[Basic classification and stratigraphic ranges follow the *Treatise*, Pt. F, and *The Fossil Record*; approximately 13 extant families (including all in the Stauro-medusida) without known fossil representatives are not listed.]

Or. Carybdeida			
Carybdeidae	C (Mosc)	— R	(157)
Or. Coronatida			
?Byronia	€ (mMid)		(310)
Collaspididae	Θ (Trem)	— R	
Periphyllidae	J (Tith)	— R	
Or. Semaestomatida			
*Eulithotidae	J (Tith)		
*Semaestomitidae	J (Tith)		
incertae sedis	C (Mosc)		(105)
Or. Lithorhizostomatida			
Rhizostomitidae	J (Tith)		
Or. Rhizostomatida			
Leptobrachiidae	J (Tith)	— R	
incertae sedis	C (Mosc)		(105)
incertae sedis	C (Step)		(230)
?Or. Conulariida			
Circonulariidae	S (l)	— S (u)	(25)
Conchopeltidae	V (m)	— Θ (Cara)	(118,329)
Conulariellidae	€ (mMid)	— Θ (Aren)	
Conulariidae	€ (u)	— Tr (Rhae)	
Conulariopsidae	Tr (Olen)		
?Palaeacmaeidae	€ (Trep)	— Θ (Trem)	(292,391a)
Paleoconularidae	€ (Boto)		(395)

\*May be related to unlisted extant families.

Or. Septodaearia			
? <i>Septodaeum</i>	Θ (Aren)	— D (Sieg)	(24)
Incertae sedis			
? <i>Albumares</i>	V (u)		(231)
? <i>Brachina</i>	V (u)		(365)
<i>Hallidaya, Skinnera</i>	V (u)		(124,363)
? <i>Kimberella</i>	V (u)		(365)
Cl. Hydroconozoa			
3 families	€ (Boto)		(395)
Cl. Anthozoa			

[Classification and stratigraphic ranges based on the *Treatise*, Pt. F (including 1981 supplement), and *The Fossil Record*, except where noted otherwise; approximately 70 extant families (including all in the Ceriantaria, Telestacea, Zoanthinaria, and Corallimorpharia) without known fossil representatives are not listed.]

Or. Antipatharia			
* <i>Leiopathes</i>	T (Mi)		
Or. Stolonifera			
Clavulariidae	K (Berr)	— R	
Tubiporidae	T (Mi)	— R	(229)
Or. Alcyonacea			
Alcyoniidae	S (m)	— R	(17)
Nephtheidae	J (Hett)	— R	
Xeniidae	K (u)	— R	(229)
?incertae sedis	€ (Boto)		(38)
Or. Trachypsammiacea			
Trachypsammiidae	P (Guad)		
Or. Coenothecalia			
Helioporidae	K (Berr)	— R	
Or. Gorgonacea			
? <i>Pragnellia</i>	Θ (Ashg)		(310)
Coralliidae	K (Berr)	— R	
Ellisellidae	T (Dani)	— R	
Gorgoniidae	T (Eo-m)	— R	(116)
Isididae	K (Maes)	— R	(229)
Melithaeidae	T (Eo)	— R	(229)
Parisididae	T (Eo)	— R	(229)
Primnoidae	K (u)	— R	
Or. Pennatulacea			
Pennatulidae	Tr	— R	(229)

\*May be related to unlisted extant families.

Pteroeididae	T (Eo)	— R	
Virgulariidae	K (Berr)	— R	
Or. Tabulata			
Agetolitidae	Θ (Ashg)	— S (m)	
Alveolitidae	S (l)	— D (Fras)	
Aulocystidae	S (l)	— P (u)	
Auloheliidae	P (Dzhu)		
Auloporidae	Θ (Aren)	— P (Dzhu)	(310)
Bajoliidae	Θ (m)	— Θ (Ashg)	
Billingsariidae	Θ (Llde)	— S (l)	
Chonostegitidae	D (Emsi)	— D (Eife)	
Cleistoporidae	S (u)	— C (Bash)	
Coccoserididae	Θ (Cara)	— Θ (Ashg)	(310)
Coenitidae	S (l)	— D (Give)	
Cyrtophyllidae	Θ (Cara)	— Θ (Ashg)	(310)
Favositidae	Θ (Cara)	— P (Guad)	(310)
Fletcheriellidae	Θ (Ashg)	— D (m)	
Gorskyitidae	C (Tour)	— P (l)	
Halysitidae	Θ (Cara)	— S (u)	
Heliolitidae	Θ (Llde)	— D (Give)	
Khmeriidae	C (Bash)	— P	
Kozlowskiocystiidae	D (Eife)		
Lichenariidae	Θ (Cara)		(310)
?Lipoporidae	⊖ (lMid)	— ⊖ (mMid)	(153)
Michelinidae	S (u)	— P (Dzhu)	
Multisoleniidae	Θ (Ashg)	— S (u)	
Multithecoporidae	S (l)	— P (u)	
Pachyporidae	S (l)	— P (Dzhu)	
Palaeacididae	C (Tour)	— C (Vise)	
Palaeoporitidae	Θ (Cara)	— Θ (Ashg)	(185)
Paleoalveolitidae	Θ (m)		
Parastriatoporidae	Θ (Ashg)	— D (Eife)	
Periphaceloporidae	D (Give)		
Plasmoporellidae	Θ (m)	— S (m)	
Plasmoporidae	S (l)	— D (Eife)	
Proheliolitidae	Θ (Cara)	— S (u)	
Proporidae	Θ (Cara)	— S (u)	
Pseudofavositidae	P (u)		
Pseudoplasmoporidae	Θ (Ashg)	— D (Gedi)	
Pycnolithidae	S (l)		
Pyrgiidae	S (u)	— P (Dzhu)	(185)
Roemeriidae	D (Emsi)	— P (Sakm)	
Romingeriidae	S (m)	— C (Namu)	
Sibiriolitidae	Θ (Ashg)		
Sinoporidae	S (l)	— P (Leon)	
Stelliporellidae	Θ (Ashg)	— D (Eife)	

Syringolitidae	S (l)	— D (l)	
Syringophyllidae	Θ (Llde)	— S (l)	(310)
Syringoporidae	Θ (Cara)	— P (Guad)	(222)
Taeniolitidae	Θ (Ashg)		
Tetradiidae	Θ (Llvi)	— Θ (Ashg)	(310)
Tetraporellidae	Θ (m)	— P (Dzhu)	
Theciidae	S (l)	— D (Eife)	
Thecostegitidae	D (Gedi)	— C (Namu)	
Trachypsammiidae	P (Asse)	— P (Dzhu)	
Vaughaniidae	C (Tour)		
Or. Rugosa			
Acervulariidae	S (m)	— S (u)	
Acrophyllidae	D (Emsi)		(225)
Adamanophyllidae	C (Tour)	— C (Namu)	
Amplexidae	S (l)	— C (Vise)	
Amsdenoididae	S (u)		
Anisophyllidae	S (u)		
Antiphyllidae	C (Vise)	— C (Mosc)	
Aphrophyllidae	C (Tour)	— C (Vise)	
Arachnophyllidae	S (l)	— D (Sieg)	
Aulophyllidae	C (Tour)	— P (l)	
Axophyllidae	D (Vise)	— C (Namu)	
Bethanyphyllidae	D (Give)		
Bothrophyllidae	C (Vise)	— P (l)	
Calostylidae	Θ (Cara)	— D (Gedi)	(225,310)
Centristelidae	D (Give)		
Columnariidae	D (Gedi)	— D (Give)	
Combophyllidae	D (Emsi)	— D (Eife)	(225)
?Cothoniidae	€ (lMid)		(153)
Cyathaxoniidae	D (Fame)	— P (Guad)	
Cyathophyllidae	D (Sieg)	— D (Fras)	(225)
Cyathopsidae	C (Tour)	— P (l)	
Cystiphyllidae	Θ (Cara)	— D (Give)	(225,310)
Digonophyllidae	D (Eife)	— D (Give)	
Disphyllidae	S (u)	— D (Fame)	
Ditoecholasmataidae	S (u)		
Durhaminidae	C (Mosc)	— P (Guad)	(222)
Edridophyllidae	S (u)	— D (Give)	(225)
Ekvasophyllidae	C (Vise)		
Endamplexidae	P (Guad)		
Endophyllidae	S (m)	— D (Fras)	(225)
Endotheciidae	P (u)		
Entelophyllidae	S (l)	— D (Gedi)	
Expressophyllidae	S (m)	— S (u)	
Fasciphyllidae	D (Emsi)	— D (Give)	
Fletcheriidae	S (l)	— S (m)	



Geyerophyllidae	C (Namu) — P (Leon)	
Goniophyllidae	S (l) — D (Give)	(208)
Hadrophyllidae	D (Sieg) — D (Eife)	(225)
Halliidae	D (Sieg) — D (Give)	(225)
Hapsiphyllidae	D (Emsi) — P (Dzhu)	(225)
Holmophyllidae	S (m) — D (Eife)	
Ketophyllidae	S (l) — S (u)	
Kielcephyllidae	D (Fame)	
Kiziliidae	C (Vise)	
Kodonophyllidae	S (l) — D (Eife)	
Koninckocariniidae	C (Mosc)	
Kyphophyllidae	Θ (Ashg) — D (Gedi)	
Laccophyllidae	S (l) — P (Guad)	
Lambelasmataidae	Θ (Cara) — S (l)	
Lindstroemiidae	D (m)	
Lithostrotionidae	C (Tour) — P (Leon)	
Lophophyllidae	C (Tour) — P (Dzhu)	(100)
Lykophllidae	S (l) — S (u)	
Metriophyllidae	D (l) — D (Fras)	
Mucophyllidae	S (l) — D (Emsi)	
Neocolumnariidae	D (Eife)	
?Numidiaphyllidae	P (Guad)	(100)
Palaeocyclidae	Θ (m) — D (Eife)	
Palaeosmiliidae	C (Vise) — C (Namu)	
Paliphyllidae	Θ (Cara) — S (m)	(185)
Pentaphyllidae	D (Emsi) — P (l)	(225)
Petalaxidae	C (Vise) — P (l)	
Petraidae	Θ (m) — D (Fame)	
Phillipsastreidae	D (Emsi) — D (Fras)	(225)
Plerophyllidae	D (Emsi) — P (u)	
Polycoeliidae	S (u) — P (Dzhu)	(100,225)
Pseudopavonidae	C (Namu)	
Ptenophyllidae	S (m) — D (Fras)	
Ptychophyllidae	S (l) — S (u)	
Pycnostylidae	S (l) — D (Give)	
Spongophyllidae	S (u) — D (Give)	
Stauriidae	Θ (Cara) — D (Give)	(208)
Stereolasmatidae	D (Give) — C (Mosc)	
Streptelasmatidae	Θ (Cara) — D (Give)	
Stringophyllidae	D (Gedi) — D (Give)	(208,225)
Timorphyllidae	P (Dzhu)	
Tryplasmataidae	Θ (Cara) — D (Give)	(225)
Uraliniidae	C (Tour) — C (Vise)	(229)
Verbeekiellidae	C (Vise) — P (Leon)	
Waagenophyllidae	C (Mosc) — P (Dzhu)	(100)
Zaphrentidae	D (Emsi) — D (Give)	
Zaphrentoididae	C (Vise) — C (Bash)	

Or. Heterocorallia			
Heterophylliidae	D (Eife)	— C (Namu)	
Or. Scleractinia			
[Classification from the <i>Treatise</i> , Pt. F; stratigraphic ranges based on <i>The Fossil Record</i> .]			
Acroporidae	K (Turo)	— R	
Actinacididae	J (Bath)	— T (O1-l)	
Agariciidae	K (Apti)	— R	
Amphiastreidae	J (Bath)	— K (Ceno)	
Astrocoeniidae	Tr (Anis)	— R	
Calamophylliidae	J (Plie)	— K (Ceno)	
Caryophylliidae	J (Hett)	— R	
Cyclolitidae	K (Haut)	— T (Mi-m)	
Dendrophylliidae	K (Ceno)	— R	
Faviidae	J (Bajo)	— R	
Flabellidae	K (Albi)	— R	
Fungiidae	K (Apti)	— R	
Guyniidae	J (Oxfo)	— R	
Haplaraeidae	J (Kimm)	— T (Eo-u)	
Meandrinidae	K (Barr)	— R	
Micrabaciidae	K (Barr)	— R	
Microsolenidae	J (Hett)	— K (Sant)	
Montlivaltiidae	Tr (Anis)	— T (Eo-m)	
Mussidae	J (Kimm)	— R	
Oculinidae	K (Apti)	— R	
Pectiniidae	T (Eo-m)	— R	
Pocilloporidae	K (Turo)	— R	
Poritidae	K (Ceno)	— R	
Procycolitidae	Tr (Anis)	— J (Bajo)	
Rhipidogyridae	J (Kimm)	— K (Sant)	
Rhizangiidae	K (Barr)	— R	
Siderastreidae	K (Apti)	— R	
Stylinidae	Tr (Anis)	— T (Eo-u)	
Stylophyllidae	Tr (Anis)	— J (Bajo)	
Synastreidae	J (Hett)	— K (Coni)	
Thamnasteriidae	Tr (Anis)	— R	
Incertae sedis			
<i>Tabulaconus</i>	€ (Boto)		(310)
Tjanshanophylliidae	Θ (u)	— S (l)	(88)
incertae sedis	€ (Atda)		(357a)
Or. Actiniaria			
*Mackenzia	€ (mMid)		(59)

\*May be related to unlisted extant families.

Cl. Incertae sedis			
<i>Escumasia</i>	C (Mosc)		(219a)
?Peytoiidae	€ (mMid)		(62a)
PLATYHELMINTHES			
?Dickinsoniidae	V (u)		(122,231,369)
?Turbellaria	T (Mi)	— R	(62)
RHYNCHOCOELA (Nemertinea)	C (Namu)	— R	(304)
PRIAPULIDA			
[Classification and stratigraphy from Conway Morris (1977a).]			
<i>Lecythioscopa</i>	€ (mMid)		
<i>Scolecofura</i>	€ (mMid)		
Ancalagonidae	€ (mMid)		
Fieldiidae	€ (mMid)		
Miskoiidae	€ (mMid)		
Ottoidae	€ (mMid)		
Priapulidae	C (Mosc)	— R	(54,302)
Selkirkiidae	€ (mMid)		
NEMATODA (Rhabditida)	C (Namu)	— R	(304,336)
MOLLUSCA			
Cl. Stenothecoida			
Cambridiidae	€ (Atda)	— € (uMid)	(252,275,314,387)
Cl. Monoplacophora			
[Classification and stratigraphic ranges from Runnegar and Jell (1976), with emendations as noted.]			
Or. Cyrtonebella			
Cyrtolitidae	θ (l)	— D (Give)	
Helcionellidae	€ (lTom)	— θ (l)	(289)
Hypseloconidae	€ (uMid)	— θ (Llvi)	
?Multifariidae	€ (Atda)	— θ (Aren)	(19)
?Pelagiellidae	€ (lTom)	— θ (Trem)	(198,295,388)
Scenellidae	€ (uTom)	— D (Sieg)	
Stenothecidae	€ (lTom)	— € (uMid)	(198,289,292)
Yochelcionellidae	€ (Boto)	— € (lMid)	
? <i>Janospira</i>	θ (Aren)		(104)
Or. Tryblidiida			
Tryblidiidae	€ (lMid)	— R	(19)
Cl. Amphineura (= Polyplacophora)			

[Classification based on the *Treatise*, Pt. I.]

Or. Palaeoloricata			
Chelodidae	Θ (Trem)	— K (u)	
Gotlandochitonidae	S (m)		
?Mattheviidae	€ (Fran)	— € (Trep)	(204,293,390)
Preacanthochitonidae	€ (Trep)	— Θ (Trem)	(132,294)
Scanochitonidae	K (Camp)		(132)
Septemchitonidae	Θ (Cara)		
Or. Neoloricata			
Acanthochitonidae	T (Ol-l)	— R	
Afossochitonidae	T (Mi-m)	— R	
Callistoplacidae	T (Mi-l)	— R	
Callochitonidae	T (Ol)	— R	
Chaetopleuridae	T (Mi)	— R	
Chitonidae	K (Camp)	— R	(317)
Hanleyidae	Q (Plei)	— R	
Ischnochitonidae	T (Eo-u)	— R	
Lepidopleuridae	Θ (Ashg)	— R	
Llandeiloichitonidae	Θ (Llde)		
Mopaliidae	T (Mi-l)	— R	
Schizochitonidae	K (Maes)	— R	(317)

#### Cl. Gastropoda

[Classification based on the *Treatise*, Pt. I, and Taylor and Sohl (1962) with numerous sources for stratigraphic ranges, as listed. Only families with marine representatives are listed; 96 extant marine families (including all in the Soleolifera, Philinoglossoidea, Acochlidioidea, and Parasita) without known fossil records are not listed.]

Or. Bellerophontida			
Bellerophontidae	€ (Trep)	— Tr (Indu)	(19,291)
"Sinuitidae"	€ (Trep)	— Tr (Olen)	(19,291,318)
Or. Archaeogastropoda			
Acmaeidae	Tr (Ladi)	— R	(132)
Amberleyidae	Tr (Ladi)	— T (Ol)	
Anomphalidae	S (m)	— P (Guad)	
Ataphridae	Tr (Ladi)	— K (Maes)	
Catantostomatidae	D (Eife)	— D (Give)	(189)
Cirridae	Tr (u)	— J (Bath)	
Clisospiridae	Θ (Aren)	— D (Give)	(136,189)
Cocculinidae	T (Mi)	— R	
Codonocheilidae	S (u)	— J (Bajo)	
Craspedostomatidae	Θ (Ashg)	— J (Bajo)	(229)
Crossostomatidae	Tr (Ladi)	— J (Bajo)	
Cyclostrematidae	J (Oxfo)	— R	
Deianiridae	K (Camp)	— T (Dani)	

Elasmonematidae	S (u)	— C (Mosc)	(386)
Eotomariidae	€ (Trep)	— J (l)	(132)
Euomphalidae	Θ (Aren)	— K (Maes)	(136,318)
Euomphalopteridae	S (m)	— S (u)	
Fissurellidae	Tr (m)	— R	
Gosseletinidae	Θ (m)	— Tr (Nori)	(176)
Haliotidae	K (Maes)	— R	
Helicotomidae	Θ (Aren)	— J (Bajo)	(136)
Holopeidae	Θ (Aren)	— P (Leon)	
Kittlidiscidae	Tr (Ladi)		
Laubellidae	Tr (Ladi)		
Lepetellidae	T (Mi)	— R	(318)
Lepetidae	T (Mi)	— R	
Lophospiridae	Θ (Llde)	— Tr (m)	(136)
Luciellidae	Θ (Aren)	— Tr (u)	(8,194)
Macluritidae	Θ (Trem)	— Θ (Cara)	(194)
Metoptomatidae	S (m)	— P (Guad)	(8)
Microdomatidae	Θ (m)	— P (Guad)	
Murchisoniidae	Θ (Trem)	— Tr (Nori)	(132)
Neritidae	Tr (Anis)	— R	
Neritopsidae	D (Gedi)	— R	(189)
Nododelphinulidae	Tr (Nori)	— K (Seno)	
Omphalotrochidae	D (Fras)	— P (Guad)	(189)
Onychochilidae	€ (Dres)	— D (Sieg)	(189,291,315)
Oriostomatidae	S (m)	— D (Give)	(189)
Palaeotrochidae	D (Gedi)	— D (Fras)	(189)
Paraturbinidae	Tr (Ladi)	— K (Seno)	(229)
Patellidae	J (Sine)	— R	(176)
Phanerotrematidae	Θ (m)	— D (Sieg)	(189)
Phasianellidae	T (Pale)	— R	
Phenacolepadidae	T (Eo)	— R	
Phymatopleuridae	D (Eife)	— K (Camp)	(136,189)
Plagiothyridae	D (Eife)	— C (l)	(189)
Planitrochidae	Θ (Aren)	— D (Eife)	(189,194)
Platyacridae	Tr (Ladi)	— J (Kimm)	(136, 229)
Platyceratidae	Θ (Aren)	— P (Leon)	
Plethospiridae	Θ (Trem)	— Tr (Nori)	(132,194)
Pleurotomariidae	P (Guad)	— R	(136)
Polytremariidae	C (l)	— P (Leon)	
Porcellidae	D (Give)	— J (Bajo)	(189)
Portlockiellidae	D (Sieg)	— P (Guad)	(7,189)
Pseudophoridae	S (m)	— P (Guad)	
Raphistomatidae	€ (Trep)	— J (l)	(132)
Rhaphischismatidae	C (l)		
Schizogoniidae	Tr (Ladi)	— Tr (Carn)	
Scissurellidae	T (Dani)	— R	
Sinuopeidae	€ (Trep)	— P (Leon)	(132)

Stomatellidae	Tr (Nori)	— R	
Symmetrocapsulidae	Tr (Ladi)	— J (Kimm)	(71)
Temnotropidae	Tr (Ladi)	— Tr (Carn)	
Trochidae	Tr (Ladi)	— R	
Trochonematidae	Θ (Cara)	— P (Leon)	(136)
Trochotomidae	Tr (Nori)	— J (Tith)	(176)
Tubinidae	D (Sieg)	— Tr (Nori)	(189)
Turbinidae	Tr (Ladi)	— R	
Velainellidae	T (Eo)		
Weeksiidae	Tr	— K (Maes)	(132,318)
Zygitidae	Tr (Ladi)		
Or. Mesogastropoda			
Aciculidae	J (l)	— R	(243)
Aclididae	T (Dani)	— R	(75)
Aporrhaidae	J (Bajo)	— R	(71,320)
Architectonicidae	K (Ceno)	— R	(322)
Assimineidae	K (Maes)	— R	(75)
Atlantidae	K (u)	— R	(213)
Brachytremidae	J (Bajo)	— J (Tith)	(229)
Bursidae	K (Maes)	— R	(347)
Caecidae	T (Pale)	— R	(75)
Calyptraeidae	J (Oxfo)	— R	(213)
Capulidae	Tr	— R	(243)
Carinariidae	T (Eo)	— R	(213)
Cassidae	K (Coni)	— R	(243,323)
Cerithiidae	J (Kimm)	— R	(318,320)
Cerithiopsidae	K (l)	— R	(75)
Coelostylinidae	D	— J (Kimm)	(229)
Colombellinidae	J (u)	— K (Maes)	(138,347)
Cymatiidae	K (Albi)	— R	(75,320,347)
Cypraeidae	J (Tith)	— R	(229)
Diastomidae	K (u)	— R	(229)
Epitoniidae	J (m)	— R	(75,229)
Eratoidea	T (Dani)	— R	(75)
Eulimidae	K (Ceno)	— R	(322)
Eustomidae	J (Bajo)	— J (Tith)	(229)
Ewekoroidea	T (Pale)		(1)
Ficidae	T (Dani)	— R	(347)
Fossaridae	P	— R	
Glauconiidae	J (Tith)	— K (Maes)	(229)
Hipponicidae	K (Maes)	— R	(229)
Iravadiidae	T (Eo)	— R	(229)
Janthinidae	T (Mi)	— R	(75)
Lacunidae	Tr (m)	— R	(75)
Lamellariidae	T (Pale)	— R	(206,213)
Littorinidae	Tr	— R	(229)

Loxonematidae	Θ (Cara)	— C (Penn)	(132,208,386)
Mathildidae	P (Guad)	— R	(8)
Meekospiridae	C (Vise)	— P (Guad)	(132,208)
Melanopsidae	K (Albi)	— R	(3)
Micromelaniidae	K (l)	— R	(136)
Modulidae	K (u)	— R	(75)
Naticidae	Tr (Carn)	— R	(112,323)
Oleacinidae	T (Ol)	— R	(323)
Omalaxidae	K (Albi)	— R	(3)
Omalogyridae	T (Eo)	— R	
Ovulidae	K (Ceno)	— R	(75,229)
Palaeozygopleuridae	D (Sieg)	— C (l)	(189,208)
Planaxidae	T (Pale)	— R	(1)
Pomatiasidae	K (u)	— R	(75)
Potamididae	P	— R	(213)
Procerithiidae	D (m)	— K (Maes)	(208,318)
Pseudomelaniidae	S	— T (Mi)	(75,229)
Pseudozygopleuridae	D (Gedi)	— Tr (Ladi)	(8,189,208)
Purpurinidae	Tr (Nori)	— J (Kimm)	(71,176)
Rissoidae	J (l)	— R	(75,229)
Seraphsidae	T (Pale)	— R	
Spirostylidae	Tr	— J	(229)
Stiliferidae	T (Eo)	— R	(75)
Strombidae	K (Haut)	— R	(324)
Struthiolariidae	T (Dani)	— R	(75)
Subulitidae	Θ (Aren)	— P (Guad)	(132,208)
Thiaridae	J (u)	— R	(229)
Tonnidae	K (Maes)	— R	(347)
Trichotropididae	K (Turo)	— R	(322)
Triphoridae	K (Albi)	— R	(75)
Turritellidae	D (Give)	— R	(189,208)
Vanikoridae	K (Sant)	— R	(136,322)
Vermetidae	Tr (m)	— R	(176)
Vitrinellidae	J	— R	(75)
Xenophoridae	J (Tith)	— R	(243)
Zygopleuridae	Tr (Ladi)	— J (Kimm)	(208)
Or. Neogastropoda			
Buccinidae	K (Albi)	— R	(347)
Buccinulidae	T (Ol)	— R	(75)
Cancellariidae	K (Albi)	— R	(347)
Conidae	K (Maes)	— R	(347)
Fasciolaridae	K (Apti)	— R	(3,322,347)
Harpidae	K (Maes)	— R	(347)
Heligmotoniidae	T (Pale)		(1)
Magilidae	K (Camp)	— R	(75,347)
Marginellidae	K (Maes)	— R	(213,243,347)

Melongenidae	K (Albi)	— R	(347)
Mitridae	K (Ceno)	— R	(213)
Muricidae	K (Albi)	— R	(243,323,347)
Nassariidae	K (Turo)	— R	(347)
Neptuneidae	K (u)	— R	(75)
Olividae	K (Camp)	— R	(213,322,347)
Pyrenidae	T (Dani)	— R	(347)
Strepsiduridae	K (u)	— T (Ol)	(75)
Terebridae	K (Maes)	— R	(347)
Turridae	K (Ceno)	— R	(322,347)
Vasidae	K (Albi)	— R	(75,322,347)
Vaupalmeriidae	T (Pale)		(1)
Volutidae	K (Ceno)	— R	(322,347)
Or. Entomotaeniata			
Ceritellidae	J (l)	— K (Ceno)	(206,213)
Itieriidae	J (Oxfo)	— K (Maes)	(229,320)
Nerineidae	J (l)	— K (Maes)	(3,206,213)
Nerinellidae	J (l)	— K (Seno)	(229)
Pyramidellidae	D (Give)	— R	(189)
Streptacididae	C (Vise)	— P (Guad)	(208)
Or. Cephalaspidea			
Actæonidae	C (Vise)	— R	(132,206,213)
Acteonellidae	J (l)	— K (Seno)	(229)
Atyidae	T (Pale)	— R	(75)
Bullidae	J (Plie)	— R	(213)
Cylinodrobulidae	K (Camp)	— R	(319)
Diaphanidae	J (Bajo)	— R	(229)
Hydatinidae	J (l)	— R	(229)
Philinidae	K (Seno)	— R	(75,229)
Retusidae	J	— R	(75)
Ringiculidae	K (Apti)	— R	(136)
Scaphandridae	K (Camp)	— R	(75,319)
Or. Thecosomata			
Cavolinidae	K (u)	— R	(229)
Spiratellidae	T (Eo-l)	— R	(132)
Or. Basommatophora			
Acroreidae	K (u)	— T (Eo)	
Amphibolidae	T (Plio)	— R	(75)
Siphonariidae	J (Call)	— R	(75,229)
Trimusculidae	T (Ol)	— R	(229)
Or. Sacoglossa			
Arthessidae	T (Eo-l)	— R	(181)
Elysiacea	T (Eo)	— R	(213)
Jullidae	T (Eo-m)	— R	(75)



Or. Anaspidea			
Akeratidae	J (Bath)	— R	(229)
Aplysiidae	T (Mi)	— R	(229)
Or. Gymnosomata			
Clionidae	T (Eo-m)	— R	(213)
Or. Notaspidea			
Umbraculidae	T (Eo)	— R	(75)
Or. Nudibranchia			
*incertae sedis	C (Mosc)		(156)
Cl. Scaphopoda			
[Classification from Palmer (1974).]			
Or. Dentalioida			
Dentaliidae	D (u)	— R	(208)
Laevidentaliidae	Θ (Llvi)	— R	(250)
Or. Siphonodentalioida			
Cadulidae	K (l)	— R	(208)
Siphonodentaliidae	P (Sakm)	— R	(385)
Cl. Rostroconchia			
[Classification and stratigraphic ranges based principally on Pojeta and Runnegar (1976).]			
Or. Ribeirioida			
Ribeiriidae	€ (uTom)	— Θ (Ashg)	(198,205,291)
Technophoridae	€ (Dres)	— Θ (Ashg)	(249)
Or. Ischyrioida			
Ischyriiidae	Θ (Trem)	— Θ (Ashg)	
Or. Conocardioida			
Bransoniidae	Θ (Trem)	— P (Guad)	(314)
Conocardiidae	D (Sieg)	— P (Sakm)	(316,385)
Eopteriidae	€ (Trep)	— Θ (Cara)	(249,314)
Hippocardiidae	Θ (Llde)	— C (Mosc)	(137a)
?Myona	€ (uMid)	— € (Dres)	(195,210,291)
Cl. Bivalvia			
[Classification and stratigraphic ranges principally from the <i>Treatise</i> , Pt. N, with emendations as listed. Exclusively nonmarine families and 5 extant marine families without known fossil representatives are not listed.]			
Or. Fordilloida			
Fordillidae	€ (Atda)	— € (Boto)	(150,247)

\*May be related to unlisted extant families.

?Or. Tuarangiida			
Tuarangiidae	€ (uMid)		(199b)
Or. Solemyoidea			
Solemyidae	D (Sieg)	— R	(132)
Or. Nuculoida			
Ctenodontidae	Θ (Llde)	— J (Bath)	(71,136)
Isoarcidae	J (Bajo)	— K (Seno)	
Malletiidae	Θ (Llde)	— R	(136)
Nuculanidae	D (Give)	— R	(316)
Nuculidae	Θ (Trem)	— R	
Praenuculidae	Θ (Trem)	— D (l)	(136,248)
Thoraliidae	Θ (l)		(211)
Or. Mytiloidea			
Colpomyidae	Θ (Aren)	— Θ (Ashg)	(248)
Mysidiellidae	Tr (l)	— Tr (Rhae)	
Mytilidae	D (Fame)	— R	(132)
Pinnidae	C (Vise)	— R	(132)
Or. Praecardioida			
Antipleuridae	Θ (m)	— D (Fras)	
Butovicellidae	S (u)		
Praecardiidae	Θ (Aren)	— Tr (Carn)	
Or. Arcoida			
Arcidae	J (Bajo)	— R	(129)
Cucullaeidae	J (Hett)	— R	(129,135)
Cyrtonodontidae	Θ (Aren)	— D (m)	(132)
Glycymerididae	K (Apti)	— R	(135)
Limopsidae	Tr (Ladi)	— R	(129a)
Manzanellidae	P (Leon)	— R	
Noetiidae	K (Apti)	— R	
Parallelodontidae	Θ (Llde)	— R	(181)
Philobryidae	T (Eo-u)	— R	
Or. Pterioidea			
Ambonychiidae	Θ (Llde)	— D (Fras)	(132,136)
Anomiidae	P (l)	— R	(216)
Aviculopectinidae	D (Fras)	— J (Tith)	(316)
Bakevelliidae	P (Guad)	— T (Eo-l)	
Buchiidae	Tr (Carn)	— K (Maes)	
Cassianellidae	Tr (Ladi)	— Tr (Nori)	(176)
Chondrodontidae	K (Albi)	— K (Camp)	
Dattidae	Tr (Rhae)		
Deltopectinidae	P (Leon)		
Dimyidae	J (Bath)	— R	
Entoliidae	C (Tour)	— K (Seno)	
Gryphaeidae	Tr (Carn)	— R	

Inoceramidae	P (l)	— K (Maes)	(135)
Isognomonidae	P (Sakm)	— R	(136)
Kochiidae	D (Sieg)	— D (u)	
Leiopectinidae	Θ (Ashg)	— D (l)	
Limidae	C (l)	— R	
Lithiotidae	J (Plie)		(129)
Lunulacardiidae	Θ (l)	— C (l)	
Malleidae	J (Bajo)	— R	(129)
Monopteriidae	C (Bash)	— C (Step)	
Monotidae	Tr (Carn)	— Tr (Nori)	
Myalinidae	C (Tour)	— J (l)	
Ostreidae	P (Guad)	— R	(136)
Oxytomidae	P (Leon)	— K (u)	
Pectinidae	Tr (Ladi)	— R	(129a)
Pergamidiidae	Tr (Carn)	— J (Sine)	
Plicatulidae	Tr (Ladi)	— R	
Posidoniidae	C (l)	— K (Coni)	
Pseudomonotidae	C (Vise)	— P (u)	
Pteriidae	P (Sakm)	— R	(136,216)
Pterineidae	Θ (Llvi)	— P (Guad)	(136)
Pterinopectinidae	S (u)	— P (Leon)	
Pulvinitidae	J (Bath)	— R	(129)
Spondylidae	Tr (m)	— R	(176)
Terquemiidae	P (l)	— J (Kimm)	(216)
Or. Actinodontoida (= Modiomorphoida)			
Allodesmatidae	Θ (Cara)	— S (u)	
Carydiidae	D (Emsi)	— D (u)	
Cycloconchidae	Θ (Aren)	— Θ (Ashg)	(248)
Lyrodesmatidae	Θ (Aren)	— S (l)	(248)
Modiomorphidae	Θ (Trem)	— P (Guad)	
Or. Unionoida (mostly freshwater)			
Pachycardiidae	Tr (l)	— J (Plie)	(135)
Or. Trigonioida			
Myophoriidae	D (Gedi)	— Tr (Rhae)	
Scaphellinidae	P (Leon)		
Trigoniidae	Tr (Anis)	— R	
Or. Veneroida			
Arcticidae	Tr (Rhae)	— R	
Astartidae	D (l)	— R	
Babinkidae	Θ (Aren)	— Θ (Llde)	(199,210)
Cardiidae	Tr (Nori)	— R	
Cardiliidae	T (Ol)	— R	
Cardiniidae	Θ (Llde)	— R	
Carditidae	D (Gedi)	— R	
Ceratomyopsidae	J (Toar)	— J (Kimm)	(129)

Chamidae	T (Dani)	— R	
Condylocariidae	T (Eo-m)	— R	
Cooperellidae	T (Mi-m)	— R	
Corbiculidae	J (Toar)	— R	(71)
Crassatellidae	D (l)	— R	
Cultellidae	K (l)	— R	
Cyamiidae	T (Mi)	— R	
Dicerocardiidae	Tr (Carn)	— K (Maes)	
Donacidae	K (u)	— R	
Dreissenidae	T (Eo)	— R	
Erycinidae	T (Pale)	— R	
Euloxidae	T (Mi)	— R	
Fimbridae	C	— R	
Gaimardiidae	T (Mi)	— R	
Galeommatidae	T (Eo-u)	— R	
Glossidae	K (Maes)	— R	(361a)
Hippopodiidae	Tr (Nori)	— J (Tith)	(129a)
Icanotiidae	K (Haut)	— K (Maes)	
Kelliellidae	T (Eo-l)	— R	
Kelliidae	T (Pale)	— R	
Lahilliidae	K (u)	— T (Mi)	
Leptonidae	T (Pale)	— R	
Lucinidae	S	— R	
Lymnocardiidae	T (Mi-l)	— R	
Mactridae	K (Camp)	— R	(135)
Mactromyidae	D (Eife)	— R	(316)
Mecynodontidae	D (Eife)	— R	
Mesodesmatidae	T (Eo)	— R	
Montacutidae	T (Eo-m)	— R	
Myophoricardiidae	Tr (l)	— Tr (Nori)	
Neoleptonidae	T (Plio)	— R	
Neomiodontidae	J (Hett)	— K (Ceno)	(135)
Permophoridae	C (l)	— K (Camp)	
Petricolidae	T (Eo)	— R	
Pisidiidae	K (l)	— R	(135)
Pollicidae	K (Ceno)	— K (u)	
Psammobiidae	K (u)	— R	
Ptychomyidae	K (l)	— K (u)	
Quenstedtiidae	J (Toar)	— J (Tith)	(129)
Rzehakiidae	T (Mi-m)	— T (Mi-u)	
Scrobiculariidae	T (Eo)	— R	
Semelidae	T (Eo)	— R	
Solecurtidae	T (Eo-l)	— R	
Solenidae	T (Eo-l)	— R	
Sowerbyidae	J (Toar)	— J (Tith)	(129)
Sportellidae	J	— R	
Tancrediidae	Tr (Carn)	— K (Maes)	(135)

Tellinidae	K (l)	— R	
Thyasiridae	Tr (m)	— R	
Trapeziidae	K (Maes)	— R	
Tridacnidae	T (Eo-m)	— R	
Turtoniidae	T (Mi)	— R	
Ungulinidae	K (u)	— R	
Unicardiopsidae	J (m)	— J (Oxfo)	
Veneridae	K (Albi)	— R	
Vesicomysidae	T (Ol-u)	— R	
Or. Myoida			
Corbulidae	C (Tour)	— R	(132)
Erodonidae	T (Eo-u)	— R	
Gastrochaenidae	J (Bath)	— R	(129)
Hiatellidae	P (l)	— R	
Myidae	T (Pale)	— R	
Pholadidae	J (Bajo)	— R	(129)
Pleurodesmatidae	T (Ol-u)	— T (Mi-l)	
Raetomyidae	T (Eo)		
Spheniopsidae	T (Eo-m)	— R	
Teredinidae	K (Apti)	— R	(135)
Or. Hippuritoida			
Caprinidae	K (Barr)	— K (Maes)	
Caprotinidae	K (Barr)	— K (Turo)	
Diceratidae	J (Oxfo)	— K (Vala)	
Hippuritidae	K (Turo)	— K (Maes)	
Megalodontidae	S (l)	— K (Apti)	
Monopleuridae	K (Vala)	— K (Maes)	
Radiolitidae	K (Barr)	— K (Maes)	
Requieniidae	J (Tith)	— K (Maes)	
Or. Pholadomyoida			
Burmesiididae	Tr (Rhae)	— J (Hett)	(129,135)
Ceratomyidae	Tr (Rhae)	— J (Tith)	(129)
Chaenomyidae	C (u)	— T (Eo)	(290)
Clavagellidae	K (Turo)	— R	
Cleidothaeridae	T (Ol)	— R	(290)
Cuspidariidae	Tr (Ladi)	— R	(132)
Edmondiidae	D (Fras)	— P (Dzhu)	(216,316)
Grammysiidae	Θ (Cara)	— P (Guad)	(136)
Laternulidae	Tr (Carn)	— R	(129a)
Lyonsiidae	T (Eo)	— R	
Margaritariidae	T (Mi)		
Megadesmidae	C (u)	— P (Dzhu)	(216)
Myochamidae	T (Mi)	— R	
Myopholadidae	J (Toar)	— K (Albi)	(129)
Orthonotidae	Θ (Llde)	— D (Give)	(248)

Pandoridae	T (Eo)	— R	(290)
Periplomatidae	K (Albi)	— R	(135)
Pholadomyidae	C (I)	— R	
Pleuromyiidae	Tr (Nori)	— K (I)	(129a, 290)
Poromyidae	K (u)	— R	
Thraciidae	J (Hett)	— R	(71,129)
Verticordiidae	K (Maes)	— R	(361a)

## Cl. Cephalopoda

[Classification and stratigraphic ranges for the Nautiloidea and Ammonoidea basically follow Teichert (1967) and *The Ammonoidea* (House and Senior, eds. 1981), with augmentation from the *Treatise*, Pts. K and L, and *Osnovy Paleontologii*. Classification of the Coleoidea is from Jeletzky (1965). 25 extant families of coleoids without known fossil representatives are not listed.]

## Or. Ellesmerocerida

Acaroceratidae	€ (Trep)		(45)
Balkoceratidae	€ (Trep)		(45)
Baltoceratidae	Θ (Trem)	— Θ (Cara)	(73)
Bassleroceratidae	Θ (Trem)	— Θ (Cara)	(45,73)
Bathmoceratidae	Θ (Aren)	— Θ (Llde)	
Cyrtocerinidae	Θ (Cara)	— Θ (Ashg)	(45,73)
Ellesmeroceratidae	€ (Trep)	— Θ (Llvi)	(45,73)
Huaiheceratidae	€ (Trep)	— Θ (Trem)	(45,73)
Plectronoceratidae	€ (Fran)	— Θ (Llde)	(73)
Protocycloceratidae	Θ (Trem)	— Θ (Llvi)	(45)
Shideleroceratidae	Θ (Ashg)		

## Or. Orthocerida

Brachycycloceratidae	C (Namu)	— C (Step)	
Clinoceratidae	Θ (Llvi)	— Θ (Ashg)	(73,99)
Dawsonoceratidae	S (I)	— S (u)	
Engorthoceratidae	D (Eife)		(353)
Follioceratidae	D (Eife)		(353)
Geisonoceratidae	Θ (Llvi)	— D (Give)	(353)
Lamellorthoceratidae	D (Sieg)	— D (Eife)	(353)
Mysterioceratidae	Θ (Llde)	— Θ (Cara)	(45,73,99)
Offleyoceratidae	S (m)	— D (Gedi)	(353)
Orthoceratidae	Θ (Trem)	— Tr (Nori)	(73)
Paraphragmitidae	S (m)		
Proteoceratidae	Θ (Llvi)	— S (m)	(99)
Pseudorthoceratidae	Θ (Llvi)	— P (I)	(73)
Sactorthoceratidae	Θ (Aren)	— Θ (Llde)	(45,73,99)
Sphooceratidae	S (m)		
Stereoplasmoceratidae	Θ (Aren)	— Θ (Cara)	(45,73)
Troedssonellidae	Θ (Trem)	— Θ (Llde)	(73,229)

Or. Ascocerida			
Ascoceratidae	Θ (Cara)	— S (u)	(73)
Choanoceratidae	S (u)		
Hebetoceratidae	Θ (Llde)	— Θ (Ashg)	(73)
Or. Intejocerida			
Bajkoloceratidae	Θ (Aren)	— Θ (Llvi)	
Intejoceratidae	Θ (Aren)	— Θ (Llvi)	(73)
Majoceratidae	Θ (Trem)	— Θ (Aren)	(73)
Padunoceratidae	Θ (Aren)	— Θ (Llvi)	
Or. Protactinocerida			
Protactinoceratidae	ϵ (Trep)	— Θ (Trem)	(44,73)
Or. Actinocerida			
Actinoceratidae	Θ (Aren)	— S (l)	
Armenoceratidae	Θ (Aren)	— S (m)	
Carbactinoceratidae	C (Vise)	— C (Step)	
Ellinoceratidae	Θ (Llvi)	— Θ (Llde)	
Georginidae	Θ (Llvi)		(73)
Gonioceratidae	Θ (Llvi)	— Θ (Ashg)	(73)
Huronidae	Θ (Llvi)	— S (m)	(73)
Meitanoceratidae	Θ (Llvi)	— Θ (Llde)	(73)
Ormoceratidae	Θ (Aren)	— C (Vise)	
Polydesmiidae	Θ (Aren)	— Θ (Llde)	(73)
Wutinoceratidae	Θ (Aren)	— Θ (Llvi)	
Or. Yanhecerida			
Yanheceratidae	ϵ (Trep)		(44)
Or. Endocerida			
Allotrioceratidae	Θ (Aren)	— Θ (Llde)	(45,73)
Botryceratidae	Θ (Ashg)		(73)
Chihlioceratidae	Θ (Aren)	— Θ (Llvi)	(73,98,229)
Cyrtendoceratidae	Θ (Aren)	— Θ (Cara)	(98)
Emmonsoceratidae	Θ (Aren)	— Θ (Llde)	(45,229)
Endoceratidae	Θ (Trem)	— S (m)	(73)
Humeoceratidae	S (m)		
Manchuroceratidae	Θ (Aren)	— Θ (Cara)	(73)
Nartheoceratidae	Θ (Cara)	— S (l)	(73,229)
Piloceratidae	Θ (Trem)	— Θ (Llvi)	(73)
Proterocameroceratidae	Θ (Trem)	— Θ (Llde)	
Thylacoceratidae	Θ (Aren)	— Θ (Llvi)	(73,98,229)
Yorkoceratidae	Θ (Aren)		(73)
Or. Discosorida			
Brevioceratidae	S (m)	— D (Fame)	(353)
Cyrtogomphoceratidae	Θ (Llvi)	— S (l)	(45,73)
Devonocheilidae	D (Emsi)	— D (Fame)	(353)
Discosoridae	S (m)	— D (Give)	

Entimoceratidae	D (Emsi)	— D (Fame)	(353)
Greenlandoceratidae	Θ (Ashg)	— S (l)	(73)
Lowoceratidae	Θ (Cara)	— S (m)	(73)
Mandaloceratidae	S (m)		
Mecynoceratidae	D (Emsi)	— D (Fame)	(353)
Mesoceratidae	S (m)		
Naedyceratidae	S (m)	— D (Fame)	(353)
Phragmoceratidae	S (m)	— D (Gedi)	(353)
Ruedemannoceratidae	Θ (Llvi)	— Θ (Cara)	(45,73)
Taxyceratidae	D (Gedi)	— D (Fame)	(353)
Westonoceratidae	Θ (Llde)	— S (l)	
Or. Oncocerida			
Acleistoceratidae	S (m)	— D (Fame)	(358)
Aktjubocheilidae	D (Fame)		(358)
Archiacoceratidae	D (Sieg)	— D (Give)	(358)
Bolloceratidae	D (Eife)	— D (Fras)	(358)
Cyrtoceratidae	S (u)	— D (Fras)	(358)
Diestoceratidae	Θ (Cara)	— Θ (Ashg)	(73,99)
Graciloceratidae	Θ (Llde)	— Θ (Ashg)	(45,73)
Hemiphragmoceratidae	S (m)	— S (u)	
Jovellaniidae	Θ (Llvi)	— D (Fame)	(73,358)
Karoceratidae	S (l)	— D (Fame)	(358)
Nothoceratidae	S (u)	— D (Fras)	(358)
Oncoceratidae	Θ (Llvi)	— S (u)	
Polyelasmoceratidae	S (m)	— D (Fame)	(358)
Potrioceratidae	D (Gedi)	— C (Namu)	(358)
Ptenoceratidae	D (Sieg)	— D (Eife)	(358)
Trimeroceratidae	S (m)		
Tripleuroceratidae	S (u)	— C (l)	(358)
Tripterooceratidae	Θ (Llvi)	— Θ (Ashg)	(99)
Valcouroceratidae	Θ (Llde)	— Θ (Ashg)	(73,99)
Or. Nautilida			
Aturiidae	T (Pale)	— T (Mi)	
Centroceratidae	D (Eife)	— P (l)	(132)
Clydonautilidae	Tr (Anis)	— Tr (Nori)	
Cymatoceratidae	J (m)	— T (Ol-u)	
Ephippioceratidae	C (Vise)	— P (l)	
Gonionautilidae	Tr (Nori)		
Grypoceratidae	C (l)	— Tr (Nori)	(132)
Hercoglossidae	J (u)	— T (Ol)	
Koninckioceratidae	C (l)	— P (l)	
Liroceratidae	C (Vise)	— Tr (Nori)	
Nautilidae	Tr (Ladi)	— R	
Paracenoceratidae	J (m)	— K (Albi)	
Permoceratidae	P (l)		
Pseudonautilidae	J (Tith)	— K (Vala)	(229)



Rhiphaeoceratidae	P (l)		
Rutoceratidae	D (Sieg)	— C (l)	(132)
Siberionautilidae	Tr (Carn)		
Solenochilidae	C (Tour)	— P (Leon)	
Syringonautilidae	Tr (Anis)	— Tr (Nori)	
Tainoceratidae	C (l)	— Tr (Nori)	(132)
Tetragonoceratidae	D (Eife)		(353)
Trigonoceratidae	C (l)	— P (l)	
Or. Tarphycerida			
Apsidoceratidae	Θ (Cara)	— Θ (Ashg)	(99)
Barrandeoceratidae	Θ (Llvi)	— D (Eife)	(99,353)
Estonioceratidae	Θ (Aren)	— Θ (Llvi)	(73)
Lechritrochoceratidae	Θ (Llvi)	— S (u)	(73)
Lituitidae	Θ (Aren)	— Θ (Ashg)	
Nephriticeratidae	D (Emsi)	— D (Fras)	(353)
Plectoceratidae	Θ (Llvi)	— Θ (Ashg)	(99)
Tarphyceratidae	Θ (Aren)		(45,73)
Trocholitidae	Θ (Aren)	— S (u)	
Uranoceratidae	S (m)		
Or. incertae sedis			
Neptunoceratidae	C (u)		
Or. Anarcestida			
Agoniatitidae	D (Eife)	— D (Give)	(139,140,229)
Anarcestidae	D (Emsi)	— D (Fame)	(229)
Auguritidae	D (Emsi)		(139)
Bactritidae	Θ (Aren)	— P (Dzhu)	
Beloceratidae	D (Fras)		(229)
Devonopronoritidae	D (Fras)		(139)
Gephuroceratidae	D (Fras)	— D (Fame)	(140,229)
Maenioceratidae	D (Give)		(139)
Mimagoniatitidae	D (Emsi)	— D (Eife)	(139)
Mimoceratidae	D (Emsi)	— D (Eife)	(139)
Mimosphinctidae	D (Emsi)	— D (Eife)	(139)
Parabactritidae	P (Asse)	— P (Leon)	
Pharciceratidae	D (Fras)		(229)
Phenacoceratidae	D (Fras)	— D (Fame)	(139)
Pinacitidae	D (Eife)	— D (Give)	(139)
Triainoceratidae	D (Fras)		(139)
Or. Clymeniida			
Biloclymeniidae	D (Fame)		(140)
Carinoclymeniidae	D (Fame)		(140)
Clymeniidae	D (Fame)		
Costaclymeniidae	D (Fame)		(140)
Cymaclymeniidae	D (Fame)		(140)
Cyrtoclymeniidae	D (Fame)		

Glatziellidae	D (Fame)		
Gonioclymeniidae	D (Fame)		
Hexaclymeniidae	D (Fame)		
Miroclymeniidae	D (Fame)		(140)
Parawocklumeriidae	D (Fame)		(139)
Rectoclymeniidae	D (Fame)		
Sellaclymeniidae	D (Fame)		(140)
Wocklumeriidae	D (Fame)		
Or. Goniatitida			
Adrianitidae	C (Step)	— P (Guad)	(111)
Agathiceratidae	C (Vise)	— P (Guad)	(182)
Anthracoceratidae	C (Namu)	— C (Mosc)	(111,182)
Berkhoceratidae	C (Vise)	— C (Namu)	(182)
Bisatoceratidae	C (Namu)	— C (Step)	(182)
Cheiloceratidae	D (Fame)		(111,139)
Christioceratidae	C (Bash)	— C (Mosc)	(182)
Cravenoceratidae	C (Vise)	— C (Namu)	(182)
Cyclolobidae	P (Leon)	— P (Dzhu)	
Delepinoceratidae	C (Vise)	— C (Namu)	(182)
Dimeroceratidae	D (Fame)		(139)
Dimorphoceratidae	C (Vise)	— C (Namu)	(111,182)
Eogonioloboceratidae	C (Vise)	— C (Namu)	(182)
Gastrioceratidae	C (Namu)	— P (Asse)	(111)
Girtyoceratidae	C (Vise)	— C (Namu)	(182)
Glaphyritidae	C (Namu)	— P (Asse)	(182)
Goniatitidae	C (Vise)		(182)
Gonioloboceratidae	C (Mosc)	— P (Asse)	(182)
Homoceratidae	C (Namu)	— C (Bash)	(111,182)
Hyattoceratidae	P (Leon)	— P (Guad)	(182)
Intoceratidae	C (Tour)	— C (Vise)	(182)
Karagandoceratidae	C (Tour)		(182)
Marathonitidae	C (Step)	— P (Guad)	(182)
Maximitidae	C (Mosc)	— C (Step)	(111,182)
Metalegoceratidae	P (Asse)	— P (Guad)	(111,182)
Munsteroceratidae	C (Tour)	— C (Namu)	(182)
Neodimorphoceratidae	C (Namu)	— C (Step)	(182)
Neoglyphioceratidae	C (Vise)	— C (Namu)	(111)
Neoicoceratidae	C (Mosc)	— P (Asse)	(182)
Nomismoceratidae	C (Vise)	— C (Namu)	(111)
Orulganitidae	C (Bash)		(182)
Paragastrioceratidae	P (Asse)	— P (Dzhu)	(111)
Pericyclidae	C (Tour)	— C (Vise)	(182)
Perrinitidae	P (Asse)	— P (Leon)	(111,182,208)
Popanoceratidae	P (Asse)	— P (Guad)	(111)
Praeglyphioceratidae	D (Fame)		(111)
Prionoceratidae	D (Fame)	— C (Namu)	(139)

Prolobitidae	D (Give)	— D (Fame)	(139)
Pseudohaloritidae	C (Step)	— P (Dzhu)	(182)
Pseudoparalegoceratidae	C (Bash)	— C (Mosc)	(182)
Ramositidae	C (Namu)		(182)
Reticuloceratidae	C (Namu)	— C (Mosc)	(111,182)
Rhymoceratidae	C (Vise)	— C (Namu)	(182)
Schistoceratidae	C (Bash)	— C (Step)	(111)
Shumarditidae	C (Step)		(182)
Sinotitidae	D (Fame)		(139)
Somoholitidae	C (Mosc)	— P (Leon)	(111,182)
Sporadoceratidae	D (Fame)		(111)
Thalassoceratidae	C (Mosc)	— P (Guad)	(182)
Tornoceratidae	D (Give)	— D (Fame)	(111)
Vidrioceratidae	C (Step)	— P (Dzhu)	(182)
Welleritidae	C (Bash)	— C (Mosc)	(111)
Wiedeyoceratidae	C (Bash)	— C (Step)	(182)
Or. Ceratitida			
Acrochordiceratidae	Tr (Olen)	— Tr (Anis)	(355)
Aplococeratidae	Tr (Anis)		(355)
Araxoceratidae	P (Guad)	— P (Dzhu)	(208)
Arcestidae	Tr (Anis)	— Tr (Rhae)	
Arpaditidae	Tr (Ladi)	— Tr (Nori)	
Aspenitidae	Tr (Olen)		(355)
Badiotitidae	Tr (Carn)		(355)
Balatonitidae	Tr (Anis)		(355)
Beneckeidae	Tr (Olen)	— Tr (Anis)	(355)
Carnitidae	Tr (Ladi)	— Tr (Carn)	
Ceratitidae	Tr (Anis)	— Tr (Ladi)	
Choristoceratidae	Tr (Nori)		(355)
Cladiscitidae	Tr (Anis)	— Tr (Nori)	
Clionitidae	Tr (Ladi)	— Tr (Nori)	(355)
Clydonitidae	Tr (Carn)	— Tr (Nori)	
Cochloceratidae	Tr (Nori)		
Columbitidae	Tr (Olen)		(355)
Cycloclitidae	Tr (Nori)		(355)
Cyrtopleuritidae	Tr (Nori)		(355)
Danubitidae	Tr (Anis)	— Tr (Ladi)	(355)
Didymitidae	Tr (Nori)		
Dinaritidae	Tr (Olen)	— Tr (Anis)	(355)
Distichitidae	Tr (Nori)		(355)
Dzhulfitidae	P (Dzhu)		(111)
Episculitidae	Tr (Nori)		(355)
Gymnitidae	Tr (Anis)	— Tr (Nori)	(355)
Haloritidae	Tr (Carn)	— Tr (Nori)	
Hedenstroemiidae	Tr (Olen)		
Heraclitidae	Tr (Nori)		
Hungaritidae	Tr (Ladi)	— Tr (Carn)	(355)

Isculitidae	Tr (Anis)		(355)
Japonitidae	Tr (Olen)	— Tr (Anis)	(355)
Joannitidae	Tr (Ladi)	— Tr (Carn)	(355)
Keyserlingitidae	Tr (Olen)		(355)
Lecanitidae	Tr (Carn)		(355)
Lobitidae	Tr (Ladi)	— Tr (Carn)	
Longobarditidae	Tr (Anis)	— Tr (Ladi)	(355)
Meekoceratidae	Tr (Indu)	— Tr (Olen)	(355)
Megaphyllitidae	Tr (Anis)	— Tr (Rhae)	
Melagathiceratidae	Tr (Olen)		(355)
Metasibiritidae	Tr (Nori)		
Nannitidae	Tr (Carn)		(355)
Nathorstidae	Tr (Ladi)		
Noridiscitidae	Tr (Nori)		(355)
Noritidae	Tr (Olen)	— Tr (Carn)	(355)
Olenikitidae	Tr (Olen)		(355)
Ophiceratidae	Tr (Indu)	— Tr (Olen)	(355)
Otoceratidae	P (Dzhu)	— Tr (Indu)	
Paraceltitidae	P (Leon)	— P (Guad)	(208)
Paranannitidae	Tr (Olen)		
Parapopanoceratidae	Tr (Anis)		(355)
Pinacoceratidae	Tr (Ladi)	— Tr (Nori)	(355)
Prionitidae	Tr (Olen)		
Procarnitidae	Tr (Olen)		(355)
Proteusitidae	Tr (Anis)		(355)
Ptychitidae	Tr (Anis)	— Tr (Ladi)	
Rhabdoceratidae	Tr (Nori)		(355)
Rimkinitidae	Tr (Ladi)		(355)
Sageceratidae	Tr (Olen)	— Tr (Carn)	(355)
Sagenitidae	Tr (Ladi)	— Tr (Nori)	(355)
Sandlingitidae	Tr (Carn)		(355)
Sibiritidae	Tr (Olen)		(355)
Sphingitidae	Tr (Ladi)	— Tr (Carn)	(355)
Stephanitidae	Tr (Olen)		
Sturiidae	Tr (Olen)	— Tr (Ladi)	(355)
Thanamitidae	Tr (Ladi)		(355)
Thetididae	Tr (Nori)		(355)
Thisbitidae	Tr (Carn)	— Tr (Nori)	
Tibetitidae	Tr (Nori)		(355)
Trachyceratidae	Tr (Ladi)	— Tr (Carn)	(355)
Tropiceltitidae	Tr (Carn)	— Tr (Nori)	(355)
Tropitidae	Tr (Carn)	— Tr (Nori)	
Ussuriidae	Tr (Olen)		
Xenodiscidae	P (Guad)	— Tr (Olen)	(208,355)
Or. Prolecanitida			
Daraelitidae	C (Vise)	— P (Guad)	
Episageceratidae	P (Guad)	— Tr (Indu)	(208,355)

Medlicottiidae	C (Mosc)	— P (Dzhu)	(111,182)
Prodromitidae	C (Tour)		
Prolecanitidae	C (Tour)	— C (Namu)	(111,182)
Pronoritidae	C (Vise)	— P (Guad)	(111)
Shikhanitidae	P (Asse)		(208)
Sundaitidae	P (Sakm)	— P (Guad)	(182)
Or. Phyllocerida			
Acanthoceratidae	K (Albi)	— K (Coni)	(382)
Astiericeratidae	K (Albi)		(382)
Brancoceratidae	K (Albi)	— K (Ceno)	(382)
Coilopoceratidae	K (Coni)	— K (Maes)	(382)
Collignoniceratidae	K (Turo)	— K (Maes)	(382)
Deshayesitidae	K (Apti)	— K (Albi)	(382)
Desmoceratidae	K (Haut)	— K (Camp)	(382)
Discophyllitidae	Tr (Carn)	— Tr (Nori)	
Douvilleiceratidae	K (Barr)	— K (Albi)	
Engonoceratidae	K (Albi)	— K (Turo)	
Eodesmoceratidae	K (Vala)	— K (Barr)	(382)
Flickiidae	K (Albi)	— K (Turo)	(382)
Forbesiceratidae	K (Albi)	— K (Ceno)	(382)
Hoplitidae	K (Albi)	— K (Ceno)	
Juraphyllitidae	J (Hett)	— J (Plie)	
Kossmaticeratidae	K (Albi)	— K (Maes)	
Leymeriellidae	K (Albi)		(382)
Lyelliceratidae	K (Albi)	— K (Ceno)	(382)
Muniericeratidae	K (Turo)	— K (Maes)	(382)
Pachydiscidae	K (Albi)	— K (Maes)	
Parahoplitidae	K (Apti)	— K (Albi)	(382)
Phylloceratidae	J (Hett)	— K (Maes)	
Placenticeratidae	K (Albi)	— K (Camp)	(382)
Pulchelliidae	K (Haut)	— K (Apti)	
Schloenbachiidae	K (Albi)	— K (Turo)	
Silesitidae	K (Barr)	— K (Albi)	
Sphenodiscidae	K (Sant)	— K (Maes)	(382)
Tissotiidae	K (Coni)	— K (Sant)	(165,382)
Trochleiceratidae	K (Apti)	— K (Albi)	(382)
Ussuritidae	Tr (Olen)	— Tr (Rhae)	
Vascoceratidae	K (Ceno)	— K (Coni)	(382)
Or. Lytocerida			
Ancyloceratidae	K (Vala)	— K (Albi)	(382)
Anisoceratidae	K (Albi)	— K (Turo)	
Baculitidae	K (Albi)	— K (Maes)	
Bochianitidae	J (Tith)	— K (Apti)	
Hamitidae	K (Albi)	— K (Turo)	(382)
Hemihoplitidae	K (Barr)		(382)
Heteroceratidae	K (Barr)	— K (Apti)	

Labeceratidae	K (Albi)	— K (Ceno)	(382)
Lytoceratidae	J (Sine)	— K (Ceno)	
Macroscaphitidae	K (Haut)	— K (Albi)	(382)
Protetragonitidae	J (Tith)	— K (Albi)	
Ptychoceratidae	K (Haut)	— K (Apti)	(382)
Scaphitidae	K (Albi)	— K (Maes)	
Tetragonitidae	K (Barr)	— K (Maes)	
Turrilitidae	K (Albi)	— K (Maes)	(382)
Or. Ammonitida			
Amaltheidae	J (Plie)		
Arietitidae	J (Hett)	— J (Sine)	(81)
Aspidoceratidae	J (Call)	— J (Tith)	
Ataxioceratidae	J (Kimm)	— J (Tith)	(81)
Aulacostephanidae	J (Oxfo)	— J (Tith)	(81)
Binneyitidae	K (Haut)	— K (Coni)	(81)
Cardioceratidae	J (Bajo)	— J (Kimm)	(81)
Coeloceratidae	J (Sine)	— J (Plie)	(81)
Craspeditidae	K (Berr)	— K (Barr)	(81)
Cymbitidae	J (Hett)	— J (Plie)	(81)
Dactylioceratidae	J (Plie)	— J (Toar)	
Dorsoplantidae	J (Kimm)	— J (Tith)	(81)
Echioceratidae	J (Sine)		(81)
Graphoceratidae	J (Bajo)		
Haploceratidae	J (Kimm)	— K (Barr)	(81)
Hildoceratidae	J (Plie)	— J (Bajo)	(81)
Himalayitidae	J (Tith)	— K (Berr)	(81)
Holcodiscidae	K (Haut)	— K (Barr)	(81)
Kosmoceratidae	J (Bath)	— J (Call)	(81)
Liparoceratidae	J (Plie)		
Lissoceratidae	J (Bajo)	— J (Oxfo)	(81)
Macrocephalitidae	J (Bath)	— J (Call)	
Morphoceratidae	J (Bajo)	— J (Bath)	
Neocomitidae	K (Berr)	— K (Haut)	(81)
Olcostephanidae	J (Tith)	— K (Haut)	(81)
Oosterellidae	K (Vala)	— K (Haut)	
Oppeliidae	J (Bajo)	— K (Haut)	(81)
Otoitidae	J (Bajo)		
Oxynoticeratidae	J (Sine)	— J (Plie)	
Pachyceratidae	J (Call)	— J (Oxfo)	
Perisphinctidae	J (Bajo)	— J (Tith)	
Phricodoceratidae	J (Sine)	— J (Plie)	(81)
Phymatoceratidae	J (Toar)	— J (Bajo)	(81)
Polymorphitidae	J (Plie)		
Psiloceratidae	J (Hett)		(81)
Reineckeidae	J (Call)		(81)
Schlotheimiidae	J (Hett)	— J (Sine)	(81)

Simoceratidae	J (Tith)		(81)
Sonniniidae	J (Bajo)		(81)
Sphaeroceratidae	J (Bajo)	— J (Call)	(81)
Spiroceratidae	J (Bajo)	— J (Call)	(81)
Stephanoceratidae	J (Bajo)	— J (Bath)	
Strigoceratidae	J (Bajo)	— J (Call)	(81)
Tulitidae	J (Bath)	— J (Call)	
Virgatitidae	J (Kimm)	— J (Tith)	(81)
Xipheroceratidae	J (Sine)	— J (Plie)	(81)
Or. Belemnitida			
Bayanoteuthidae	T (Eo-u)		(334)
Belemnitellidae	K (Ceno)	— K (Maes)	(334)
Belemnitidae	J (Hett)	— J (Call)	(333)
Belemnoteuthididae	J (Call)	— J (Kimm)	(333)
Belemnopseidae	J (Toar)	— K (Barr)	(333,334)
Chondroteuthidae	J (Toar)		(333)
Cylindroteuthididae	J (Bajo)	— K (Apti)	(333,334)
Dicoelitidae	J (Bajo)	— J (Tith)	(333)
Dimitobelidae	K (Barr)	— K (Maes)	(334)
Diplobelidae	J (Tith)	— K (Ceno)	(333,334)
Duvaliidae	J (Toar)	— K (Apti)	(333,334)
Hastitidae	J (Plie)	— J (Tith)	(333)
Oxyteuthidae	K (Vala)	— K (Apti)	(334)
Or. Octopida			
Argonautidae	T (Mi)	— R	(132)
*Palaeoctopodidae	K (Coni)		(132,243)
Or. Sepiida			
Belemnoseidae	T (Dani)	— T (Ol-l)	(243)
Belopteridae	T (Eo)		(243)
Belosepiellidae	T (Eo-m)		(243)
Groenlandibelidae	K (Ceno)	— K (Maes)	(243)
Sepiidae	T (Eo-u)	— R	(243)
Spirulidae	T (Mi)	— R	(243)
Spirulirostridae	T (Eo)	— T (Mi-m)	(243)
Vasseuriidae	T (Eo)		(243)
Or. Teuthida			
Geopeltididae	J (Toar)	— J (Tith)	(243)
Gonatidae	T (Plio)	— R	(50)
Kelaenidae	J (Kimm)	— J (Tith)	(243)
Leptoteuthididae	K (Ceno)	— K (Seno)	(243)
Liototeuthididae	J (Toar)		(243)
Loliginidae	T (Eo-m)	— R	(50)
Loligosepiidae	Tr (u)	— J (Tith)	(243)

\*May be related to unlisted extant families.

Necroteuthididae	T (Ol-l)		(243)
Ommastrephidae	T (Plio)	— R	(50)
Onychoteuthidae	T (Plio)	— R	(50)
Palaeoliginidae	J (Kimm)	— K (Sant)	(243)
Pleisoteuthidae	J (Toar)	— K (Maes)	(243)
Teudopseidae	J (Toar)		(243)
Trachyteuthididae	J (Kimm)	— K (Maes)	(243)
Or. Phragmoteuthida			
Phragmoteuthidae	P (Guad)	— J (Sine)	(132,181)
Or. Aulacocerida			
Aulacoceratidae	D (Fras)	— Tr (Nori)	
Chitinotheuthidae	J (Hett)	— J (Plie)	
Xiphotheuthidae	Tr (Anis)	— J (Oxfo)	

## ?MOLLUSCA

## Cl. Cricoconarida (= Tentaculitoidea)

[Sources of classification and stratigraphic ranges as indicated.]

## Or. Tentaculitida

Gotlandellitidae	S (l)	— S (m)	(184)
Rossiitidae	S (u)	— D (Fras)	(184)
Tentaculitidae	Θ (Trem)	— D (Fras)	(132,184)
Volynitidae	S (m)	— D (Gedi)	(184)

## Or. Homoctenida

Homoctenidae	D (Sieg)	— D (Fras)	(30)
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## Or. Dacryoconarida

Nowakiidae	S (u)	— D (Fras)	(132)
Striatostyliolinidae	D (Sieg)	— D (Give)	(30)
Styliolinidae	S (m)	— D (Fame)	(132)

## Cl. Hyolitha (= Calyptomatida)

[Classification primarily follows Rozanov et al. (1969) with additional families and stratigraphic ranges as indicated. *Wyattia* (Taylor, 1966) is included in the Globorilidae.]

## Or. Orthothecida

Allatheciidae	€ (lTom)	— Θ	(70,289)
Ceratothecidae	S (u)	— D (Gedi)	(132)
Circothecidae	V (N-Da)	— Θ (Cara)	(198,289,358)
Isititheciidae	€ (uTom)	— € (Boto)	(340)
Orthothecidae	€ (lTom)	— D (m)	(132,198,289,358)
Pauxillitidae	Θ (Trem)	— Θ (Llde)	(132)
Tetratheciidae	€ (lTom)	— Θ (l)	(287,340,358)

## Or. Hyolithida

Amydaicornidae	€ (Atda)	— € (mMid)	(358)
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Golicornidae	€ (Atda) — € (Boto)	(358)
Hyalolithidae	€ (uTom) — P (Guad)	(132,195,358)
Pterigothecidae	Θ (l) — D	(358)
Sulcavitidae	€ (Atda) — S (l)	(205,208,358)
Trapevitidae	€ (uTom) — € (Atda)	(69,289,358)
Or. Globorilida		
Globorilidae	V (N-Da) — € (lMid)	(163,172,253,348)
Or. Camerothecida		
Camerothecidae	€ (Boto)	(197,208,220)
Diplothecidae	€ (Boto)	(197,208,220)
SIPUNCULIDA (1 extant family)	D (m) — R	(54)
ECHIURIDA (5 extant families)		
* <i>Coprinoscolex</i>	C (Mosc)	(158)
? <i>Protechiurus</i>	V (u)	(120)

## ANNELIDA

## Cl. Polychaeta

[Classification from Clark (1969) with significant additions of extinct families from Kielan-Jaworska (1966); stratigraphic ranges in part from the *Treatise*, Pt. W. Approximately 44 extant families without known fossil representatives are not listed.]

Or. Amphinomorpha			
Amphinomidae	C (Mosc) — R	(302,354)	
Or. Eunicomorpha			
Archaeoprionidae	Θ (Cara)	(203)	
* <i>Atraktoprionidae</i>	Θ (m) — P (Guad)	(166,341)	
Dorvilleidae	J (Call) — R	(342)	
Kalloprionidae	Θ (m) — P (Guad)	(166)	
Kielanoprionidae	D (Fras) — P (Gaud)	(341,343)	
Lumbrinereidae	C (Namu) — R	(304)	
Mochtyellidae	Θ (m) — P (Gaud)	(166,341)	
Paulinitidae	Θ (Trem) — C	(167)	
Polychaeturidae	Θ (m) — D (Fras)	(167,349)	
Ramphoprionidae	Θ (m)	(166)	
Rhytiprionidae	Θ (m) — S	(166)	
* <i>Skalenoprionidae</i>	Θ (Ashg) — P	(166)	
Symmetroprionidae	Θ (Ashg) — S	(166)	
Tetraprionidae	Θ (m) — S (m)	(166)	
Xianioprionidae	Θ (m) — D (Fras)	(166,341)	

\*May be related to unlisted extant families.

Or. Phyllocoemomorpha			
Aphroditidae	D (u)	— R	(303,354)
Fossundecimidae	C (Mosc)		(303,354)
Hesionidae	C (Mosc)	— R	(303,354)
Glyceridae	Θ	— R	(208)
Goniadidae	C (Vise)	— R	(303)
Nephthyidae	C (Vise)	— R	(303,354)
Nereidae	Θ (m)	— R	(208)
Palmyridae	C (Mosc)	— R	(354)
Phyllodocidae	S	— R	(208)
Sigalionidae	Θ (m)	— R	(208)
Sprigginidae	V (u)		(117,119)
Or. Spiomorpha			
Cirratulidae	T (Mi)	— R	(208)
?Keiloritidae	Θ	— S	(208)
Sabellaridae	C	— R	(208)
Spionidae	€ (Boto)	— R	(119)
Or. Drilomorpha			
Arenicolidae	Tr (Rhae)	— R	(208)
Opheliidae	€ (Boto)	— R	(119)
Or. Terebellomorpha			
Pectinariidae	C (Namu)	— R	(89)
Terebellidae	€ (mMid)	— R	(119)
Or. Flabelligerimorpha			
Flabelligeridae	C (Mosc)	— R	(354)
Or. Serpulimorpha			
Sabellidae	C (i)	— R	(229)
Serpulidae	Θ	— R	(208)
Incertae sedis			
<i>Eopolychaetus</i>	Θ (Ashg)		(181,208)
<i>Pontobdellepsis</i>	Θ (Ashg)		(181,208)
<i>Ramesses</i>	C (Namu)		(304)
<i>Soris</i>	C (Namu)		(304)
Burgessochaetidae	€ (mMid)		(60)
Canadiidae	€ (mMid)	— € (uMid)	(60)
Insilicoryphidae	€ (mMid)		(60)
Palaeoscolecidae	€ (Boto)	— S (u)	(60,119,208)
Peronochaetidae	€ (mMid)		(60)
Stephenoscolecidae	€ (mMid)		(60)
Cl. Myzostomaria (6 extant families)			
	D (m)	— R	(62)
Cl. Clitellata			

[Classification from Clark (1969). The great majority of families are nonmarine.]

Subcl. Oligochaeta (3 extant marine families)  
 \*incertae sedis C (Bash) (178)

Subcl. Hirudinea (2 extant marine families)  
 \*incertae sedis J (Bajo) (177)

?ANNELIDA [Groups included largely follow Glaessner (1976.)]

Or. Cribricyathida

[Classification and stratigraphic ranges mostly from the *Treatise*, Pt. E (revised). *Cloudina* is included in the Vologdinophyllidae.]

Acherocyathidae	€ (Atda)	(146)
Akademiophyllidae	€ (Atda)	(146)
Capillicyathidae	€ (Boto)	
Conoidocyathidae	€ (Boto) — € (IMid)	
Cribricyathidae	€ (Boto) — € (IMid)	
Leibaellidae	€ (Atda)	(146)
Pyxidocyathidae	€ (Boto) — € (IMid)	
Vologdinophyllidae	V (u) — € (Atda)	(115,146)

Or. Coleolida

Coleolidae	V (N-Da) — C (Tour)	(132,329)
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?Or. Volborthellida

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

Salterellidae	€ (Boto)	(388,391)
Volborthellidae	€ (Atda) — € (m)	(131,132,163,388)
Vologdinellidae	€ (uMid)	(351)

?Or. Machaeridia

Lepidocoleidae	Θ (m) — D (l)	(251)
Plumulitidae	D (l)	(149)
Turrilepodidae	Θ (m) — (Namu)	(251)

Or. Mitrosagophora

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

Lapworthellidae	€ (lTom) — € (m)	(132,198,289,340)
Tannuolinidae	€ (Boto)	(395)
Tommotiidae	€ (lTom) — € (Atda)	(69,198,289)

Or. Thambetolepida (=Coeloscleritophora)

Chancelloriidae	€ (lTom) — € (u)	(18,69,74)
Siphogonuchitidae	€ (uTom)	(253)
Wiwaxiidae (=Sachitidae)	€ (lTom) — € (mMid)	(15,18,61,150,202)

\*May be related to unlisted extant families.

## Incertae sedis

Anabaritidae	V (N-Da)	— € (uTom)	(69,329,358)
Ancientidae	Θ (m)	— Θ (Ashg)	(284,299a)
Angustiochreidae	V (N-Da)	— € (lTom)	(358)
Cornulitidae	Θ (Cara)	— C (Tour)	(132)
Platysolenitidae	€ (lTom)	— € (Atda)	(163,289)

## INCERTAE SEDIS

[Miscellaneous taxa of familial or probable familial status but of unknown taxonomic affinities.]

Amiskwiidae	€ (mMid)		(55)
Konyriidae	Θ (Llvi)	— Θ (Llde)	(23a)
Opabiniidae	€ (mMid)		(61,373)
<i>Banffia</i>	€ (mMid)		(61)
<i>Cambrotubulus</i>	V (N-Da)	— (uTom)	(69,329,358)
<i>Deuteronectanebos</i>	C (Namu)		(304)
<i>Dinomischus</i>	€ (mMid)		(56)
<i>Etacystis</i>	C (Mosc)		(219)
<i>Hallucigenia</i>	€ (mMid)		(57)
<i>Lenargyrion</i> (= <i>Utahphospha</i> )	€ (Atda)	— Θ (Aren)	(16,260)
<i>Nectocaris</i>	€ (mMid)		(61)
<i>Oesia</i>	€ (mMid)		(61)
<i>Portalia</i>	€ (mMid)		(61)
<i>Redoubtia</i>	€ (mMid)		(61)
<i>Rhombocorniculum</i>	€ (Atda)	— € (Boto)	(32,33)
<i>Sunnaginia</i>	€ (lTom)	— € (Atda)	(289)
<i>Tullimonstrum</i>	C (Mosc)		(266)
<i>Tummulduria</i>	€ (lTom)		(358)
<i>Worthenella</i>	€ (mMid)		(61)

## ARTHROPODA

## Chelicerata

## Cl. Merostomata

[Classification and stratigraphic ranges from the *Treatise*, Pt. P, with emendations as indicated. Only marine taxa are listed.]

## ?Or. Aglaspida

Aglaspidae	€ (Fran)	— Θ (m)	(20,254)
?Beckwithiidae	€ (uMid)	— € (Dres)	(132,254,337)

## Or. Chasmataspidida

Chasmataspidae	Θ (Llvi)		(132)
?Diploaspidae	D (Emsi)		(132)
?Heteroaspidae	D (Emsi)		(132)

## Or. Xiphosurida

<i>Drabovaspis</i>	Θ (m)		(22)
Archaeolimulidae	Θ (m)		(22)
Belinuridae	D (Gedi)	— C (Step)	(97)
Bunodidae	S (u)		(85)
Elleriidae	D (u)		(97)
Eolimulidae	€ (Atda)		(20,196)
Kiaeriidae	D (Gedi)		(97)
Limulidae	Tr (l)	— R	(97)
Mesolimulidae	Tr (l)	— K (Ceno)	(97)
Paleolimulidae	D (Fame)	— P (Leon)	(97)
Pseudoniscidae	S (m)	— D (Sieg)	(85,132)
Weinberginidae	D (Sieg)		(132)

## Incertae sedis

?Gdowia	€ (uTom)		(329)
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## Or. Eurypterida

[Classification from Størmer (1974); marine taxa only.]

Carcinosomatidae	Θ (Llvi)	— D (Emsi)	(279)
Dolichopteridae	Θ (Llvi)	— D (Sieg)	
Drepanopteridae	Θ (Cara)	— D (Fame)	(279,338)
Eurypteridae	Θ (Llde)	— D (Emsi)	(132,208)
Hibbertopteridae	D (Eife)	— C (Step)	(279,338)
Hughmilleriidae	Θ (Llde)	— D (Fame)	(132,208)
Kokomopteridae	S (u)		(338)
Megalograptidae	Θ (Cara)	— S (m)	(132,144)
Mixopteridae	S (m)	— S (u)	(338)
Pageidae	D (Gedi)	— D (Sieg)	(279,338)
Parastylonuridae	Θ (Ashg)	— D (Fame)	
Pterygotidae	Θ (Llvi)	— D (Fame)	(132,208,279)
Rhenopteridae	D (Gedi)	— D (Fras)	(279)
Slimoniidae	S (l)	— D (Gedi)	(338)
Stylonuridae	Θ (Llde)	— D (Fame)	

## Cl. Arachnida

[Classification from the *Treatise*, Pt. P; marine taxa only.]

## Or. Scorpionida

Dolichophonidae	S (m)	— S (u)	(132,208,244)
Palaeophonidae	S (u)		(208,244)
Palaeoscorpidae	D (Sieg)		(132,208,244)
? <i>Waeringscorpia</i>	D (Emsi)		(208,244)

## Cl. Pycnogonida

## Or. Palaeopantopoda

Palaeopantopodidae	D (Sieg)		(132,208)
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Or. Palaeoisopoda		
Palaeoisopididae	D (Sieg)	(23,132,208)
Or. Pantopoda		
*Palaeotheca	D (Sieg)	(23)

## Trilobitomorpha

## Cl. Trilobita

[Classification primarily from the *Treatise*, Pt. 0, except for the Agnostida which is from Öpik (1963). Stratigraphic ranges are from numerous sources, as indicated.]

## ?Or. Agnostida (=Miomera)

Agnostidae	€ (Boto) — Ø (Ashg)	(132,208)
Clavagnostidae	€ (uMid) — € (Dres)	(132,148,193)
Condylopygidae	€ (Boto) — € (uMid)	(110,132,208)
Diplagnostidae	€ (mMid) — Ø (Trem)	(132,148,193)
Discagnostidae	€ (Dres)	(226)
Eodiscidae	€ (Atda) — € (uMid)	(110,132,193)
Pagetiidae	€ (Atda) — € (mMid)	(132,148,287)
Phalacromidae	€ (uMid) — € (Dres)	(171,172)
Sphaeragnostidae	Ø (Ashg)	(226)
Trinodidae	€ (Dres) — Ø (Ashg)	(226)
Or. Redlichiida		
Abadiellidae	€ (Atda) — € (lMid)	(132,141,395)
Bathynotidae	€ (Boto) — € (lMid)	(148,193,208)
Chengkouidae	€ (Boto)	(393)
Daguinaspididae	€ (Atda)	(132,141)
Despujolsiidae	€ (Atda)	(141)
Dolerolenidae	€ (Atda) — € (Boto)	(141,195,261)
?Ellipsocephalidae	€ (Atda) — € (mMid)	(110,141,261)
Emuellidae	€ (lMid)	(173,245)
Gigantopygidae	€ (Boto)	(141,173)
Hicksiidae	€ (Boto)	(141)
Kueichowiidae	€ (Boto)	(173,393)
Longduidae	€ (Boto)	(393)
Mayiellidae	€ (Boto)	(42,173)
Neoredlichiidae	€ (Atda) — € (Boto)	(141,173,262)
Olenellidae	€ (Atda) — € (mMid)	(110,132,262)
Paradoxididae	€ (Atda) — € (uMid)	(110,173,262)
Protolenidae	€ (lTom) — € (mMid)	(92,141,173,262)
Redlichiidae	€ (Atda) — € (mMid)	(132,141,173,262)
Saukiandidae	€ (Boto)	(141,262)
Yinitidae	€ (Atda) — € (Boto)	(195,393)
Yunnanocephalidae	€ (Atda)	(170,195)

\*May be related to unlisted extant families.

Or. Corynexochida			
Balangiidae	€ (Boto)	— € (lMid)	(173,195)
Corynexochidae	€ (Boto)	— € (Fran)	(227,261,262,314)
Dinesidae	€ (Boto)	— € (uMid)	(148,263)
Dolichometopidae	€ (Boto)	— € (Dres)	(193,261,263)
Dorypygidae	€ (Atda)	— € (Trep)	(110,261,379)
Ogygopsidae	€ (Boto)	— € (mMid)	(110,193)
Oryctocephalidae	€ (Atda)	— € (uMid)	(132,173,195,393)
Zacanthoididae	€ (Boto)	— € (uMid)	(110,193,261)
Or. Ptychopariida			
Agraulidae	€ (lMid)	— € (Dres)	(110,148,296)
Alokistocaridae	€ (Boto)	— € (Fran)	(110,193,381)
Alsataspididae	θ (Trem)	— θ (Llvi)	(132,379)
Andrarinidae	€ (mMid)	— € (Fran)	(110,148,193)
Annamitiidae	€ (uMid)		(276)
Anomocaridae	€ (lMid)	— θ (Trem)	(148,263,379)
Apatokephalopsidae	θ (Trem)		(394)
Asaphidae	€ (uMid)	— θ (Ashg)	(132,172,173)
Asaphiscidae	€ (lMid)	— θ (Trem)	(173,263,379)
Aulacodigmatidae	€ (uMid)	— € (Dres)	(226)
Auritamidae	€ (uMid)	— € (Dres)	(226)
Avoninidae	€ (uMid)	— € (Fran)	(208)
Bolaspidae	€ (mMid)	— € (uMid)	(110,193)
Burlingiidae	€ (mMid)	— € (Fran)	(87,132,172,173)
Catillicephalidae	€ (uMid)	— € (Trep)	(148,349)
Ceratopygidae	€ (uMid)	— θ (Trem)	(132,173,208)
Cheilocephalidae	€ (Dres)	— € (Fran)	(132,208)
Conocoryphidae	€ (Atda)	— θ (Trem)	(110,132,173,193)
Coosellidae	€ (uMid)	— € (Dres)	(110,191,208)
Crepicephalidae	€ (lMid)	— € (Dres)	(148,173,263)
Cyclopygidae	θ (Trem)	— θ (Ashg)	(132)
Damesellidae	€ (uMid)	— € (Dres)	(110,173,227)
Decoroproetidae	S (l)	— D (Sieg)	(2)
Diceratocephalidae	€ (Dres)		(170,173,381)
Dikelocephalidae	€ (Dres)	— € (Trep)	(110,132,208)
Dikelokephalinidae	θ (Trem)	— θ (Llvi)	(132)
Dionididae	θ (Llvi)	— θ (Ashg)	(132)
Dokimocephalidae	€ (Dres)	— θ (Trem)	(110,132,379)
Elviniidae	€ (Dres)	— θ (Trem)	(132,173,208,315)
Emmrichellidae	€ (Boto)	— θ (Trem)	(262,378)
Endymioniidae	θ (Llvi)	— θ (Cara)	(132)
Entomaspididae	€ (Trep)	— θ (Trem)	(208)
Erixaniidae	€ (Dres)		(226)
Eurekiidae	€ (Fran)	— θ (Trem)	(110,132,208,379)
Hapalopleuridae	θ (Trem)	— θ (Cara)	(132,378)
Harpidae	θ (Trem)	— D (Fras)	(132)

Harpidiidae	€ (Fran)	—	Θ (Aren)	(87,132,208)
Holotrachelidae	Θ (Ashg)			(132)
Housiidae	€ (Dres)	—	€ (Fran)	(110,132)
Hungaiidae	€ (Trep)	—	Θ (Ashg)	(208,378)
Hypermeaspidiidae	Θ (Aren)	—	Θ (m)	(208)
Idahoiidae	€ (Dres)	—	€ (Trep)	(110,132,208,227)
Illaenidae	Θ (Trem)	—	S (u)	(132,379)
Illaenuridae	€ (Fran)	—	€ (Trep)	(110,132,208)
Ityophoridae	Θ (Cara)	—	Θ (Ashg)	(132)
Kaolishaniidae	€ (Dres)	—	€ (Trep)	(193,195,314)
Kingstoniidae	€ (uMid)	—	Θ (Trem)	(170,183,379)
Komaspidiidae	€ (uMid)	—	Θ (Cara)	(132,172,312,378)
Lecanopygidae	€ (Fran)	—	Θ (Aren)	(110,132,208)
Leiostegiidae	€ (uMid)	—	Θ (Trem)	(172,173,378)
Liostracinidae	€ (uMid)	—	€ (Trep)	(172,173,208)
Loganellidae	€ (Fran)	—	€ (Trep)	(87,208)
Lonchocephalidae	€ (uMid)	—	€ (Trep)	(191,208,227)
Marjumiidae	€ (mMid)	—	Θ (Trem)	(132,172,173)
Menomoniidae	€ (uMid)	—	€ (Fran)	(87,110,191,208)
Missisquoiidae	€ (Fran)	—	Θ (Trem)	(313,378,394)
Nepeidae	€ (uMid)	—	€ (Dres)	(132,227)
Nileidae	€ (Trep)	—	Θ (Ashg)	(5,379)
Norwoodiidae	€ (uMid)	—	Θ (Trem)	(191,227,378)
Olenidae	€ (Dres)	—	Θ (Cara)	(132,193,375)
Orometopidae	Θ (Trem)	—	Θ (Aren)	(132)
Pagodiidae	€ (uMid)	—	€ (Trep)	(132,170,173,379)
Papyriaspidiidae	€ (lMid)	—	€ (Trep)	(170,173,349,381)
Parabolinoiidae	€ (Dres)	—	€ (Fran)	(110,208)
Phillipsiidae	D (Fame)	—	P (Guad)	(132)
Phillipsinellidae	Θ (Ashg)			(132,378)
Placosematidae	€ (uMid)	—	€ (Dres)	(226)
Plectriferidae	€ (uMid)	—	€ (Dres)	(226)
Plethopeltidae	€ (uMid)	—	Θ (Trem)	(110,191,378)
Polycyrtaspididae	€ (Dres)			(226)
Pterocephalidae	€ (Dres)	—	€ (Trep)	(132,208,313)
Ptychaspidiidae	€ (Fran)	—	Θ (Trem)	(110,132,195)
Ptychopariidae	€ (Boto)	—	Θ (Trem)	(110,148,262,378)
Raphiophoridae	Θ (Aren)	—	S (u)	(132)
Raymondinidae	€ (uMid)	—	€ (Trep)	(110,208)
Remopleurididae	€ (uMid)	—	Θ (Ashg)	(132,148)
Rhyssometopidae	€ (uMid)	—	€ (Dres)	(226)
Saukiidae	€ (Dres)	—	€ (Trep)	(132,195,208,227)
Shirakiellidae	€ (Fran)			(172,173,195)
Shumardiidae	€ (Fran)	—	Θ (Ashg)	(132,313,350)
Solenopleuridae	€ (Boto)	—	Θ (Trem)	(110,262,263,379)
Styginidae	Θ (Aren)	—	Θ (Ashg)	(132)
Taihungshaniidae	Θ (Trem)	—	Θ (Llvi)	(132)



Telephinidae	Θ (Llvi)	— Θ (Ashg)	(132)
Thysanopeltidae	Θ (Cara)	— D (Fras)	(132)
Tricrepicephalidae	€ (uMid)	— € (Dres)	(110,191,227)
Trinucleidae	Θ (Aren)	— Θ (Ashg)	(132)
Tsinaniidae	€ (Fran)	— € (Trep)	(172,173,381)
Or. Proetida			
Aulacopleuridae	Θ (Aren)	— C (Bash)	(103,132)
Bathuridae	Θ (Trem)	— Θ (Cara)	(103,132)
Brachymetopidae	S (m)	— C (Step)	(103,132,138)
Celmidae	Θ (Llvi)		(103,132)
Dimeropygidae	Θ (Aren)	— Θ (Ashg)	(103,132)
Glaphuridae	Θ (Aren)	— Θ (Ashg)	(103)
Proetidae	Θ (Aren)	— P (Leon)	(103,132)
Or. Phacopida			
Calmoniidae	S (m)	— D (Fras)	(2,208)
?Calymenidae	Θ (Trem)	— D (Eife)	(2,132,208)
Cheiruridae	€ (u)	— D (Give)	(2,132)
Dalmanitidae	Θ (Aren)	— D (Fras)	(132)
Encrinuridae	Θ (Trem)	— D (Gedi)	(2,132,379)
?Homalonotidae	Θ (Trem)	— D (Fras)	(2,132)
Monorakidae	Θ (Cara)	— Θ (Ashg)	(132)
Phacopidae	S (l)	— D (Fame)	(132)
Pliomeridae	Θ (Trem)	— Θ (Ashg)	(132)
Pseudotrinitidae	D (Emsi)	— D (Eife)	(2)
Pterygometopidae	Θ (Aren)	— S (l)	(132)
Synphoriidae	S (m)	— D (Eife)	(2,138)
Or. Lichida			
Lichakephalidae	Θ (Trem)		(132)
Lichidae	Θ (Trem)	— D (Fras)	(132,208)
Or. Odontopleurida			
Eoacidaspidae	€ (uMid)	— € (Fran)	(148,283)
Eodontopleuridae	€ (Boto)		(393)
Odontopleuridae	Θ (Aren)	— D (Fras)	(132)
Or. Nektaspida			
Naraoiidae	€ (mMid)		(374)
Incertae sedis			
Amgaspidae	€ (lMid)	— € (uMid)	(148,173,263)
Edelsteinaspidae	€ (lMid)	— € (mMid)	(148,173,263,288)
Granulariidae	€ (Boto)	— € (uMid)	(148,261)
Hanburiidae	€ (mMid)		(148)
Isocolidae	Θ (Aren)	— Θ (Ashg)	(5,378)
Jakutidae	€ (Boto)	— € (lMid)	(148,173,263)
Myindidae	Θ (Trem)		(379)
Namanoiidae	€ (lMid)	— € (uMid)	(148,173)

Sarkiidae	Θ (m)	(208)
Cl. Merostomoidea		
[Classification after Bergström (1971, 1980).]		
Or. Emeraldellida		
Emerallidae	€ (mMid)	(41,61)
Or. Limulavida		
Sidneyiidae	€ (mMid)	
Or. Cheloniellida		
Cheloniellidae	D (Sieg)	(132,208)
Or. uncertain		
<i>Helmetia</i>	€ (mMid)	(377)
Paleomeridae	€ (Atda)	(21)
Strabopidae	€ (Fran) — Θ (Cara)	(132,254)
Cl. Marrelomorpha		
[Classification after Bergström (1980).]		
Or. Mimetasterida		
<i>Mimetaster</i>	€ (mMid) — D (Sieg)	(132,377)
Or. Acercostraca		
Vachonisiidae	D (Sieg)	(132)
Or. Cyclina (=Cycloidea)		
Cyclidae	C (Tour) — Tr (Nori)	(132)
Hemitrochiscidae	P (u) — Tr (u)	
Mesoprosopidae	Tr (u)	
Crustacea		
Cl. Incertae sedis		
?Or. Leancoiliida		
Leancoiliidae	€ (mMid)	(377)
Waptiida		
Waptiidae	€ (mMid)	(377)
Cl. Cephalocarida		
*? <i>Dala</i>	€ (Dres)	(215)
Cl. Branchiopoda		
[Classification from the <i>Treatise</i> , Pt. R. Only marine families are listed; three extant marine families without known fossil representatives are not listed.]		

\*May be related to unlisted extant families.

Incertae sedis			
?Parvancorinidae	V (u)		(208)
Or. Diplostraca (?Conchostraca)			
incertae sedis	D (Gedi)	— D (Emsi)	(132)
Or. Anostraca			
Gilsonicarididae	D (Sieg)		(132)

## Cl. Ostracoda

[Classification and stratigraphic ranges from the *Treatise*, Pt. Q, and *The Fossil Record*, with emendations as indicated. Six extant families without known fossil representatives are not listed; exclusively nonmarine families also are not listed.]

Or. Archaeocopida (= Bradoriida)			
Alutidae	€ (Atda)		(170,195,228)
Beyrichonidae	€ (Atda)	— Θ (Trem)	(132,228,295,297)
Bradoriidae	€ (uTom)	— € (Fran)	(70,74,228,314)
Comptalutidae	€ (IMid)	— € (uMid)	(228,314)
Indianidae	€ (Boto)	— € (mMid)	(228,295,314)
Monasteriidae	€ (mMid)		(160)
Oepikalutidae	€ (mMid)	— € (uMid)	(160)
Svealutidae	€ (mMid)	— € (Dres)	(160,228,296,314)
Or. Leperditicopida			
Isochilinidae	Θ (Trem)	— D (Give)	
Leperditiidae	Θ (Aren)	— D (Give)	
incertae sedis	€ (l)		(177)
Or. Palaeocopida			
Aechminellidae	S (m)	— P (Sakm)	(144)
Aechminidae	Θ (Cara)	— D (Give)	(208)
Amphissitidae	D (Emsi)	— P (Guad)	(125)
Aparchitidae	Θ (Aren)	— C (Step)	
Arcyzonidae	D (Eife)	— D (Fras)	(125, 224)
Bassleratiidae	Θ (Aren)	— Θ (Cara)	
Beyrichiidae	Θ (m)	— C (Tour)	(26)
Beyrichiopsidae	D (Sieg)	— P (Guad)	(125)
Bolliidae	Θ (Aren)	— D (Give)	(125,298)
Cardiniferellidae	C (Namu)		
Chilobolbinidae	Θ (m)	— S (m)	
?Conchoprimitiidae	Θ (l)	— Θ (Ashg)	(299)
Craspedobolbinidae	S (l)	— D (Fame)	(159)
?Cryptophyllidae	Θ (Cara)	— J (u)	(299)
Ctenoloculinidae	S (m)	— C(l)	(27)
Drepanellidae	Θ (Cara)	— D (Fame)	
?Eridoconchidae	Θ (Cara)	— D (Fame)	(159,299)
Eurychilinidae	Θ (Aren)	— S (l)	(298)
Geisinidae	D (Eife)	— P (Sakm)	(125)

Glyptopleuridae	D (Give)	— P (Sakm)	
Hollinellidae	S (u)	— Tr (Indu)	(27)
Hollinidae	D (m)	— C (Step)	(27)
Jaanussoniidae	Θ (m)	— D	(299)
Judahellidae	Tr (Indu)	— Tr (Ladi)	(325)
Kellettinidae	C (Tour)	— P (Guad)	
Kirkbyellidae	S (m)	— C (Mosc)	
Kirkbyidae	D (Eife)	— Tr (Indu)	(224,325)
Kloendenellidae	S (l)	— C (Step)	
Knightinidae	D (u)	— Tr (Indu)	(325)
Leperditellidae	Θ (Aren)	— P (Leon)	
Lichwiniidae	D (Give)	— P (Guad)	
Miltonellidae	P (Guad)		
Nodellidae	D (Emsi)	— D (Fame)	(125)
Oepikellidae	Θ (Cara)	— Θ (Ashg)	
Paraparchitidae	D (Gedi)	— P (Guad)	(125)
Piretellidae	Θ (Aren)	— Θ (Ashg)	(298)
Placideidae	D (Give)	— P (Guad)	
Pribylitidae	S (u)	— D (Fame)	(125)
Primitiopsidae	Θ (Llde)	— D (Give)	
Punciidae	Θ (Aren)	— R	
Quadrijugatoridae	Θ (Aren)	— Θ (Cara)	
Richinidae	Θ (Cara)	— D (Fras)	(125)
Sansabellidae	C (Vise)	— C (Step)	
?Schmidtellidae	Θ (Cara)	— D (m)	(298,299)
Scrobiculidae	D (Emsi)	— P (Guad)	(125)
Sigmoopsidae	Θ (Aren)	— Θ (Ashg)	
Tetradellidae	€ (lMid)	— S (l)	(177)
Tvaerenellidae	Θ (Aren)	— Θ (Ashg)	
Youngiellidae	D (Give)	— C (Step)	
Zygobolbidae	Θ (m)	— S (m)	
Or. Myodocopida			
Bolbozoidae	S (l)	— D (Fame)	
Cyprellidae	C (Vise)		
Cypridinellidae	D	— C (Vise)	
Cyprosinidae	D (Gedi)	— D (Fame)	
Entomoconchidae	D (Gedi)	— C (Step)	
Entomozoidae	Θ (Llvi)	— P (Asse)	
Polycopidae	C (Vise)	— R	
Rhombinidae	C (Tour)	— C (Vise)	
Thaumatocyprididae	J (Bajo)	— R	
Or. Podocopida			
Acronotellidae	Θ (Cara)	— S (u)	
Bairdiidae	Θ (Ashg)	— R	
Bairdiocyprididae	S (l)	— P	
Barychilinidae	Θ (Cara)	— D (Fras)	(159)

Beecherellidae	S (m)	— D (Fame)	(125,144)
Berounellidae	S (u)	— D (Fame)	
Brachyocytheridae	J (Kimm)	— R	
Bufinidae	D (Eife)	— C (Penn)	(125)
Bythocytheridae	Θ (Ashg)	— R	
Cavellinidae	S (u)	— Tr (Indu)	(325)
Cyprididae	J (Bath)	— R	
Cytherellidae	S (m)	— R	(144)
Cytherettidae	K (Coni)	— R	
Cytheridae	K (Neoc)	— R	(4)
Cytherideidae	C (Mosc)	— R	
Cytherissinellidae	Tr (Indu)	— Tr (Olen)	
Cytheruridae	J (Bajo)	— R	
Egorovitinidae	C (Vise)		(127)
Healdiidae	D (Gedi)	— K (Apti)	(125)
Hemicytheridae	T (Eo-l)	— R	
Krausellidae	Θ (Llde)	— D (Fras)	(159)
Leguminocythereididae	T (Pale)	— R	
Leptocytheridae	T (Eo-u)	— R	
Loxoconchidae	J (Bajo)	— R	
Macrocyprididae	J (Oxfo)	— R	
Pachydomellidae	S (m)	— D (Fame)	(224)
Paracyrididae	J (Hett)	— R	
Paradoxostomatidae	K (Albi)	— R	(4)
Pectocytheridae	K (Maes)	— R	
Permianidae	P (Dzhu)		
Pontocyprididae	K (u)	— R	(208)
Progonocytheridae	J (Sine)	— K (Maes)	
Protocytheridae	J (Sine)	— R	
Quasillitidae	D (Gedi)	— P (Guad)	(125)
Ropolonellidae	D (Sieg)	— D (Fras)	(125)
Schizocytheridae	K (Ceno)	— R	
Schulerideidae	J (Toar)	— R	
Sinusuellidae	P (Dzhu)		
Thlipsuridae	S (l)	— D (Fame)	(125,224)
Tomiellidae	P (Dzhu)		
Trachyleberididae	J (Bajo)	— R	
Xestoleberididae	K (Sant)	— R	
Incertae sedis			
Buregiidae	D (Give)		
?Cl. Euthycarinoidea			
[May not be crustaceans.]			
Or. Euthycarcinida			
Euthycarcinidae	C (Mosc)	— Tr (Olen)	(132,301)
Sottyxerxidae	C (Mosc)	— C (Step)	(301)

## Cl. Copepoda

[Approximately 30 extant marine families; freshwater families not considered.]

Calanoida -			
(?Ascomyzontidae)	K (Apti)	— R	(72)
incertae sedis	J (Call)		(132,278)

## Cl. Cirripedia

[Classification from the *Treatise*, Pt. R; stratigraphic ranges from *The Fossil Record*. Approximately 17 extant families without fossil representatives (including all in the Rhizocephala and Apoda) are not listed.]

Or. Thoracica			
<i>Priscanermarinus</i>	€ (mMid)		(51a)
Balanidae	T (Eo-l)	— R	
Brachylepadidae	J (Tith)	— T (Mi-u)	
Chthamalidae	K (Camp)	— R	
Cyprilepadidae	S (u)		
Lepadidae	T (Eo-m)	— R	
Oxynaspididae	T (Eo-m)	— R	
Poecilasmataidae	T (Eo-u)	— R	
Praelepadidae	C (Mosc)		
Scalpellidae	C (u)	— R	
Stramentidae	K (Albi)	— K (Seno)	
Verrucidae	K (Ceno)	— R	
Or. Acrothoracica			
Trypetesidae	C (Step)	— R	
Or. Ascothoracica			
incertae sedis	K (Turo)	— R	(181)

## Cl. Malacostraca

[Classification and stratigraphic ranges based on the *Treatise*, Pt. R, with emendations as indicated. Only marine families are listed, and approximately 90 extant families without known fossil representatives are not listed.]

Or. Leptostraca			
Nebaliidae	P (Guad)	— R	(132)
?Or. Canadaspidida			
Canadaspididae	€ (mMid)		(36,39)
Perspucarididae	€ (mMid)	— € (uMid)	(37,276a)
Or. Hymenostroaca			
Hymenocarididae	€ (Boto)	— € (Aren)	(39,264)
Or. Hoplostraca			
Sairocarididae	C (Vise)	— C (Mosc)	(301,303)
Or. Archaeostraca			
Aristozoidae	S (u)	— D (Eife)	(279)

Austriocarididae	D (Emsi)	— Tr (Carn)	(279)
Ceraticarididae	Θ (Trem)	— C (Mosc)	(46,303)
Echinocarididae	D (Sieg)	— C (Tour)	(46,279)
Ohiocarididae	D (Fame)		(279)
Pephricarididae	D (Fame)		(279)
Rhinocarididae	D (Sieg)	— C (Mosc)	(279)
Or. Incertae sedis			
<i>Anomalocaris</i>	ϵ (Boto)	— ϵ (mMid)	(38)
<i>Carnarvonia</i>	ϵ (mMid)		
<i>Protocaris</i>	ϵ (l)	— ϵ (mMid)	(35)
Discinocarididae	Θ (m)	— S (u)	
Peltocarididae	Θ (Ashg)	— Tr (Carn)	
Tuzoiidae	ϵ (Atda)	— ϵ (uMid)	(61,121,276a)
Or. Palaeostomatopoda			
Perimecturidae	D (u)	— C (Namu)	(300)
Or. Stomatopoda			
Gonodactylidae	K (l)	— R	(300)
Lysiosquillidae	T (Eo)	— R	
Sculdidae	J (Tith)	— K (u)	
Squillidae	K (l)	— R	
Tyrannophontidae	C (Namu)	— C (Mosc)	(300,303,307)
Or. Aeschronectida			
Aenigmacarididae	C (Vise)	— C (Step)	(307)
Aratidecthidae	C (Vise)	— C (Mosc)	
Kallidecthidae	C (Bash)	— C (Step)	(300,307,308)
Or. Eocaridacea			
Anthracophausiidae	C (Vise)	— C (Mosc)	(300,303)
Eocarididae	D (Give)	— D (Fame)	(300)
Essoidiidae	C (Mosc)		(303)
Or. Belotelsonidea			
Belotelsonidae	C (Vise)	— C (Mosc)	(303,307)
Or. Waterstonellidea			
Waterstonellidae	C (Vise)		
Or. Decapoda			
Albuneidae	T (Ol-l)	— R	
Astacidae	J (u)	— R	
Atelecyclidae	T (Eo-l)	— R	
Atyidae	T (Ol-u)	— R	
Axiidae	J (Toar)	— R	
Calappidae	K (Haut)	— R	(383)
Callianassidae	J (u)	— R	
Cancriidae	T (Eo-m)	— R	
Cancrinidae	J (Tith)		

MILWAUKEE PUBLIC MUSEUM

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# Contributions

in  
BIOLOGY  
and  
GEOLOGY

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Number 51

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**A Compendium of Fossil Marine Families**

**J. John Sepkoski, Jr.**



Carcineretidae	K (Apti)	— K (Maes)	(383)
Carpiliidae	K (Ceno)	— R	(383)
Coenobitidae	T (Mi)	— R	
Coleiidae	Tr (u)	— K (l)	
Cynomidae	K (Haut)	— R	(383)
Dakoticancridae	K (Seno)		
Dorippidae	K (Albi)	— R	
Dromiidae	K (Albi)	— R	(383)
Dynomenidae	J (Tith)	— R	(383)
Eocarcinidae	J (Plie)		
Erymidae	P (Guad)	— K (Camp)	(9,305)
Eryonidae	J (l)	— K (l)	
Galatheidae	J (Bajo)	— R	
Geryonidae	T (Eo-l)	— R	
Glypheidae	P (Sakm)	— R	(101a,300)
Goneplacidae	T (Pale)	— R	
Grapsidae	T (Eo-m)	— R	
Homolidae	J (Tith)	— R	
Laomediidae	T (Mi)	— R	
Latreilliidae	K (Ceno)	— R	(383)
Leucosiidae	T (Eo-m)	— R	
Majidae	T (Eo-l)	— R	
Mecochiridae	Tr (l)	— K (Camp)	(9)
Nephropidae	J (m)	— R	
Ocypodidae	T (Eo-m)	— R	
Oplophoridae	J (Call)	— R	
Paguridae	J (Plie)	— R	
Palaemonidae	T (Eo-l)	— R	
Palaeopalaemonidae	D (Fame)		(93,300,306)
Palaeopemphicidae	P (Guad)		(132)
Palicidae	K (Albi)	— R	
Palinuridae	J (l)	— R	
Parastacidae	T (Eo)	— R	
Parthenopidae	T (Eo-m)	— R	
Pemphicidae	Tr (m)		
Penaeidae	Tr (u)	— R	(132)
Pinnotheridae	T (Eo-l)	— R	(52)
Platychelidae	Tr (u)		
Polychelidae	J (m)	— R	
Porcellanidae	K (Ceno)	— R	
Portunidae	T (Eo-l)	— R	
Potamidae	T (Mi-u)	— R	
Prosopidae	J (Bajo)	— R	(383)
Raninidae	K (Albi)	— R	
Retroplumidae	T (Eo-m)	— R	
Scyllaridae	K (Albi)	— R	
Tetrachelidae	Tr (u)		

Thalassinidae	Q (Plei)	— R	
Tymolidae	T (Eo-m)	— R	
Udorellidae	J (Tith)		
Uncinidae	J (Toar)		
Xanthidae	K (Apti)	— R	(383)
Or. Mysidacea (marine only)			
Jerometichenoriidae	P (Sakm)		
Mysidae	T (Mi-l)	— R	
Notocarididae	P (Guad)		(300)
Pygocephalidae	C (Vise)	— P (l)	(305)
Teallicarididae	C (Tour)	— C (Vise)	(303)
Or. Cumacea (extant)			
<i>Nannastacus</i>	P (Guad)		(132)
<i>Palaeocuma</i>	Tr (m)		
Or. Tanaidacea (extant)			
<i>Charassocarcinus</i>	J (Bajo)		
<i>Ophthalmapseudes</i>	P (Guad)		(132)
<i>Palaeotanais</i>	J (Bajo)		(208)
Anthracocarididae	C (Tour)		(303)
Cryptocarididae	C (Mosc)		
Or. Isopoda			
Amphisopidae	P (Guad)	— R	
Archaeoniscidae	J (u)		
Armadillidiidae	T (Mi-u)	— R	
Cirolanidae	T (Mi-u)	— R	
Epicaridea	J (Oxfo)	— R	(62)
Idoteidae	T (Ol-l)	— R	
Oniscidae	T (Eo-u)	— R	
Palaeophreatoicidae	C (Mosc)	— P (Guad)	(303,305)
Porcellionidae	T (Eo-u)	— R	
Sphaeromidae	K (u)	— R	
Trichoniscidae	T (Eo-u)	— R	
Urdidae	J (Bath)	— K (Apti)	(243)
Or. Amphipoda			
Gammaridae	T (Eo-u)	— R	
Uniramia			
Cl. Tardigrada (3 extant marine families)			
? <i>Aysheaia</i>	€ (mMid)		(375,376)
? <i>Xenusion</i>	€ (uTom)		(145)
Arthropod incertae sedis			
Cl. Incertae sedis			
Or. Bostrichopodida			

Bostrichopodidae	C (Tour)		
Incertae sedis			
<i>Actaeus</i>	€ (mMid)		(377)
<i>Alalcomenaeus</i>	€ (mMid)		(377)
Bohemillidae	Θ	— Θ (Ashg)	(208)
<i>Burgessia</i>	€ (mMid)		(377)
Corcoraniidae	Θ (Trem)		(151)
<i>Habelia</i>	€ (mMid)		(377)
<i>Kablikia</i>	Θ (Llde)		(132,208)
<i>Marriocarida</i>	€ (mMid)	— Θ (Ashg)	(208)
<i>Molaria</i>	€ (mMid)		(377)
Mollisoniidae	€ (mMid)		(377)
Odaraidae	€ (mMid)		(377)
<i>Pahvantia</i>	€ (uMid)		(276a)
<i>Plenocaris</i>	€ (mMid)		(377)
? <i>Pomerania</i>	€ (uTom)		(162,186)
Praecambridiidae	V (u)		(123,208)
Protocarididae	€ (mMid)	— € (uMid)	(40,276a,377)
<i>Serracaris</i>	€ (Boto)		(38)
<i>Skania</i>	€ (mMid)		(377)
<i>Tegopelte</i>	€ (mMid)		(377)
Vendomiidae	V (u)		(162,231)
Yohoiidae	€ (mMid)	— € (u)	(132,208)

## PHORONIDA (1 extant family)

? <i>Helicosyrinx</i>	Θ		(62)
incertae sedis	K (Maes)	— R	(208)

## BRYOZOA

[Classification based on the *Treatise*, Pt. G, and stratigraphic ranges on *The Fossil Record*, with emendations as indicated; references to the *Treatise* (208) are to Part A. Approximately 37 extant families without fossil records are not listed.]

## Cl. Stenolaemata

## Or. Cyclostomata

Cavidae	J (Bath)	— K (Maes)	
Cerymboporidae	K (Ceno)	— R	
Clausidae	K (Vala)	— K (Maes)	
Corynotrypidae	Θ (Aren)	— P (u)	(84a)
Crisiidae	K (Ceno)	— R	
Crownoporidae	Θ (Llvi)	— Θ (Cara)	(84a)
Cytididae	J (Kimm)	— R	
Diaperoeciidae	J (Bath)	— R	
Diastoporidae	Θ (Cara)	— R	

Eleidae	J (Bath)	— T (Dani)	
Entalophoridae	J (Plie)	— R	
Fron diporidae	J (Bath)	— R	
Hederellidae	S (m)	— C (Step)	(84a)
Heteroporidae	Tr (Nori)	— R	
Horneridae	K (Apti)	— R	(359)
Leiosoeeciidae	J (Bath)	— T (Eo-l)	
Lichenoporidae	K (Vala)	— R	
Lobosoeeciidae	K (Ceno)		
Multisparsidae	J (Bajo)	— K (l)	
Oncosoeeciidae	J (Plie)	— R	
Petaloporidae	K (Haut)	— R	
Phaceloporidae	S (l)	— D	
Plagioeciidae	J (Bath)	— R	
Reptariidae	S (m)	— D (m)	(84a)
Semiceidae	K (Ceno)	— K (Maes)	(359)
Sulcocavidae	K (Coni)	— K (Maes)	(359)
Terviidae	T (Eo-m)	— R	
Theonoidae	J (Bajo)	— R	
Tretocycloeciidae	K (Ceno)	— R	
Tubuliporidae	D (Eife)	— R	
Or. Cystoporata			
Actinotrypidae	C (Vise)	— P (Guad)	(208,285)
Ceramoporidae	Θ (Aren)	— D (Gedi)	(229)
Constellariidae	Θ (Llde)	— S (m)	
Dianulitidae	Θ (Aren)	— Θ (Ashg)	(200)
Etherellidae	P (Leon)	— P (Guad)	(208,285a)
Fistuliporidae	Θ (Llvi)	— P (Dzhu)	(209,285)
Goniocla diidae	D (u)	— P (Dzhu)	(209,229,285)
Hexagonellidae	D (m)	— P (Dzhu)	(209,285)
Rhinoporidae	Θ (Llvi)	— S (m)	
Sulcoreteporidae	D (Gedi)	— P (Guad)	(285)
Or. Trepostomata			
Aisenvergiidae	C (Tour)		
Amplexoporidae	Θ (Cara)	— S (u)	
Anisotrypidae	D (u)	— P (Dzhu)	(285a)
Araxoporidae	C (Tour)	— Tr (Indu)	(285)
Atactotoechidae	Θ (Aren)	— D (Fras)	(23b)
Batostomellidae	Θ (Aren)	— S (u)	
Cycloporidae	C (Vise)		(285a)
Dittoporidae	Θ (Aren)	— Θ (Ashg)	
Dyscritellidae	D (u)	— P (Dzhu)	(285a)
Eridotrypellidae	D (Give)	— P (Guad)	(209,229)
Halloporidae	Θ (Llde)	— D (Emsi)	
Heterotrypidae	Θ (Cara)	— D (Fras)	
Leioclemidae	C (Tour)	— P (Asse)	(285a)

Mesotrypidae	Θ (Llde)	— Θ (Ashg)	(229)
Monticuliporidae	Θ (Llvi)	— S (u)	
Stenoporidae	D (Gedi)	— P (Dzhu)	(285a)
Trematoporidae	Θ (Aren)	— D (Eife)	
Ulrichotrypellidae	D (u)	— P (Guad)	(285)
Or. Cryptostomata			
Acanthocladiidae	Θ (Llvi)	— P (Guad)	(285a)
Arthrostylidae	Θ (Cara)	— P (Asse)	(285a)
Bactroporidae	D (Give)		
Escharoporidae	Θ (Llde)	— C (Vise)	
Fenestellidae	Θ (Cara)	— Tr (Indu)	
Fenestraliidae	C (Tour)	— P (Guad)	(209,285)
Girtyoporidae	C (Vise)	— Tr (Indu)	(285a)
Hyphasmoporidae	D (u)	— P (Dzhu)	(209,285)
Intraporidae	D (m)	— C (Vise)	
Nikiforovellidae	D (m)	— P (Guad)	(285)
Phragmopheridae	C (Step)		(285a)
Phylloporinidae	Θ (Llvi)	— P (Leon)	(285a)
Polyporidae	Θ (Cara)	— Tr (Indu)	(209,285)
Ptilodictyidae	Θ (Llde)	— D (Sieg)	
Rhabdomesidae	S (u)	— P (Guad)	(285a)
Rhinidictyidae	Θ (Cara)	— S	(229)
Rhomboporidae	C (Vise)	— P (u)	
Septatoporidae	C (Tour)	— P (Dzhu)	(209,285)
Steptoporidae	D (u)	— P (Guad)	(285a)
Stictoporellidae	Θ (Aren)	— C (Namu)	
Timanodictyidae	P (Asse)	— P (Guad)	(208,229,285a)
Virgatellidae	Θ (m)		
?Worthenoporidae	C (Tour)	— C (Vise)	
Cl. Gymnolaemata			
Or. Ctenostomata			
Arachnidiidae	K (Maes)	— R	(361)
Ascodictyidae	S (l)	— P	
Cookobryozoonidae	T (Mi-m)	— T (Plio)	(246)
Immergentiidae	T (Mi-l)	— R	(246)
Orbignyoporidae	K (Maes)	— T (Plio)	(246)
Penetrantiidae	Tr (Rhae)	— R	(246)
Ropalonariidae	Θ (Cara)	— P (Sakm)	(84a)
Spathiporidae	J (Call)	— R	(246)
Terebriporidae	K (Maes)	— R	(246)
Vesiculariidae	K (Maes)	— R	
Vinellidae	Θ (Aren)	— K (Camp)	
Voigtellidae	K (Camp)	— K (Maes)	(246)
Or. Cheilostomata			
Adeonidae	T (Eo-l)	— R	

Aeteidae	T (Eo-u)	— R	
Alysiidiidae	T (Mi-m)	— R	
Andrioporidae	K (Ceno)	— T (Dani)	
Arachnopusiidae	T (Eo-m)	— R	
Aspidostomatidae	K (Ceno)	— R	(84)
Bifaxariidae	T (Eo-u)	— R	(43)
Bitectiporidae	T (Ol-u)	— R	
Calloporidae	K (Albi)	— R	
Calpensiidae	T (Eo-m)	— R	
Calpidoporidae	K (Ceno)	— K (Sant)	
Catenicellidae	T (Eo-u)	— R	(115a)
Cellariidae	K (Sant)	— R	
Celleporidae	K (Camp)	— R	
Chaperiellidae	T (Ol-l)	— R	
Cheiloporinidae	K (Sant)	— R	
Conescharellinidae	T (Eo-u)	— R	(115a)
Coscinopleuridae	K (Sant)	— T (Eo-l)	
Crepidacanthidae	T (Eo-m)	— R	
Cribrilinidae	K (Sant)	— R	
Ctenoporidae	K (Ceno)		
Cyclicoporidae	K (Maes)	— R	
Disheloporidae	K (Coni)	— K (Sant)	
Dysnoetoporidae	K (Camp)	— K (Maes)	
Electridae	J (Tith)	— R	
Eurystomellidae	Q (Plei)	— R	
Exochellidae	K (Sant)	— R	
Farciminariidae	K (Maes)	— R	
Fusicellariidae	K (Turo)	— T (Mi)	
Gigantoporidae	K (Maes)	— R	
Hiantoporidae	K (Sant)	— R	
Hincksinidae	K (Camp)	— R	
Hippoporinidae	K (Camp)	— R	
Hippothoidae	K (Ceno)	— R	
Lekythoporidae	T (Eo-u)	— R	
Lunulitidae	K (Turo)	— R	
Mamilloporidae	K (Maes)	— R	
Membranicellariidae	K (Maes)	— R	
Membraniporidae	K (Ceno)	— R	
Microporellidae	T (Mi-u)	— R	
Microporidae	K (Sant)	— R	
Mucronellidae	K (Camp)	— R	
Myagroporidae	K (Coni)	— K (Sant)	
Myriozoidae	T (Eo-u)	— R	(115a)
Nephroporidae	K (Maes)		
Onychocellidae	K (Ceno)	— R	
Orbituliporidae	K (Camp)	— R	
Otoporidae	K (Ceno)	— K (Camp)	

Parmulariidae	K (Camp)	— R	
Pasytheidae	T (Eo-l)	— R	
Pelmatoporidae	K (Turo)	— R	
Petraliidae	T (Eo-u)	— R	
Phylactellidae	T (Pale)	— R	
Phylactelliporidae	T (Eo-m)	— R	
Platyglenidae	K (Maes)	— T (Dani)	
Porinidae	K (Turo)	— R	
Prostomariidae	T (Mi)		
Reteporidae	T (Eo-l)	— R	
Rhacheoporidae	K (Coni)	— K (Maes)	
Schizoporellidae	K (Maes)	— R	
Scrupariidae	T (Eo-l)	— R	
Scrupocellariidae	T (Eo-u)	— R	(43)
Setosellidae	K (Maes)	— R	(361a)
Steginoporellidae	T (Eo-m)	— R	
Stomachetosellidae	T (Eo-m)	— R	
Taractoporidae	K (Coni)	— K (Sant)	
Thalamoporellidae	K (Camp)	— R	
Thoracoporidae	K (Turo)	— K (Sant)	
Tubucellariidae	T (Eo-m)	— R	
Umbonulidae	T (Eo-m)	— R	
Wawaliidae	J (u)	— R	(84)

## BRACHIOPODA

## Cl. Inarticulata

[Classification from the *Treatise*, Pt. H; stratigraphic ranges augmented with *The Fossil Record* and a number of other sources, as listed.]

## Or. Lingulida

Andobolidae	Θ (Ashg)		
Craniopsidae	Θ (Cara)	— C (Tour)	
Elkaniidae	€ (Fran)	— Θ (Aren)	(295)
Lingulasmaticidae	Θ (Cara)	— Θ (Ashg)	
Lingulidae	S (m)	— R	
Obolidae	€ (uTom)	— Θ (Ashg)	(196,384)
Paterulidae	Θ (Aren)	— S (m)	
Trimerellidae	Θ (Cara)	— S (u)	

## Or. Acrotretida

Acrothelidae	€ (uTom)	— Θ (Trem)	(70,252)
Acrotretidae	€ (lTom)	— S (u)	(358)
Botsfordiidae	€ (Atda)	— € (mMid)	(163,314,350)
Craniidae	Θ (Llvi)	— R	
Curticiidae	€ (uMid)	— € (Fran)	(132,192)
Discinidae	Θ (Llde)	— R	
Eoconulidae	Θ (Cara)		

Ptychopeltidae	Θ (m)		
Siphonotretidae	€ (uMid)	— Θ (Cara)	(192,314)
Trematidae	Θ (Cara)	— D (Gedi)	
Or. Obolellida			
Obolellidae	€ (Atda)	— € (uMid)	(163,172,286)
Or. Paterinida			
Paterinidae	€ (uTom)	— Θ (Cara)	(286,287)
Or. Kutorginida			
Kutorginidae	€ (uTom)	— € (mMid)	(132,286,351)
Yorkiidae	€ (Atda)	— € (Boto)	(64,232,316)

## Cl. Articulata

[Classification from the *Treatise*, Pt. H, with additions from Cooper and Grant (1972-1977); stratigraphic ranges augmented with *The Fossil Record* and a number of other sources, as listed. References to the *Treatise* (208) are to Part A.]

Or. Orthida			
Angusticardiiniidae	Θ (Aren)	— Θ (Ashg)	
Billingsellidae	€ (Boto)	— Θ (Aren)	(171,172)
Clitambonitidae	Θ (l)	— Θ (Ashg)	
Cremonthidae	Θ (m)	— Θ (Cara)	
Dalmanellidae	Θ (Aren)	— C (l)	
Dicoelosiidae	Θ (Ashg)	— D (Fras)	(31)
Dolerorthidae	Θ (l)	— D (Emsi)	(31)
Eichwaldiidae	Θ (Cara)	— S (u)	
Enteletidae	Θ (Llde)	— P (Dzhu)	(128)
Eoorthidae	€ (Boto)	— Θ (Aren)	(194,275)
Finkelnburgiidae	€ (Fran)	— Θ (Aren)	(196,297,380)
Gonambonitidae	Θ (Aren)	— Θ (m)	
Harknessellidae	Θ (Llde)	— Θ (Ashg)	(380)
Hesperonomiidae	Θ (Aren)		(282,380)
Heterorthidae	Θ (Llvi)	— S (u)	(31,380)
Hypsomyoniidae	D (m)	— D (u)	
Isogrammidae	C (l)	— P (Guad)	
Kaysereididae	D (Eife)	— D (Fras)	(31)
Kullervoidae	Θ (Llde)	— Θ (Ashg)	(380)
Leioriidae	€ (Boto)		(64)
Linoporellidae	Θ (Cara)	— S (m)	
Mystrophoridae	D (Eife)		(31)
Nisusiidae	€ (Atda)	— € (uMid)	(171,275,286)
Orthidae	€ (m)	— P (Dzhu)	(368)
Orthidiellidae	Θ (Aren)	— Θ (Ashg)	(282)
Paurorthidae	Θ (Aren)	— Θ (m)	
Plaesiomyidae	Θ (l)	— Θ (Ashg)	
Plectorthidae	Θ (Aren)	— S (m)	(31,380)



Polytoechiidae	Θ (Trem) — Θ (Llvi)	(282)
Protorthidae	€ (Boto) — € (m)	(64)
Rhipidomellidae	S (l) — P (Dzhu)	(368)
Saukrodictyidae	Θ (Ashg) — S (l)	(31)
Skenidiidae	Θ (Aren) — D (Fras)	(380)
Triplesiidae	Θ (Aren) — S (m)	(282)
Tropidoleptidae	D (Gedi) — D (Fras)	(31)
Tuvaellidae	S (l)	
Or. Strophomenida		
Agelesiidae	P (Leon)	(66)
Anopliidae	S (u) — D (Emsi)	(31)
Anoptambonitidae	Θ (Llde) — Θ (Ashg)	(239a)
Aulostegidae	C (Step) — P (Dzhu)	(208)
Bactryniidae	Tr (Rhae)	
Bimuriidae	Θ (Llde) — Θ (Cara)	
Buxtoniidae	D (Fame) — P (Guad)	(31,208)
Cadomellidae	J (Plie) — J (Toar)	
Chonetellidae	P (Asse) — P (Dzhu)	(128)
Chonetidae	Θ (Ashg) — P (Dzhu)	
Chonostrophiidae	S (u) — C (Tour)	
Christianiidae	Θ (Llde) — Θ (Ashg)	
Cooperinidae	C (Penn) — P (Guad)	(66)
Cyclacanthariidae	P (Sakm) — P (Guad)	(66)
Davidsoniidae	D (Eife) — D (Give)	(31,67)
Daviesiellidae	D (u) — C (Vise)	
Dictyoclostidae	C (Tour) — P (Dzhu)	(208)
Echinoconchidae	C (Tour) — P (Dzhu)	(128)
Eocramatiidae	Θ (Llvi)	(380)
Eodevonariidae	D (Sieg) — D (Eife)	(31)
Foliomenidae	Θ (Ashg)	
Gigantoproductidae	D (u) — C (Namu)	
Hercosiidae	P (Sakm) — P (Leon)	(66)
Institinidae	C (Vise)	
Leioproductidae	D (Give) — P (Leon)	(31,208)
Leptaenidae	Θ (Cara) — C (Vise)	(380)
Leptellinidae	Θ (Aren) — S (u)	
Leptestiidae	Θ (Aren) — Θ (Ashg)	
Linoproductidae	C (Tour) — P (Dzhu)	(128)
Lyttoniidae	C (Step) — P (Dzhu)	(128)
Marginiferidae	C (Vise) — P (Dzhu)	(128)
Meekellidae	Θ (Cara) — P (Dzhu)	(128)
Oepikinidae	Θ (Llvi) — Θ (Ashg)	
Orthotetellidae	P (Sakm) — P (Dzhu)	(66,128)
Orthotetidae	D (Sieg) — P (Guad)	(31,208)
Overtoniidae	D (Fame) — P (Leon)	(31,208)
Plectambonitidae	Θ (Aren) — Θ (m)	

Poikilosakidae	C (Step)	— P (Guad)	(208)
Productellidae	D (Emsi)	— C (Namu)	
Productidae	C (Vise)	— C (Mosc)	
Richthofeniidae	P (Sakm)	— P (Dzhu)	(208)
Scacchinellidae	C (Step)	— P (Leon)	(208)
Scapharinidae	P (Guad)		(66)
Schuchertellidae	S (l)	— P (Dzhu)	(31,128)
Sinuatellidae	C (Vise)	— C (Namu)	
Sowerbyellidae	Θ (Llde)	— D (Eife)	
Spyridiophoridae	C (Step)	— P (Leon)	
Strophalosiidae	D (Emsi)	— P (Guad)	(208)
Stropheodontidae	Θ (Ashg)	— D (Fras)	(31)
Strophomenidae	Θ (Llvi)	— D (Sieg)	(31)
Taffiidae	Θ (Trem)	— Θ (Llvi)	(194)
Teguliferinidae	C (Penn)	— P (Guad)	(208)
Thecospiridae	Tr	— Tr (Rhae)	
Tschernyschewiidae	P (Asse)	— P (Dzhu)	(208,368)
Or. Pentamerida			
Alimbellidae	Θ (l)		
Brevicameridae	Θ (l)		
Camerellidae	Θ (Aren)	— S (l)	(31,282)
Clarkellidae	Θ (Trem)	— Θ (Ashg)	(194)
Enantiosphenidae	D (Give)		(31)
Eostrophiidae	⊖ (mMid)		(232,314)
Gypidulidae	S (l)	— D (Fras)	(31)
Huenellidae	⊖ (Dres)	— Θ (l)	(172,350)
Lycophoriidae	Θ (l)	— Θ (m)	
Parallelelasmatidae	Θ (m)	— Θ (Cara)	(31)
Parastrophinidae	Θ (Cara)	— D (Sieg)	(31,380)
Pentameridae	S (l)	— D (Fras)	
Porambonitidae	Θ (Aren)	— S (l)	(282)
Stricklandiidae	S (l)	— S (m)	
Syntrophiidae	Θ (Aren)	— Θ (Ashg)	(31,380)
Syntrophopsidae	Θ (Trem)	— Θ (Llvi)	(194,282)
Tetralobulidae	Θ (Trem)	— Θ (Aren)	(194,282)
Virgianidae	Θ (Ashg)	— S (l)	
Or. Rhynchonellida			
Allorhynchidae	C (Tour)	— P (Guad)	(66)
Amphipellidae	P (Leon)		(66)
Ancistrohynchidae	Θ (Llvi)	— Θ (Llde)	
Atriboniidae	D (Sieg)	— P (Dzhu)	
Austrirhynchiidae	Tr (Carn)	— Tr (Rhae)	
Basilolidae	K (Coni)	— R	
Camarotoechiidae	Θ (Llde)	— P (Guad)	(208,282)
Camerophorinidae	D (Emsi)	— D (Give)	(208)
Cardiarinidae	C (Namu)	— C (Step)	

Cryptoporidae	T (Eo-l)	— R	
Dimerellidae	Tr (Anis)	— K (Haut)	
Eatoniidae	S (l)	— D (Emsi)	
Erymnariidae	T (Eo-l)	— T (Eo-u)	
Frieleidae	T (Plio)	— R	
Hemithyrididae	T (Eo-l)	— R	
Oligorhynchiidae	Θ (Llde)	— S (l)	(31,282)
Petasmatheridae	P (Leon)	— P (Guad)	(66)
Pontisiidae	P (Asse)	— P (Guad)	(66)
Pugnacidae	D (Gedi)	— P (Dzhu)	(368)
Rhynchonellidae	Tr (Olen)	— K (Ceno)	(240)
Rhynchoporidae	C (Tour)	— P (Guad)	
Rhynchotetradidae	C (Tour)	— P (Sakm)	(208)
Rhynchotrematidae	Θ (Llde)	— D (Give)	
Septirhynchiidae	J (Call)	— J (Kimm)	
Stenosclimatidae	D (Eife)	— P (Dzhu)	(128,208)
Tetracamidae	C (Tour)	— C (Namu)	
Trigonirhynchiidae	Θ (Llde)	— P (Sakm)	
Ucinulidae	S (m)	— P (Dzhu)	(208)
Wellerellidae	C (Tour)	— K (Maes)	
Yunnanellidae	D (Give)	— D (Fame)	(31)
Or. Spiriferida			
Ambocoeliidae	S (u)	— Tr (Indu)	(128)
Anomaloriidae	P (Guad)		(66)
Athyrididae	S (m)	— Tr (Carn)	
Athyrisinidae	D (Emsi)	— Tr (Nori)	
Brachythyrididae	D (Fame)	— P (Leon)	(31,208)
Costispiriferidae	D (Sieg)	— D (Fras)	
Crenispiriferidae	C (Penn)	— P (Guad)	(66)
Cyrtiidae	S (l)	— D (Eife)	
Cyrtinidae	S (m)	— Tr (Carn)	
Cyrtospiriferidae	D (Eife)	— C (Mosc)	(31)
Delthyrididae	S (l)	— C (Tour)	
Elythidae	D (Emsi)	— P (Dzhu)	(31,208)
Fimbrispiriferidae	D (Emsi)	— D (Give)	
Koninckinidae	Tr (Rhae)	— J (Sine)	
Martiniidae	S (u)	— P (Dzhu)	(128)
Meristellidae	Θ (Cara)	— C (Tour)	
Microspiriferidae	D (Emsi)	— C (Vise)	
Nucleospiridae	S (m)	— P (Leon)	
Paraspiriferinidae	P (Asse)	— P (Guad)	(66)
Reticulariidae	S (m)	— P (Dzhu)	(31,368)
Reticulariidae	C (Miss)	— P (Guad)	(66)
Retziidae	D (Gedi)	— Tr (Carn)	(31)
Rhynchospirininidae	S (m)	— D (Eife)	(208)
Saranostegidae	P (Leon)	— P (Guad)	(66)

Spinocyrtidae	D (Emsi)	— D (Fame)	
Spiriferidae	C (Tour)	— Tr (Indu)	(368)
Spiriferinidae	D (Fame)	— J (Bajo)	(31)
Suessiidae	J (l)		
Syringothyrididae	D (Fame)	— P (Guad)	
Xenosariidae	P (Guad)		(66)
Xestotrematidae	P (Guad)		(66)
Or. Atrypida			
Anoplothecidae	S (m)	— D (Eife)	
Atrypidae	Θ (Ashg)	— D (Fras)	(67)
Dayiidae	Θ (Cara)	— S (u)	(31)
Kayseriidae	D (Eife)		(31)
Leptocoeliidae	S (l)	— D (m)	
Lissatrypidae	Θ (Cara)	— D (Give)	(31,67)
Paliferellidae	S (u)	— D (Give)	(67)
Zygospiridae	Θ (Cara)	— S (m)	(67)
Or. Terebratulida			
Cancellothyrididae	J (Plie)	— R	
Centronellidae	D (Gedi)	— P (Dzhu)	(31)
Cheniothyrididae	J (m)		
Cranaenidae	D (Emsi)	— P (Sakm)	(31)
Cryptonellidae	D (Emsi)	— P (Guad)	(31,208)
Dallinidae	Tr (Rhae)	— R	
Dictyothyrididae	J (Bath)	— J (Oxfo)	
Dielasmatidae	C (Tour)	— Tr (Rhae)	
Dyscoliidae	K (Ceno)	— R	
Eudesiidae	J (Bath)		
Hercothyrididae	T (Eo)	— R	(65)
Heterelasminidae	D (u)	— P (Guad)	(208)
Kraussinidae	T (Mi-m)	— R	
Labaiidae	C (Mosc)	— Tr (Indu)	(208)
Laqueidae	T (Mi)	— R	
Megathyrididae	K (Ceno)	— R	
Mutationellidae	S (u)	— P (Guad)	(31,208)
Notothyrididae	C (Namu)	— P (Dzhu)	(208)
Orthotomidae	J (Plie)		
Platidiidae	T (Eo-l)	— R	
Pygopidae	J (Bajo)	— K (Neoc)	
Rhenorenselaeridae	D (Gedi)	— D (Emsi)	(31)
Rhipidothyrididae	D (Gedi)	— C (Vise)	(31)
Stringocephalidae	D (Eife)	— D (Give)	(31)
Tegulithyrididae	J (Call)		
Terebratellidae	K (Albi)	— R	
Terebratulidae	Tr (Ladi)	— R	
Zeilleriidae	Tr (Olen)	— K (Albi)	(240)

Or. Thecideida			
Thecideidae	J (l)	— R	
Thecidellinidae	Tr (Rhae)	— R	
CHAETOGNATHA (One extant family)			
	C (Mosc)	— R	(55,302)
ECHINODERMATA			
Cl. Edrioblastoidea			
Or. Pentacystida			
Astrocystitidae	Θ (Cara)		(208)
Cl. Crinoidea			
[Classification and stratigraphic ranges from the <i>Treatise</i> , Pt. T, and Moore and Strimple (1973), with emendations as noted. Approximately 13 extant families without known fossil representatives are not listed.]			
?Or. Echinocrinida			
Echinocrinidae	€ (mMid)		(331)
Or. Diplobathrida			
Anthemocrinidae	S (m)	— S (u)	
Anthracocrinidae	Θ (Llvi)		
Archaeocrinidae	Θ (Llvi)	— Θ (Ashg)	(164)
Cleiocrinidae	Θ (Llde)		(132)
Dimerocrinitidae	Θ (Ashg)	— D (Fras)	
Elpidocrinidae	S (m)	— S (u)	(107)
Emperocrinidae	S (m)	— S (u)	(107)
Gazacrinidae	S (m)		
Hirneacrinidae	S (l)	— S (u)	(106)
Lampterochrinidae	S (m)		
Nyctocrinidae	S (m)		
Opsiochrinidae	D (l)	— D (Give)	(107)
Orthocrinidae	D (Emsi)	— D (m)	
Prokopiochrinidae	S (m)	— S (u)	(106)
Reteocrinidae	Θ (Llde)	— Θ (Ashg)	
Rhodocrinitidae	Θ (Llde)	— C (Vise)	
Spyridiochrinidae	D (Gedi)		(132)
Or. Monobathrida			
Abacocrinidae	S (u)		
Acrochrinidae	C (l)	— C (Step)	
Actinocrinitidae	C (Tour)	— P (Guad)	
Amphocrinidae	C (Tour)	— C (Namu)	
Batocrinidae	C (Tour)	— C (Vise)	
Carpocrinidae	S (m)	— D (m)	
Clonocrinidae	S (u)	— D (Sieg)	

Coelocrinidae	D (m)	— C (l)	
Dichocrinidae	C (l)	— P (Guad)	
Dolatocrinidae	D (Emsi)	— D (Give)	
Eucalyptocrinitidae	S (m)	— D (m)	
Eutelecrinidae	P (Guad)		(106)
Glyptocrinidae	Θ (Cara)	— S (u)	
Hapalocrinidae	S (m)	— D (Give)	
Hexacrinitidae	S (u)	— D (Fame)	
Marsupiocrinidae	S (m)	— D (l)	
Melocrinitidae	Θ (Ashg)	— D (Fame)	
Paragaricocrinidae	C (Namu)	— P (Guad)	
Parahexacrinitidae	D (l)		
Paramelocrinidae	S (u)		
Patelloocrinidae	Θ (Ashg)	— D (Emsi)	
Periechocrinidae	S (m)	— C (Vise)	
Platycrinidae	D (l)	— P (u)	
Polypeltidae	S (u)	— D (Emsi)	
Scyphocrinitidae	S (u)	— D (Gedi)	
Stelidiocrinidae	S (u)		
Tanaocrinidae	Θ (Aren)	— Θ (Ashg)	(238)
Tunisiacrinitidae	P (Guad)		
Xenocrinidae	Θ (Ashg)		
Or. Taxocrinida			
Synerocrinidae	C (l)	— C (Step)	
Taxocrinidae	Θ (Cara)	— C (Namu)	
Or. Sagenocrinitida			
Calyocrinidae	D (Eife)	— P (Guad)	
Dactylocrinidae	S (u)	— P (Guad)	
?Edriocrinidae	D (Gedi)	— D (m)	
Euryocrinidae	D (Give)	— P (Guad)	
Gaulocrinidae	C (l)		
Homalocrinidae	S (u)		
Icthyocrinidae	S (l)	— C (l)	
Lecanocrinidae	S (u)	— D (Eife)	
Mespilocrinidae	C (l)	— P (Guad)	
Nipterocrinidae	S (m)	— C (Tour)	(199a)
Palaeoholopodidae	P (Guad)		
Prophylocrinidae	P (Guad)		
Sagenocrinitidae	S (u)	— P (l)	
Or. Disparida			
Acolocrinidae	S (m)		(34)
Allagecrinidae	D (u)	— P (Guad)	
Anamesocrinidae	D (m)		
Anomalocrinidae	Θ (Cara)	— Θ (Ashg)	
Apodasmocrinidae	Θ (Cara)		(108,367)

Belemnocrinidae	C (l)		
Calceocrinidae	Θ (Llde)	— P (Leon)	
Catilloocrinidae	Θ (Llvi)	— P (Guad)	(165a)
Cinnaticrinidae	Θ (Cara)	— Θ (Ashg)	(108,367)
Eustenocrinidae	Θ (Aren)	— Θ (Cara)	
Haplocrinidae	D (m)		
Heterocrinidae	Θ (Llvi)	— S (m)	(367)
Holynocrinidae	D (m)		
Homocrinidae	Θ (Cara)	— S (m)	
Iocrinidae	Θ (Llvi)	— Θ (Ashg)	
Myelodactylidae	S (l)	— D (Gedi)	
Paradoxocrinidae	P (Guad)		
Perissocrinidae	D (m)		
Perittocrinidae	Θ (Llvi)		
Pisocrinidae	S (m)	— D (u)	
Pygmaeocrinidae	S (u)	— D (m)	
Synbathocrinidae	S (m)	— P (Guad)	
Tunguskocrinidae	Θ (m)		
Zophocrinidae	S (u)	— D (m)	
Or. Hybocrinida			
Baerocrinidae	Θ (Llvi)	— Θ (m)	
Cornocrinidae	Θ (Llvi)	— S (l)	(330)
Hybocrinidae	Θ (Aren)	— Θ (Cara)	(183a)
Hybocystitidae	Θ (m)		
Or. Cladida			
Adinocrinidae	C (l)		
Aethocrinidae	Θ (Trem)	— Θ (Aren)	
Agassizocrinidae	C (Namu)	— P (l)	
Ampelocrinidae	C (l)	— P (Guad)	
Anobasicrinidae	C (Namu)	— P (u)	
Aphelecrinidae	C (Tour)	— C (Namu)	
Apographiocrinidae	C (Bash)	— P (Guad)	
Arkacrinidae	C (Bash)		
Barycrinidae	D (Emsi)	— C (Vise)	
Blothrocrinidae	C (Tour)	— P (Sakm)	
Botryocrinidae	Θ (m)	— D (u)	
Bursacrinidae	C (l)		
Cadocrinidae	P (Guad)		
Calceolispongiidae	P (Sakm)	— P (Guad)	
Carabocrinidae	Θ (Llde)	— Θ (Ashg)	
Catacrinidae	C (Bash)	— P (Guad)	
Cercidocrinidae	C (l)		
Clathrocrinidae	C (Step)		
Codiacrinidae	S (m)	— P (Guad)	
Corythocrinidae	C (l)		
Cricocrinidae	C (Mosc)		

Cromyocrinidae	C (Vise)	— P (Sakm)
Crotalocrinitidae	S (m)	— D (Give)
Cupressocrinitidae	D (l)	— D (u)
Cupulocrinidae	Θ (Llde)	— Θ (Ashg)
Cyathocrinitidae	Θ (Llvi)	— P (Guad)
Cymbiocrinidae	C (Namu)	— P (u)
Decadocrinidae	D (Give)	— C (Step)
Dendrocrinidae	Θ (Cara)	— D (u)
Diphuicrinidae	C (Bash)	— P (Sakm)
Encrinidae	Tr (m)	
Erisocrinidae	C (Namu)	— P (Sakm)
Eupachyrcrinidae	C (Namu)	
Euspirocrinidae	Θ (Cara)	— C (Tour)
Exocrinidae	C (Bash)	— P (Sakm)
Galateacrinidae	C (Mosc)	— C (Step)
Gasterocomidae	D (l)	— D (Give)
Graphiocrinidae	C (Tour)	— P (Guad)
Hydreionocrinidae	C (Vise)	
Indocrinidae	P (Leon)	— P (Guad)
Laudonocrinidae	C (Miss)	— P (l)
Lecythocrinidae	D (Give)	— C (l)
Lophocrinidae	C (Vise)	
Manicrinidae	S (m)	— S (u)
Mastigocrinidae	Θ (m)	— C (l)
Merocrinidae	Θ (m)	— Θ (Ashg)
Metabolocrinidae	Θ (m)	— D (l)
Mollocrinidae	C (Bash)	— P (Guad)
Ontariocrinidae	Θ (m)	
Ottawacrinidae	Θ (Cara)	
Pachylocrinidae	C (l)	— P (l)
?Paractocrinidae	Θ (l)	
Paradelocrinidae	C (Bash)	— P (Guad)
Pelecocrinidae	C (l)	— P (Guad)
Petalocrinidae	S (m)	
Phanocrinidae	C (Vise)	— C (Namu)
Pirasocrinidae	C (Bash)	— P (Guad)
Porocrinidae	Θ (Cara)	— Θ (Ashg)
Poteriocrinitidae	D (Sieg)	— C (Namu)
Protothylacocrinidae	D (m)	
Protencrinidae	C (Mosc)	— P (Leon)
Rhenocrinidae	D (l)	— C (Mosc)
Scotiacrinidae	C (Vise)	
Scytalocrinidae	D (Give)	— P (Guad)
Sellardsicrinidae	C (Mosc)	
Spaniocrinidae	C (l)	— P (Guad)
Sphaerocrinidae	Θ (Llvi)	— D (Give)
Stachyocrinidae	P (Guad)	



Staphylocrinidae	C (Vise)	— P (u)
Stellarocrinidae	C (Namu)	— P (Sakm)
Streblocrinidae	D (m)	— P (Guad)
Sundacrinidae	P (l)	— P (Guad)
Sycocrinitidae	C (Tour)	— P (Guad)
Texacrinidae	C (Bash)	— P (Sakm)
Thenarocrinidae	S (m)	
Timorechinidae	P (Guad)	
Trimerocrinidae	P (l)	— P (Guad)
Ulocrinidae	C (Vise)	— P (Guad)
Zeacrinidae	C (Tour)	— P (Guad)
Or. Millericrinida		
Apiocrinitidae	J (l)	— K (l)
Cyclocrinidae	J (l)	— K (l)
Dadocrinidae	Tr (Anis)	
Hyocrinidae	T (Dani)	— R
Millericrinidae	J (l)	— J (Tith)
Or. Cyrtocrinida		
Eudesicrinidae	J (Plie)	— J (Toar)
Eugeniocrinitidae	J (Bath)	— K (Camp)
Hemibrachiocrinidae	K (Vala)	— K (Barr)
Hemicrinidae	J (Tith)	— K (Albi)
Holopodidae	J (Tith)	— R
Phyllocrinidae	J (Bajo)	— K (Neoc)
Plicatocrinidae	J (Hett)	— J (Tith)
Sclerocrinidae	J (Oxfo)	— K (Haut)
Or. Bourgueticrinida		
Bathycrinidae	K (Sant)	— R
Bourgueticrinidae	K (Turo)	— T (Eo)
Or. Isocrinida		
Holocrinidae	Tr (Anis)	
Isocrinidae	Tr (Indu)	— R
Pentacrinidae	J (Hett)	— J (Oxfo)
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	J (Toar)	— K (Haut)
Pterocomidae	J (Tith)	— T (Dani)

Solanocrinitidae	J (Plie)	— K (Coni)
Thalassometridae	T (Mi-l)	— R
Thiolliericrinidae	J (Bath)	— K (Haut)
Or. Uintacrinida		
Marsupitidae	K (Sant)	
Uintacrinidae	K (Sant)	
Or. Roveacrinida		
Roveacrinidae	Tr (Ladi)	— K (Camp)
Saccocomidae	J (Kimm)	— K (Camp)

## Cl. Edrioasteroidea

[Classification and stratigraphic ranges from Bell (1976) with emendations as indicated.]

Or. Isorophida			
Agelacrinitidae	D (Gedi)	— C (Step)	
Carneyellidae	Θ (Llde)	— Θ (Ashg)	
Cyathocystidae	Θ (Lvi)	— Θ (Ashg)	
Isorophidae	Θ (Cara)	— S (m)	
Lebetodiscidae	Θ (Llde)	— S (u)	
Pyrogocystidae	Θ (Lvi)	— D (Eife)	
Or. Edrioasterida			
Edrioasteridae	Θ (Cara)		
Totiglobidae	€ (mMid)	— € (u)	(11)
Or. Stromatocystitida			
Camptostromatidae	€ (Boto)		(208,331)
Stromatocystitidae	€ (Atda)	— € (mMid)	(11)
<i>Walcottidiscus</i>	€ (mMid)		
Incertae sedis			
? <i>Tribrachidium</i>	V (u)		(122,208)

## Cl. Helicoplacoidea

Helicoplacidae	€ (Atda)	— € (Boto)	(208,331)
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## Cl. Blastoidea

[Classification based on the *Treatise*, Pt. S and Breimer and Macurda (1972); stratigraphic ranges from *The Fossil Record*.]

Incertae sedis	Θ (Cara)		(39a)
Or. Fissiculata			
Codasteridae	C (Vise)	— P (Guad)	(33a)
Neoschismatidae	C (Tour)	— P (Guad)	(33a)
Nymphaeoblastidae	D (Emsi)	— P (Sakm)	(33a)
Orophocrinidae	D (Emsi)	— P (Guad)	(33a)
Phaenoschismatidae	S (m)	— C (Namu)	(33a)

Or. Spiraculata			
Diploblastidae	C (Vise)	— C (Namu)	
Granatocrinidae	C (Tour)	— C (Vise)	
Nucleocrinidae	D (Emsi)	— D (Give)	
Orbitremitidae	C (Vise)	— P (Guad)	
Penetremitidae	D (Eife)	— P (Guad)	
Schizoblastidae	D (Give)	— P (Guad)	
Troosticrinidae	S (m)	— C (Vise)	
Cl. Parablastoidea			
Blastocystidae	Θ (Aren)	— Θ (Llvi)	(132,330,331)
Meristoschismatidae	Θ (Llvi)	— Θ (Llde)	(238,330)
"Cystoidea"			
[Classification based on the <i>Treatise</i> , Pt. S; stratigraphic ranges from <i>The Fossil Record</i> with emendations as indicated.]			
Cl. Rhombifera			
Callocystitidae	Θ (Ashg)	— D (Fras)	
Caryocrinitidae	Θ (Cara)	— D (Gedi)	
Caryocystitidae	Θ (Aren)	— Θ (Ashg)	
Cheirocrinidae	Θ (Trem)	— Θ (Ashg)	(237)
Cystoblastidae	Θ (Llde)	— Θ (Cara)	(237)
Echinoencrinitidae	Θ (Aren)	— Θ (Ashg)	
Echinospaeritidae	Θ (Aren)	— Θ (Ashg)	
Glyptocystitidae	Θ (Llde)	— Θ (Cara)	(238)
Hemicosmitidae	Θ (Aren)	— Θ (Ashg)	
Heterocystitidae	S (m)		
Macrocystellidae	Θ (Trem)	— Θ (Llde)	(237)
Pleurocystitidae	Θ (Aren)	— D (Eife)	
Polycosmitidae	Θ (Llvi)		
Rhombiferidae	Θ (Cara)	— Θ (Ashg)	
Stichocystidae	Θ (Llvi)	— Θ (Llde)	(238)
Thomacystidae	Θ (Ashg)		(238)
Cl. Diploporita			
Aristocystitidae	Θ (Trem)	— S (m)	
Asteroblastidae	Θ (Aren)	— Θ (Llvi)	
Dactylocystidae	Θ (Cara)	— S (m)	
Eumorphocystidae	Θ (Llde)		(238)
Glyptosphaeritidae	Θ (Trem)	— Θ (Cara)	
Gomphocystitidae	Θ (Llvi)	— S (m)	
Mesocystidae	Θ (Aren)	— Θ (Llvi)	
Protocrinitidae	Θ (Llvi)	— Θ (Cara)	
Sphaeronitidae	Θ (Trem)	— D (Eife)	
Cl. Eocrinoidea			
[Classification and stratigraphic ranges from Sprinkle (1973), with emendations as indicated.]			

Or. Imbricata (= Lepidocystoidea)			
Lepidocystidae	€ (Boto)		
Or. "number 1"			
Eocrinidae	€ (Atda)	— € (uMid)	(83,331)
Lichenoididae	€ (uMid)		
Rhopalocystidae	θ (Trem)		
Or. "number 2"			
<i>Cambrocrinus</i>	€ (Dres)		
<i>Eocystites</i>	€ (Atda)	— € (mMid)	(171)
<i>Eustypocystis</i>	€ (uMid)		
<i>Nolichuckia</i>	€ (uMid)		
<i>Pareocrinus</i>	€ (uMid)		
Ascocystitidae	θ (Llvi)		(238)
Macrocystellidae	θ (Trem)	— θ (Llde)	(132)
Or. Coronata			
Stephanocrinidae	θ (Llde)	— S (u)	
Incertae sedis			
<i>Cymbionites</i>	€ (lMid)		(314,316b)
<i>Peridionites</i>	€ (lMid)		(314,316b)
Cryptocrinitidae	θ (Llvi)	— S (m)	(238)
Lingulocystidae	θ (Trem)	— θ (Llvi)	
?Palaeocystitidae	θ (Llde)		(39b,238)
Rhipidocystidae	θ (Aren)	— θ (Cara)	
Trachelocrinidae	€ (mMid)	— € (Fran)	

## Cl. Paracrinoidea

[Classification from Parsely and Mintz (1975); sources of stratigraphic ranges as indicated.]

Or. Comarocystitida			
Amygdalocystitidae	θ (Llvi)	— θ (Cara)	(238)
Camarocystitidae	θ (Llvi)	— S (l)	(109,238)
Or. Platycystitida			
Malocystitidae	θ (Llvi)	— θ (Cara)	(238)
Platycystitidae	θ (Llvi)	— θ (Llde)	(108)
Incertae sedis			
Springerocystidae	θ (l)	— θ (Llde)	(330)
Cl. Ctenocystoidea	€ (mMid)		(277)
Cl. Homostealea			
Or. Cineta			
Gyrocystidae	€ (mMid)		(208,331)
Trochocystitidae	€ (mMid)	— € (uMid)	(208,331)
Cl. Homoiostealea			

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

Or. Soluta

Dendrocystitidae	€ (Boto)	— D (Gedi)	(331)
Girvanicystidae	Θ (Ashg)		
Iowacystidae	Θ (Llde)	— Θ (Ashg)	(175,238)
Minervaecystidae	€ (Trep)	— Θ (Trem)	(331)
Rutroclypeidae	D (Gedi)		
Syringocrinidae	Θ (Cara)		(238)

Cl. Stylophora

[Classification and stratigraphic ranges mostly from Derstler (1979).]

Or. Cornuta

Amygdalothecidae	Θ (Aren)	— Θ (Llvi)	
Ceratocystidae	€ (mMid)	— € (Fran)	(331)
Cothurnocystidae	€ (Trep)	— Θ (Ashg)	(208)
Phyllocystidae	€ (uMid)	— Θ (Llvi)	
incertae sedis	€ (Boto)		(331)

Or. Mitrata

Anomalocystitidae	Θ (Cara)	— D (Give)	
Kirkocystidae	Θ (Aren)	— Θ (Ashg)	
Lagynocystidae	Θ (Cara)		
Paranacystidae	Θ (Cara)	— D (Sieg)	

Cl. Echinoidea

[Classification and stratigraphic ranges based on the *Treatise*, Pt. U, and *The Fossil Record*, with emendations as noted. Five extant families without known fossil representatives are not listed.]

Or. Bothriocidaroida

Bothriocidaridae	Θ (Llde)	— Θ (Ashg)	(174)
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Or. Echinocystitoida

Echinocystitidae	S	— P (Asse)	(181)
Lepidesthidae	D	— P (Asse)	(181)
Lepidocentridae	Θ (Ashg)	— C (Miss)	

Or. Palaechinoidea (= Melonechinoida)

Cravenechinidae	S (m)	— P (Asse)	
Palaechinidae	C (Tour)	— C (Namu)	(255)

Or. Cidaroida

Archaeocidaridae	D (Eife)	— P (Guad)	
Cidaridae	Tr (Carn)	— R	(316a)
Miocidaridae	C (l)	— J (Oxfo)	(316a)
Psychocidaridae	J (u)	— R	

Or. Echinothurioida

Echinothuriidae	K (Sant)	— R	(132)
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Pelanechinididae	J (Oxfo)		(132)
Or. Diadematoidea			
Aspidodiademmatidae	J (Bath)	— R	
Diademmatidae	Tr (Nori)	— R	
Or. Pedinoida			
Pedinidae	Tr (Nori)	— R	
Or. Pygasteroidea			
Pygasteridae	J (Sine)	— K (Ceno)	(167)
Or. Salenioida			
Acrosaleniidae	J (Hett)	— K (Maes)	
Saleniidae	J (Kimm)	— R	
Or. Hemicidaroida			
Hemicidaridae	J (Hett)	— K (Maes)	
Pseudodiademmatidae	Tr (Nori)	— K (Ceno)	
Or. Phymosomatoida			
Phymosomatidae	J (Hett)	— R	
Stomechinidae	J (Plie)	— R	
Or. Arbacioida			
Arbaciidae	J (Bajo)	— R	(167)
Or. Temnopleuroidea			
Glyphocyphidae	J (Plie)	— T (Eo-m)	
Temnopleuridae	K (Ceno)	— R	
Toxopneustidae	K (Camp)	— R	
Or. Echinoida			
Echinidae	T (Eo-m)	— R	(396)
Echinometridae	T (Pale)	— R	
Parasaleniidae	T (Eo-u)	— R	
Strongylocentrotidae	T (Ol-u)	— R	
incertae sedis	K (Neoc)		(167)
Or. Plesiocidaroida			
Tiarechinidae	Tr (Carn)		
Or. Orthopsida			
Orthopsidae	J (Hett)	— K (Maes)	(167)
Or. Holoctypoida			
Anorthopygidae	K (Albi)	— K (Ceno)	
Conoclypidae	T (Eo-m)	— T (Mi)	
Conulidae	J (Call)	— T (Eo)	
Discoididae	K (Apti)	— K (Maes)	
Echinoneidae	K (u)	— R	
Galeritidae	K (Sant)	— K (Maes)	
Holoctypidae	J (Plie)	— K (Maes)	

Oligopygidae	K (Seno)	— T (Ol)	
Or. Clypeasteroidea			
Abertellidae	T (Mi)		
Arachnoididae	T (Ol-u)	— R	
Astricypeidae	T (Ol-l)	— R	
Clypeasteridae	T (Eo-u)	— R	
Dendrasteridae	T (Plio)	— R	
Echinarachniidae	T (Ol)	— R	
Eoscutellidae	T (Eo)		
Fibulariidae	T (Pale)	— R	(167a)
Laganidae	T (Eo-u)	— R	
Mellitidae	T (Mi-l)	— R	
Monophorasteridae	T (Eo-m)		(396)
Neolaganidae	T (Eo-u)	— T (Ol-u)	
Protoscutellidae	T (Eo-m)	— T (Eo-u)	
Rotulidae	T (Mi)	— R	
Scutasteridae	T (Mi-l)		
Scutellidae	T (Ol)	— T (Mi)	
Or. Cassiduloidea			
Apatopygidae	T (Plio)	— R	
Archiaciidae	K (Neoc)	— K (Ceno)	
Cassidulidae	K (Albi)	— R	
Clypeidae	J (Bajo)	— K (Ceno)	
Clypeolampadidae	K (Ceno)	— K (Maes)	
Echinolampadidae	K (Ceno)	— R	
Faujasiidae	K (Ceno)	— T (Eo-u)	
Galeropygidae	J (Toar)	— J (Kimm)	
Nucleolitidae	J (Bajo)	— K (Maes)	(255)
Pliolampadidae	K (Camp)	— R	
Or. Holasteroidea			
Collyritidae	J (Sine)	— K (Vala)	
Disasteridae	J (Plie)	— K (Vala)	
Holasteridae	K (Vala)	— R	
Somaliasteridae	K (Seno)	— T (Pale)	
Stenonasteridae	K (Coni)	— K (Camp)	
Urechinidae	T (Mi-l)	— R	
Or. Spatangoida			
Asterostomatidae	T (Pale)	— R	
Brissidae	K (Ceno)	— R	
Hemiasteridae	K (Apti)	— R	
Loveniidae	T (Eo-m)	— R	
Micrasteridae	K (Ceno)	— T (Eo-m)	
Palaeostomatidae	K (Ceno)	— R	
Pericosmidae	T (Eo-l)	— R	
Schizasteridae	K (Ceno)	— R	

Spatangidae	T (Eo-m)	— R
Toxasteridae	K (Berr)	— R
Or. Neolampadoidea		
Neolampadidae	T (Eo-u)	— R
Incertae sedis		
Heterocidaridae	J (Plie)	— J (Oxfo)

## Cl. Stelleroidea

[Classification from the *Treatise*, Pt. U, and stratigraphic ranges from *The Fossil Record*, with emendations as indicated. 29 extant families without known fossil representatives are not listed.]

Or. Goniactinida			
Archegonasteridae	Θ (Aren)		
Archophiactinidae	Θ (Ashg)	— D (u)	
Chinianasteridae	Θ (Trem)	— Θ (Aren)	
Helianthasteridae	D (Sieg)	— D (u)	
Villebrunasteriidae	Θ (Trem)		
Or. Platyasterida			
Palasteriscidae	Θ (Cara)	— D (Eife)	
Or. Paxillosida			
Astropectinidae	Tr (Ladi)	— R	
Benthopectinidae	K (Albi)	— R	
Lepidasteridae	S (m)	— D (u)	
Luidiidae	T (Mi)	— R	
Palasterinidae	S (l)	— D (l)	
Petrasteridae	Θ (Aren)	— S	
Or. Valvatida			
Eoactinidae	S (l)		
Goniasteridae	J (Plie)	— R	
Hudsonasteridae	Θ (Llvi)	— S (u)	(181)
Mesopalaeasteridae	Θ (Ashg)	— D (Fras)	
Monasteridae	C (u)	— P (l)	
Neopalaeasteridae	C (Tour)		
Odontasteridae	J (Bath)	— R	
Ophidiasteridae	K (Ceno)	— R	
Palaeasteridae	S (m)		
Promopalaeasteridae	Θ (Cara)	— S	(174)
Sphaerasteridae	J (Bath)	— R	
Stauranderasteridae	J (Bath)	— T (Dani)	
Xenasteridae	D (Eife)		
Or. Spinulosida			
Asterinidae	J (Bajo)	— R	
Lepyriactinidae	S (l)		
Schuchertiidae	Θ (Cara)	— S (m)	



Solasteridae	J (Plie)	— R	
Taeniactinidae	Θ (Cara)	— C (Tour)	
Tropidasteridae	J (Plie)		
Valvasteridae	J (Hett)	— R	
Or. Forcipulatida			
Asteriidae	J (Plie)	— R	
Brisingidae	T (Ol-l)	— R	
Calliasterellidae	C (Tour)	— K (Maes)	
Cnemidactinidae	Θ (Llvi)	— Θ (Ashg)	(181)
Compsasteridae	D (l)	— J (Bath)	
Urasterellidae	Θ (Llvi)	— C (u)	(181)
Or. Stenurida			
Bdellacomidae	S (u)	— D (Eife)	
Eophiuridae	Θ (Aren)		
Palaeuridae	Θ (Aren)	— D (Eife)	
Phragmactinidae	Θ (Ashg)		(238)
Pradesuridae	Θ (Aren)	— D (Eife)	
Rhopalocomidae	S (u)	— D (Fras)	
Stenasteridae	Θ (Cara)	— Θ (Ashg)	
Or. Oegophiurida			
Encrinasteridae	Θ (Ashg)	— C (Tour)	
Furcasteridae	Θ (Ashg)	— C (Tour)	
Klasmuridae	D (u)		
Lapworthuridae	Θ (Aren)	— D (l)	
Protasteridae	Θ (Cara)	— C (Tour)	
Or. Phrynophiurida			
Eospondylidae	D (Sieg)		
Gorgonocephalidae	T (Ol)	— R	
Onychasteridae	C (l)		
Or. Ophiurida			
Amphiuridae	K (Ceno)	— R	
Ophiacanthidae	J (Plie)	— R	
Ophiocomidae	K (Ceno)	— R	
Ophiodermatidae	J (Hett)	— R	
Ophiuridae	C (Tour)	— R	
Ophiurinidae	S (l)	— C (Tour)	(181)
Cl. Holothuroidea			
[Classification and stratigraphic ranges based on the <i>Treatise</i> , Pt. U, with augmentation from Kukalová-Peck (1973) and Pawson (1980). Names in quotes indicate sclerite taxa. Approximately 23 families of extant holothurians have been erected.]			
Or Dendrochirotida			
“Calclamnidae”	Θ (Trem)	— R	

"Priscopeditidae"	C (Tour)	— R	(128a)
"Schlumbergeritidae"	J (u)		
Or. Aspidochirota			
Holothuriidae	J (Tith)	— R	
"Stichopitidae"	C (Vise)	— R	(132)
Or. Elasipodida (extant)			
? <i>Eldonia</i>	€ (mMid)		(132)
"Paleochiridotidae"	C (Tour)	— C (u)	(128a)
"Protocaudinidae"	Θ (m)	— J (u)	
Or. Apodida			
"Achistridae"	C (Tour)	— K (Barr)	(128a,132)
Chiridotidae	K	— R	
Myriotrochidae	D (Give)	— R	(132)
Synaptidae	J (Oxfo)	— R	(132)
Or. Molpadiida			
Caudinidae	J (u)	— R	
Molpadiidae	J (u)	— R	
Or. Arthrochirota			
Palaeocucumariidae	D (Gedi)		
Incertae sedis			
"Calclyridae"	C (u)	— P (Guad)	(132)
"Etheridgellidae"	C (Step)	— J (Oxfo)	(132)
Cl. Cyclocystoidea			
Cyclocystoididae	€ (lMid)	— D (Eife)	

## Cl. Ophiocystioidea

[Classification and stratigraphic ranges based on the *Treatise*, Pt. U, and *The Fossil Record*.]

Eucladiidae	S (u)		
Rhenosquamidae	D (Eife)		
Rotasacciidae	D (Give)		(134)
Sollasinidae	S (m)	— S (u)	
Volchoviidae	Θ (Aren)	— Θ (Ashg)	

## POGONOPHORA

?Or. Hyolithelminthes			
Hyolithellidae	V (N-Da)	— € (mMid)	(12,208,327)
Torelledidae	V (N-Da)	— P (Sakm)	(326,329,371)
?Or. Sabelliditida			
Saarinidae	V (N-Da)	— € (uTom)	(326,327)
Sabelliditidae	V (N-Da)	— € (lMid)	(68,289,326,327)

Or. Thecanephria or Athecanephria (5 extant families)  
 \*incertae sedis             $\Theta$             — T (Plio)       (326)

## ?PHYLUM

## Cl. Conodonta

[Assemblage classification based on the *Treatise*, Pt. W (revised), with emended stratigraphic ranges based on Fähræus (1976) and other sources, as listed.]

## Or. Paraconodontida

Amphigeisinae            $\ominus$  (Atda) —  $\ominus$  (mMid)   (33)  
 Furnishinae            V (N-Da) —  $\Theta$  (Trem)   (15,16,183,329)  
 Westergaardodinae    $\ominus$  (mMid) —  $\Theta$  (m)       (15,16,188)

## Or. Conodontophorida

Acanthodontidae        $\Theta$  (Trem) —  $\Theta$  (Aren)  
 Anchignathodontidae   C (Tour) — Tr (l)  
 Bactrognathidae       D (Fame) — C (Tour)   (132)  
 Balognathidae          $\Theta$  (Aren) — S (l)       (339)  
 Belodellidae            $\Theta$  (l) — D (Fras)       (132)  
 Cavusgnathidae        D (u) — P (l)  
 Chirognathidae         $\Theta$  (Lvi) —  $\Theta$  (Cara)  
 Clavohamulidae         $\ominus$  (Trep) —  $\Theta$  (Aren)   (204)  
 Cordylododontidae      $\ominus$  (Trep) —  $\Theta$  (Trem)  
 Cryptotaxidae         D (Eife) — D (Fame)  
 Cyrtodontidae          $\Theta$  (Aren) —  $\Theta$  (Ashg)  
 Distomodontidae       S (l) — S (m)  
 Drepanoistodontidae    $\Theta$  (Trem) —  $\Theta$  (Ashg)  
 Elictognathidae       D (Fame) — C (Tour)  
 Ellisonidae            C (Bash) — Tr (Rhae)  
 Fryxellodontidae       $\Theta$  (Trem)  
 Gondolellidae         C (Mosc) — P (Leon)  
 Hibbardellidae         $\Theta$  (Cara) — C (Step)  
 Icriodontidae          $\Theta$  (Cara) — D (Fame)   (132)  
 Idiognathodontidae    D (Fame) — P (Leon)   (86,132)  
 Juanognathidae         $\Theta$  (l) —  $\Theta$  (m)  
 Kockelellidae         S (l) — S (u)  
 Mestognathidae        C (Vise) — C (Namu)  
 Multioistodontidae     $\Theta$  (Aren) —  $\Theta$  (Ashg)  
 Oepikodontidae         $\Theta$  (Aren)  
 Oistodontidae          $\Theta$  (Trem) —  $\Theta$  (Cara)   (204)  
 Oneotodontidae         $\ominus$  (Trep) —  $\Theta$  (Trem)  
 Panderodontidae        $\Theta$  (Aren) — D (Give)   (91)  
 Paracordylodontidae    $\Theta$  (Aren)               (132)

\*May be related to unlisted extant families.

Periodontidae	Θ (Aren)	— Θ (Ashg)	
Phragmodontidae	Θ (Cara)	— Θ (Ashg)	
Polygnathidae	Θ (Ashg)	— C (Bash)	(63)
Polyplacognathidae	Θ (l)	— Θ (Cara)	
Prioniodontidae	Θ (Aren)	— Θ (Llvi)	
Proconodontidae	€ (Dres)	— Θ (Trem)	(183)
Protopanderodontidae	Θ (Trem)		
Pterospathodontidae	S (l)	— S (u)	
Pygodontidae	Θ (Cara)		
Rhipidognathidae	Θ (l)	— S (m)	(63)
Scolopodontidae	Θ (Trem)	— Θ (Cara)	
Strachanognathidae	Θ (Cara)	— Θ (Ashg)	
Terodontidae	€ (Fran)	— Θ (Trem)	
Ulrichodinidae	Θ (Aren)		
Xaniognathidae	P (l)	— Tr (u)	
Incertae sedis			
?Lochrieidae	C (Namu)		(201,309)
?Odontogriphidae	€ (mMid)		(53)

## HEMICHORDATA

## Cl. Graptolithina

[Classification and stratigraphic ranges based on the *Treatise*, Pt. V (revised), with emendations as indicated.]

Or. Dendroidea			
Acanthograptidae	€ (Trep)	— D (Sieg)	(51,132)
Anisograptidae	Θ (Trem)	— Θ (Cara)	
Dendrograptidae	€ (uMid)	— C (Namu)	(208,265)
Ptilograptidae	Θ (Aren)	— S (u)	(51,194)
Or. Tuboidea			
Idiotubidae	€ (u)	— S (m)	
Tubidendridae	Θ (Trem)	— S (m)	
Or. Cameroidea			
Bithecocamaridae	Θ (Trem)		
Cysticamaridae	Θ (Trem)	— Θ (Aren)	(132)
Or. Stolonidea			
Stolonodendridae	Θ (Trem)		(51,265)
Or. Crustoidea			
Hormograptidae	Θ (Llde)	— Θ (Cara)	(51)
Wimanicrustidae	Θ (Aren)		
Or. Dithecoidea			
Bulmanidendridae	€ (uMid)		(221)
Chaunograptidae	€ (uMid)	— D (Gedi)	(132,229,265)

Dithecodendridae	€ (uMid) — € (u)	(229,311)
Siberiograptidae	€ (u) — S (l)	(229)
Or. Archaeodendrida		
Archaeodendridae	€ (uMid)	(221,265)
Or. Graptoloidea		
Abrograptidae	Θ (Aren) — Θ (Cara)	
Corynoididae	Θ (Cara)	
Cryptograptidae	Θ (Aren) — Θ (Ashg)	(51)
Cyrtoagraptidae	S (l) — S (u)	(51)
Dicaulograptidae	Θ (l)	
Dichograptidae	Θ (Trem) — Θ (Cara)	(51)
Dicranograptidae	Θ (Llde) — Θ (Ashg)	(51)
Dimorphograptidae	S (l)	
Diplograptidae	Θ (Llvi) — S (l)	(51)
Glossograptidae	Θ (Aren) — Θ (Ashg)	(51)
Lasiograptidae	Θ (Trem) — Θ (Ashg)	(51,194)
Monograptidae	S (l) — D (Emsi)	
Nemagraptidae	Θ (Cara)	(51)
Periragraptidae	Θ (Ashg)	
Retiolitidae	Θ (Llde) — S (u)	(51)
Sinograptidae	Θ (Aren) — Θ (Llvi)	
Incertae sedis		
Acanthastida	Θ (Trem)	
Graptoblasti	Θ (Trem) — Θ (Llde)	
Graptovermida	Θ (Trem)	
Cl. Pterobranchia		
Or. Rhabdopleurida		
Rhabdopleuridae	Θ (Trem) — R	(181,208)
?incertae sedis	€ (mMid)	(61)
Or. Cephalodiscida		
Cephalodiscidae	Θ (Trem) — R	(208)
Eocephalodiscidae	Θ (Trem)	(208)
Cl. Enteropneusta (4 extant families)		
?incertae sedis	€ (mMid)	(61)
HORDATA		
Cl. Ascidiacea (Urochordata) (13 extant families)		
*incertae sedis	€ (Trep)	(214)
Cl. Acrania (Cephalochordata) (1 extant family)		
*?Pikaia	€ (mMid)	(58,61)

May be related to unlisted extant families.

## Agnatha

[Classification from Nelson (1976) with stratigraphic ranges from *Osnovy Paleontologii* and *The Fossil Record*. One extant marine family without known fossil representatives is not listed; exclusively freshwater fossil families also are not listed.]

## Cl. Cephalaspidomorphi

Or. Cephalaspidiformes (= Osteostraci) (mostly freshwater)			
Tremataspidae	Θ (Cara)	— S (u)	
Sclerodontidae	S (u)		
Or. Petromyzoniformes (= Cyclostomata)			
Petromyzontidae	C (Mosc)	— R	(6)

## Cl. Pteraspidomorphi

Or. Pteraspidomorphes (= Heterostraci)			
?Anatolepsis	Є (Fran)	— Θ (Llvi)	(259)
Amphiaspidae	D (Sieg)	— D (Eife)	(130)
?Arandaspididae	Θ (Llvi)		(274)
Astraspidae	Θ (Cara)	— Θ (Ashg)	
Cardipeltidae	D (Sieg)		
Cythaspidae	S (l)	— D (Gedi)	(77,130)
Drepanaspidae	S (u)	— D (Eife)	
Eriptychiidae	Θ (Cara)	— S (u)	
Obliaspidae	D (Sieg)		
Polybranchiaspidae	D (Sieg)		
Pteraspidae	D (Gedi)	— D (Give)	
Or. Thelodontiformes (= Coelolepida)			
Apalolepididae	D (Gedi)		(356)
Loganiidae	S (m)	— S (u)	(356)
Thelodontidae	Θ (Aren)	— D (Eife)	
Turiniidae	D (Gedi)	— D (Fras)	(356,357)
Incertae sedis			
<i>Palaeospondylus</i>	D (m)		(212)

## Cl. Placodermi

[Classification and stratigraphic ranges from Denison (1978). Only families with marine representatives are listed.]

Or. Stensioellida			
Stensioellidae	D (Sieg)		
Or. Pseudopetalichthyida			
Paraplesiobatidae	D (Sieg)		
Or. Rhenanida			
Asterosteidae	D (Sieg)	— D (Fras)	

Or. Ptyctodontida			
Ptyctodontidae	D (Eife)	— D (Fame)	
Or. Acanthothoraci			
Palaeacanthaspidae	D (Gedi)	— D (Sieg)	
Or. Petalichthyida			
Macropetalichthyidae	D (Sieg)	— D (Fras)	
Or. Arthrodira			
Actinolepidae	D (Sieg)		
Brachydeiridae	D (Fras)		
Buchanosteidae	D (Emsi)		
Bungartiidae	D (Fame)		
Coccosteidae	D (Eife)	— D (Fame)	
Dinichthyidae	D (Give)	— D (Fame)	
Gemuendenaspidae	D (Sieg)		
Heterosteidae	D (Give)		
Holonematidae	D (Sieg)	— D (Fame)	
Homosteidae	D (Sieg)	— D (Give)	
Leiosteidae	D (Fras)		
Leptosteidae	D (Fras)		
Mylostomatidae	D (Fras)	— D (Fame)	
Pholidosteidae	D (Fras)		
Rachioosteidae	D (Give)	— D (Fras)	
Selenosteidae	D (Fras)	— D (Fame)	(229)
Titanichthyidae	D (Fame)		
Trematosteidae	D (Fras)		
Williamsaspidae	D (Emsi)		
Or. Antiarcha			
Bothriolepidae	D (Fras)		
incertae sedis	D (Give)	— D (Fras)	
?Incertae sedis			
Cratoselachidae	C (Miss)		(280)

## I. Chondrichthyes

[Classification from Nelson (1976) and Zangerl (1981), with sources of stratigraphic ranges as indicated. Two extant marine families without fossil representatives and three fossil freshwater families are not listed.]

Or. Iniopterygia			
Iniopterygidae	C (Mosc)		(392)
Sibyrhynchidae	C (Mosc)		(392)
incertae sedis	C (Namu)		(392)
Or. Bradyodontida			
<i>Jimpholia</i>	C (Mosc)		(392)
Acanthorhinidae	J (Plie)		(229)

Callorhynchidae	K (u)	— R	(280)
Chimaeropsidae	J (l)	— J (Tith)	(132)
Chimaeridae	C (Mosc)	— R	(392)
Cochliodontidae	D (Fame)	— P (Guad)	(132)
Copodontidae	D (Fras)	— C (Mosc)	(132)
Deltoptychiidae	C (l)		(392)
Menaspidae	C (l)	— P (Guad)	(212,392)
Myriacanthidae	J (Hett)	— J (Tith)	(132,229)
Rhinochimaeridae	J (u)	— R	(280)
Squaloraiidae	J (Sine)		(132)
Or. Euselachii			
Ctenacanthidae	D (Give)	— C (Vise)	(132)
"Hybodontidae"	D (Fras)	— T (Pale)	(280,392)
Phoebodontidae	D (m)	— C (Mosc)	(392)
Pseudalatiidae	Tr (Rhae)		(257)
Ptychodontidae	K (Barr)	— T (Dani)	(132)
Tamiobatidae	D (m)	— C (u)	(392)
Tristychiidae	C (Vise)	— C (Namu)	(132)
Or. Desmiodontida			
<i>Desmiodus</i>	C (l)		(392)
<i>Heteropetalus</i>	C (Namu)		(392)
Or. Cladoselachida			
Cladoselachidae	D (Fras)		(392)
Or. Coronodontida			
Coronodontidae	D (Fras)		(392)
Or. Symmoriida			
Stethacanthidae	D (u)	— C (u)	(392)
Symmoriidae	C (l)	— C (Mosc)	(392)
Or. Eugeneodontida			
<i>Campodus</i>	C (Namu)		(392)
Agassizodontidae	C (Namu)	— P (Guad)	(392)
Caseodontidae	C (Mosc)	— P (Guad)	(392)
Edestidae	C (Namu)	— K (u)	(280,392)
Eugeneodontidae	C (Mosc)		(392)
Or. Orodontida			
Orodontidae	D (u)	— C (Mosc)	(392)
Or. Petalodontida			
Petalodontidae	C (Tour)	— P (Guad)	(132,392)
Or. Heterodontiformes			
Heterodontidae	J (Tith)	— R	(132)
Palaeospinacidae	J (Sine)	— T (Pale)	(132)
Or. Hexanchiformes			



Chlamydoselachidae	T (Mi)	— R	(280)
Hexanchidae	J (Sine)	— R	(132)
Or. Lamniformes			
Carcharhinidae	K (Maes)	— R	(132)
Lamnidae	K (Apti)	— R	(132)
Odontaspidae	J (u)	— R	(280)
Orectolobidae	J (Tith)	— R	(132)
Orthacodontidae	J (Sine)	— T (Eo)	(132,280)
Scyliorhinidae	J (Tith)	— R	(132)
Sphyrnidae	T (Eo-m)	— R	(132)
Or. Squaliformes			
Pristiophoridae	K (Maes)	— R	(132)
Squalidae	J (Kimm)	— R	(229)
Squatinae	C (Namu)	— R	(392)
Or. Rajiformes			
Dasyatidae	K (Turo)	— R	(132)
Myliobatidae	J (u)	— R	(280)
Pristidae	K (Turo)	— R	(132)
Rajidae	K (Ceno)	— R	(132)
Rhinobatidae	J (l)	— R	(280)
Torpedinidae	T (Pale)	— R	(280)
Incertae sedis			
Chondrenchelyidae	C (Vise)	— C (Namu)	(132,392)
Helodontidae	D (u)	— P (Guad)	(132,280)
Polysentoridae	C (Mosc)		(392)
Cl. Acanthodii			
[Classification and stratigraphic ranges from Denison (1979). Nonmarine families are not listed.]			
Or. Climatiformes			
Climatiidae	S (m)	— D (Eife)	
Gyracanthidae	D (Sieg)	— C (Mosc)	
Or. Ischnacanthiformes			
Ischnacanthidae	S (u)	— C (Vise)	
Or. Acanthodiformes			
Acanthodidae	D (Fras)	— C (l)	

## Cl. Osteichthyes

[Classification from Nelson (1976); stratigraphic ranges based on Romer (1966), with emendations as indicated. Approximately 160 extant marine families without known fossil representatives are not listed; exclusively non-marine families also are not listed.]

Or. Dipteriformes (=Dipnoi) (only a few marine forms)

Dipnorhynchidae	D (Sieg)	— D (Fame)	(77,113,132)
Dipteridae	D (Eife)	— D (Fame)	(132)
Or. Coelacanthiformes (=Crossopterygii)			
Coelacanthidae	C (Vise)	— P (u)	(132,353a)
Diplocercidae	D (Fras)	— D (Fame)	(132,353a)
Euporosteidae	D (Give)	— D (Fras)	(132,353a)
Eusthenopteridae	D (Give)		(132,353a)
Holoptychidae	D (Give)	— D (Fame)	(132,353a)
*Laugiidae	Tr (Indu)	— J (Tith)	(242)
Osteolepidae	D (Eife)	— D (u)	(132,353a)
Porolepidae	D (Sieg)	— (Give)	(132,353a)
Or. Palaeonisciformes (only a few marine forms)			
Centrolepidae	J (Sine)		(132)
Palaeoniscidae	D (m)	— J (u)	(229)
Stegotrachelidae	D (Give)	— C (Tour)	(132)
Or. Perleidiformes (only a few marine forms)			
Cleithrolepidae	Tr (Anis)	— Tr (Carn)	(132)
Perleididae	Tr (Anis)	— Tr (Carn)	(132)
Or. Acipenseriformes (mostly freshwater)			
Acipenseridae	K (Camp)	— R	(132)
Or. Semionotiformes			
Hadrodontidae	K (u)		(354a)
Lepisosteidae	K (Camp)	— R	(132)
Semionotidae	P (Dzhu)	— K (Ceno)	(132)
Or. Pycnodontiformes			
Pycnodontidae	Tr (u)	— T (Eo-m)	
Or. Amiiiformes (= Protospondyli)			
Catervariolidae	J (Tith)		(132)
Caturidae	Tr (Ladi)	— K (Ceno)	(132)
Macrosemiidae	Tr (Ladi)	— K (Ceno)	(132)
Pachycormidae	Tr (Nori)	— K (Ceno)	(132,229)
?Palaeolabridae	K (u)	— T (Pale)	(235)
Paracentrophoridae	Tr (l)		(218)
Parasemionotidae	Tr (Indu)	— Tr (u)	(132)
Promecosominidae	Tr (m)		(218)
Or. Aspidorhynchiformes			
Aspidorhynchidae	J (Bath)	— K (Maes)	(132)
Or. Pholidophoriformes			
Galkiniidae	J (Kimm)	— T (Eo-u)	(132,229,235)
Ichthyokentemidae	J (Tith)	— K (Berr)	(132)
Ligulellidae	J (Tith)		(132)

\*May be related to unlisted extant families.

Majokiidae	J (Tith)		(132)
Pleuropholidae	J (Tith)	— K (Berr)	(132)
Pholidophoridae	Tr (Ladi)	— K (Berr)	(132)
Or. Leptolepiformes			
Leptolepidae	Tr (Nori)	— K (Ceno)	(132)
Or. Ichthyodectiformes			
Allothrissopidae	J (Kimm)		(236)
Ichthyodectidae	J (Kimm)	— K (Camp)	(236)
Saurodontidae	K (Ceno)	— K (Maes)	(236)
Or. Osteoglossiformes			
Tselfatiidae	K (Maes)		(132)
Or. Clupeiformes			
Chirocentridae	J (Tith)	— R	(132)
Clupeidae	J (Tith)	— R	(132)
Engraulidae	T (Eo-l)	— R	(229,335)
Or. Elopiformes			
Albulidae	K (Albi)	— R	(154)
?Crossognathidae	K (Neoc)	— K (Turo)	(236)
Elopidae	J (Kimm)	— R	(102,132)
Megalopidae	J (Kimm)	— R	(102)
Osmeroididae	K (Albi)	— K (Coni)	(102)
Pachyrhizodontidae	K (u)		
Thryptodontidae	K (u)		
Or. Anguilliformes			
Anguillavidae	K (u)		
Anguillidae	T (Eo-l)	— R	(335)
Congridae	K (u)	— R	
Heterenchelyidae	T (Mi)	— R	
Moringuidae	T (Eo-u)	— R	(335)
Muraenesocidae	T (Eo-l)	— R	(335)
Muraenidae	T (Eo-l)	— R	(335)
Nemichthyidae	T (Eo)	— R	
Nettastomatidae	T (Eo-u)	— R	(335)
Ophichthidae	T (Eo-m)	— R	(335)
Urenchelyidae	K (Ceno)	— K (Maes)	
Xenocongridae	T (Eo)	— R	
Or. Notacanthiformes			
Halosauridae	K (Ceno)	— R	(132)
Notacanthidae	K (Maes)	— R	(132)
Or. Salmoniformes			
Alepocephalidae	T (Eo-m)	— R	(335)
Argentinidae	T (Eo-l)	— R	(335)
Bathylagidae	T (Eo-m)	— R	

Chauliodontidae	T (Mi-u)	— R	(229)
Gonostomatidae	K (Ceno)	— R	(132)
Osmeridae	T (Eo-l)	— R	(335)
Protostomiatidae	K (u)		
Salmonidae	K (Camp)	— R	(132)
Sternoptychidae	T (Ol-l)	— R	(229)
Stomiatiidae	K (Ceno)	— R	(132)
Or. Gonorhynchiformes			
Chanidae	K (Albi)	— R	(132)
Gonorhynchidae	K (Ceno)	— R	(132)
Or. Siluriformes (only a few marine forms)			
Ariidae	T (Eo-u)	— R	(335)
Bagridae	T (Eo-l)	— R	
Plotosidae	T (Ol)	— R	
Or. Myctophiformes			
Myctophidae	K (Ceno)	— R	(126)
Sardinioidae	K (Ceno)	— K (Camp)	(126)
Or. Aulopiformes			
Aulopidae	T (Eo-l)	— R	(281,335)
Cheirothricidae	K (u)		(281)
Chlorophthalmidae	T (Eo-l)	— R	(281,335)
Cimolichthyidae	K (Ceno)	— K (Camp)	(126,281)
Dercetidae	K (Ceno)	— T (Pale)	(126,281)
Enchodontidae	K (Albi)	— T (Pale)	(132,281)
Halecidae	K (Ceno)	— K (Turo)	(126,281)
Paralepidae	T (Eo)	— R	(281)
Prionepididae	K (Ceno)	— K (Turo)	(126,281)
Synodontidae	T (Eo-l)	— R	(281,335)
Tomagnatidae	K (u)		(281)
Or. Polymixiiformes			
Polymixiidae	K (Ceno)	— R	(132)
Sphenocephalidae	K (u)		(132)
Or. Gadiformes			
Bregmacerotidae	T (Eo-u)	— R	(335)
Carapidae	T (Eo-m)	— R	(50)
Gadidae	K (Camp)	— R	(132,229)
Macrouridae	T (Pale)	— R	(132)
Merlucciidae	T (Eo-l)	— R	(335)
Moridae	T (Eo-l)	— R	(335)
Ophidiidae	T (Eo-l)	— R	(335)
Or. Batrachoidiformes			
Batrachoididae	T (Mi-u)	— R	(132)
Or. Lophiiformes			

Antennariidae	T (Eo-m)	— R	(132)
Chaunacidae	T (Eo-u)	— R	(335)
Lophiidae	T (Eo-m)	— R	(132)
Or. Atheriniformes			
Atherinidae	T (Eo-l)	— R	(132,335)
Belonidae	T (Eo)	— R	
Cyprinodontidae	T (Ol-l)	— R	(132)
Exocoetidae	K (Maes)	— R	(132)
Forficidae	T (Mi)		
Scomberesocidae	T (Eo)	— R	
Or. Lampridiformes			
Lamprididae	T (Mi-u)	— R	(132)
Lophotidae	T (Eo-u)	— R	(335)
Veliferidae	T (Eo-l)	— R	(132)
Or. Ctenothrissiformes			
Aulolepidae	K (Ceno)		(132,229)
Ctenothrissidae	K (Ceno)	— K (Turo)	(132)
Or. Beryciformes			
Aipichthyidae	K (u)		
Berycidae	K (u)	— R	
Dinopterygidae	K (u)		
Diretmidae	T (Mi)	— R	
Holocentridae	K (u)	— R	
Melamphaeidae	T (Mi-m)	— R	(50)
Monocentridae	T (Pale)	— R	
Pharmacichthyidae	K (u)		
Pycnosteroididae	K (u)		
Trachichthyidae	K (Ceno)	— R	
incertae sedis	J (Tith)		(132)
Or. Zeiformes			
Caproidae	T (Eo-u)	— R	(335)
Zeidae	T (Pale)	— R	
Or. Syngnathiformes			
Aulostomidae	T (Eo-l)	— R	(132)
Centriscidae	T (Eo)	— R	(229)
Fistulariidae	T (Eo)	— R	(229)
Macrorhamphosidae	T (Ol)	— R	
Ramphosoidae	T (Eo-l)	— T (Eo-m)	
Solenostomidae	T (Eo)	— R	
Syngnathidae	T (Eo-m)	— R	
incertae sedis	K (Ceno)		
Or. Gasterosteiformes			
Aulorhynchidae	T (Eo-m)	— R	(132)
Gasterosteidae	T (Mi-u)	— R	(132)

Or. Scorpaeniformes			
Agonidae	T (Eo-l)	— R	(335)
Anoplopomatidae	T (Mi-u)	— R	
Cottidae	T (Eo-l)	— R	
Cyclopteridae	Q (Plei)	— R	
Hexagrammidae	T (Mi-u)	— R	
Platycephalidae	T (Eo-u)	— R	(335)
Scorpaenidae	T (Eo-l)	— R	(132,335)
Synancejidae	T (Eo-l)	— R	(132,335)
Triglidae	T (Eo-l)	— R	(132,335)
Zaniolepididae	T (Eo-l)	— R	(335)
Or. Dactylopteriformes			
Dactylopteridae	T (Eo-u)	— R	(335)
Or. Perciformes			
Acanthuridae	T (Eo-m)	— R	(132)
Ammodytidae	T (Eo)	— R	
Apogonidae	T (Eo-l)	— R	(335)
Blenniidae	T (Eo-m)	— R	(132)
Blochiidae	K (Ceno)	— T (Eo-m)	(132)
Branchiostegidae	T (Eo-u)	— R	(335)
Callionymidae	T (Eo-l)	— R	(132)
Carangidae	T (Eo-l)	— R	(335)
Centropomidae	T (Eo-l)	— R	(335)
Cepolidae	T (Eo)	— R	
Chaetodontidae	K (u)	— R	(229)
Champsodontidae	T (Ol)	— R	
Channidae	K (Neoc)	— R	(229)
Chiasmodontidae	T (Ol)	— R	(229)
Clinidae	T (Eo)	— R	
Echeneidae	T (Ol)	— R	
Embiotocidae	T (Eo)	— R	
Enoplosidae	T (Eo)	— R	
Ephippidae	T (Eo)	— R	
Gempylidae	K (u)	— R	
Gerridae	T (Eo-m)	— R	(335)
Gobiidae	T (Eo-m)	— R	(132)
Istiophoridae	K (u)	— R	
Kuhliidae	T (Eo-m)	— R	(335)
Labridae	T (Pale)	— R	
Lactariidae	T (Mi)	— R	
Leiognathidae	T (Ol)	— R	
Leptoscopidae	T (Mi)	— R	
Lobotidae	T (Ol)	— R	
Lutjanidae	T (Eo-l)	— R	(335)
Menidae	T (Dani)	— R	(132)
Mugilidae	T (Ol-l)	— R	(132)

Mullidae	T (Mi)	— R	
Nemipteridae	T (Eo-l)	— R	(335)
Nomeidae	T (Eo-l)	— R	(132)
Nototheniidae	T (Mi)	— R	
Oplegnathidae	T (Plio)	— R	
Owstoniidae	T (Plio)	— R	
Palaeorhynchidae	T (Eo)	— R	
Phylloodontidae	K (Camp)	— T (Eo-u)	(132,154)
Plesiopidae	T (Eo-u)	— R	(335)
Polynemidae	T (Mi-u)	— R	(132)
Pomacentridae	T (Eo)	— R	
Pomadasyidae	T (Eo-m)	— R	(335)
Pomatomidae	T (Eo-l)	— R	(335)
Princanthidae	T (Eo-l)	— R	(335)
Scaridae	T (Eo)	— R	
Scatophagidae	T (Eo)	— R	
Sciaenidae	K (Maes)	— R	
Scombridae	T (Pale)	— R	
Serranidae	T (Dani)	— R	(132)
Siganidae	T (Ol)	— R	
Sillaginidae	T (Ol)	— R	
Sparidae	T (Pale)	— R	
Sphyraenidae	T (Eo-l)	— R	(132)
Toxotidae	T (Eo)	— R	
Trachinidae	T (Eo-l)	— R	(132)
Trichiuridae	T (Pale)	— R	
Tripterygiidae	T (Plio)	— R	
Uranoscopidae	T (Eo-l)	— R	(132)
Xiphiidae	K (u)	— R	
Or. Gobiesociformes			
Gobiesocidae	T (Mi-u)	— R	(132)
Or. Pleuronectiformes			
Bothidae	T (Eo-l)	— R	(50,132)
Citharidae	T (Eo-l)	— R	(132)
Cynoglossidae	T (Mi)	— R	
Pleuronectidae	T (Eo-l)	— R	(50)
Psettodidae	T (Eo-m)	— R	(132)
Scophthalmidae	T (Eo-l)	— R	(132)
Soleidae	T (Pale)	— R	
Or. Tetraodontiformes			
Balistidae	T (Eo-l)	— R	(132)
Diodontidae	T (Eo)	— R	
Eotrigonodontidae	K (Ceno)	— T (Eo-m)	(132)
Molidae	T (Mi)	— R	
Ostraciontidae	T (Eo)	— R	

Tetraodontidae	T (Eo)	— R	
Triacanthidae	K (u)	— R	
Triacanthodidae	T (Eo)	— R	
Trigonodontidae	K (Ceno)	— T (Plio)	(132)
Triodontidae	T (Eo-l)	— R	(132)

## Cl. Reptilia

[Marine families only. Classification is from Romer (1966), with stratigraphic ranges from Romer (1966) and *The Fossil Record*.]

Or. Chelonia			
Cheloniidae	K (l)	— R	(354a)
Dermochelyidae	T (Eo-l)	— R	
Protostegidae	K (u)	— T (Ol)	
Toxochelyidae	K (Albi)	— T (Eo)	
Or. Squamata			
Aigialosauridae	J (Tith)	— K (l)	
Dolichosauridae	K (l)	— K (u)	
Mosasauridae	K (u)		
Palaeophidae	T (Eo)		
Simoliophidae	K (Albi)	— K (Ceno)	
Or. Nothosauria			
Nothosauridae	P (Guad)	— Tr (Carn)	
Pachypleurosauridae	Tr (m)	— Tr (Carn)	
Simosauridae	Tr (m)	— Tr (Carn)	
Or. Plesiosauria			
Cymatosauridae	Tr (m)	— Tr (u)	
Elasmosauridae	K (Berr)	— K (Maes)	
Leptocleididae	J (Hett)	— K (Haut)	
Pistosauridae	Tr (Ladi)		
Plesiosauridae	Tr (Ladi)	— K (Apti)	
Pliosauridae	J (Bath)	— K (Maes)	
Polycotylidae	K (Apti)	— K (Maes)	
Thaumatosauridae	J (l)	— J (u)	
Or. Placodontia			
Helvetosauridae	Tr (Anis)	— Tr (Ladi)	
Henodontidae	Tr (Carn)		
Placocheilyidae	Tr (Anis)	— Tr (Rhae)	
Placodontidae	Tr (Olen)	— Tr (Ladi)	
Or. Ichthyosauria			
Ichthyosauridae	J (Hett)	— K (Maes)	
Mixosauridae	Tr (Anis)	— Tr (Nori)	
Omphalosauridae	Tr (Olen)	— Tr (Ladi)	
Shastasauridae	Tr (Ladi)	— Tr (Nori)	
Stenopterygiidae	J (Plie)	— K (Apti)	



Or. Crocodylia			
Metriorhynchidae	J (Call)	—	K (Haut)
Teleosauridae	J (Toar)	—	K (Neoc)

## Cl. Mammalia

[Marine or largely marine families only. Classification is from Romer (1966), and stratigraphic ranges are from *The Fossil Record*, lipps and Mitchell (1976), and Romer (1966).]

Or. Cetacea			
Acrodelphidae	T (Mi-l)	—	T (Plio)
Agorophiidae	T (Ol-u)		
Balaenidae	T (Mi-l)	—	R
Balaenopteridae	T (Mi-u)	—	R
Basilosauridae	T (Eo-u)	—	T (Ol-l)
Cetotheriidae	T (Ol-u)	—	T (Plio)
Delphinidae	T (Plio)	—	R
Dorudontidae	T (Eo-u)		
Eurhinodelphidae	T (Mi-l)	—	T (Mi-u)
Hemisyntchelidae	T (Mi-m)	—	T (Plio)
Monodontidae	Q (Plei)	—	R
Patriocetidae	T (Eo-u)	—	T (Ol-u)
Phoncaenidae	T (Mi-u)	—	R
Physeteridae	T (Mi-l)	—	R
Platanisidae	T (Mi-m)	—	R
Protocetidae	T (Eo-m)		
Squalodontidae	T (Ol-l)	—	T (Mi-u)
Ziphiidae	T (Mi-l)	—	R
Or. Sirenia			
Dugongidae	T (Eo-m)	—	R
Manatidae	T (Mi-l)	—	R
Or. Carnivora (Pinnipedia)			
Enaliarctidae	T (Mi-l)	—	T (Mi-m) (258a)
Odobenidae	T (Mi-u)	—	R
Otariidae	T (Mi-m)	—	R
Phocidae	T (Mi-m)	—	R

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