



Catalog of Tunicate Type
Specimens in the United States
National Museum Collections

LINDA L. COLE

SMITHSONIAN CONTRIBUTIONS TO ZOOLOGY • NUMBER 487

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ABSTRACT

Cole, Linda L. Catalog of Tunicate Type Specimens in the United States National Museum Collections. *Smithsonian Contributions to Zoology*, number 487, 12 pages, 1989.—This catalog includes holotypes, paratypes, and syntypes of tunicate species deposited in the United States National Museum Collections, which are in the National Museum of Natural History, Smithsonian Institution. It also includes whole-mount slides as noted. For types other than holotypes, the number of specimens is noted. As of January 1988, the tunicate type collection of the National Museum consists of 256 lots and approximately 500 specimens. The catalog lists types in alphabetical order according to genus and species by the originally assigned names; changes in nomenclature are noted. Preceding the alphabetical type list is a systematic listing of the types, by originally assigned names only.

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Catalog of Tunicate Type Specimens in the United States National Museum Collections

Linda L. Cole

Introduction

The United States National Museum (USNM), Smithsonian Institution, was established not only for the public viewing of objects, but also for the benefit of scientific knowledge and the classification of organisms.

In 1968, almost 100 years after the United States National Museum was established, its collections were divided between two twentieth-century museums: the National Museum of Natural History (NMNH) and the National Museum of History and Technology (now the National Museum of American History). At this point the USNM ceased to exist as an organizational entity, but the USNM name continued to be applied to the collections for which NMNH assumed responsibility.

Most of the tunicate type specimens were collected during various expeditions funded by the Smithsonian. The collection also consists of tunicate type specimens from various other sources, such as the "Albatross" and "Fish Hawk," that were commissioned by the United States Bureau of Fisheries. Other types were generously donated by research teams and individual scientists.

Most of the types in this collection belong to the class Ascidiacea. However, the collection also includes types of pelagic tunicates, members of the classes Thaliacea and Appendicularia. All specimens belonging to the class Ascidiacea are now stored in alcohol, and all pelagic specimens have always been stored in formalin.

If an author listed a specimen as a "type" in a description, referring to the single specimen that was used to describe a species, in this listing the term has been changed to holotype. If an author listed a specimen as a cotype in a description and the author did not designate a holotype, in this listing the term

has been changed to syntype (the term currently recognized by the International Code of Zoological Nomenclature).

The systematic list in the present work follows the classification of Goodbody (1982), with allowances for the fact that many former type names are now junior synonyms of present-day species. In both the systematic listing and the alphabetical listing, junior synonyms are listed as though they were currently accepted. In the alphabetical listing, their senior synonyms are noted as commentary. Also in the alphabetical listing, taxa renamed because of particular revision are noted. In synonymies of either sort, specimens are listed by their original names and parenthetically by their current designation as well.

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Systematic Listing of Tunicate Types

Class ASCIDIACEA

Order APLOUSOBRANCHIA

Family POLYCLINIDAE Verrill, 1871

Genus *Aplidium* Savigny, 1816

Aplidium abyssum Kott, 1969

Aplidium balleniae Monniot and Monniot, 1983

Aplidium bilinguae Monniot and Monniot, 1983

Aplidium gracile Monniot and Monniot, 1983

Aplidium miripartum Monniot and Monniot, 1983

Aplidium pellucidum Kott, 1971

Aplidium siderum Monniot and Monniot, 1983

Linda L. Cole, Department of Invertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560.

- Aplidium yezoense* Tokioka, 1967
 Genus *Amaroucium* Milne Edwards, 1841 [= *Amaroecium* sensu Verrill and Smith, 1873; = *Amoroecium* sensu Verrill and Rathbun, 1879; = *Amaroucium* sensu Hartmeyer, 1909]
Amaroucium constellatum Verrill, 1871
 Genus *Psammaplidium* Herdman, 1886
Psammaplidium spauldingi Ritter, 1907
 Genus *Aplidiopsis* Lahille, 1890
Aplidiopsis amoyense Tokioka, 1967
 Genus *Polyclinum* Savigny, 1816
Polyclinum indicum Sebastian, 1952
Polyclinum johnsoni Monniot and Monniot, 1989
 Genus *Synoicum* Phipps, 1774
Synoicum ostenor Monniot and Monniot, 1983
Synoicum ramulosum Kott, 1969
Synoicum tentaculatum Kott, 1969
 Genus *Ritterella* Harant, 1931
Ritterella mirifica Monniot and Monniot, 1983
Ritterella rubra Abbott and Trason, 1968
 Genus *Euherdmania* Ritter, 1904
Euherdmania morgani Millar and Goodbody, 1974
 Genus *Placentela* Redikorzev, 1913
Placentela translucida Kott, 1969
- Family DIDEMNIDAE Verrill, 1871
 Genus *Didemnum* Savigny, 1816
Didemnum fusiferum Van Name, 1921
Didemnum macrospiculatum Tokioka, 1967
Didemnum nekozita Tokioka, 1967
Didemnum opacum Ritter, 1907
Didemnum santa elenae Van Name, 1945
Didemnum siphonale Tokioka, 1967
Didemnum sphaericum Tokioka, 1967
Didemnum studeri Hartmeyer, 1911
 Genus *Didemnopsis* Hartmeyer, 1903
Didemnopsis jolense Van Name, 1918
 Genus *Leptoclinides* Bjerkan, 1905
Leptoclinides hawaiiensis Tokioka, 1967
 Genus *Diplosoma* MacDonald, 1859
Diplosoma antarcticum Kott, 1969
 Genus *Echinoclinum* Van Name, 1902
Echinoclinum philippinense Tokioka, 1967
- Family POLYCITORIDAE Michaelsen, 1904
 Genus *Eudistoma* Caullery, 1909
Eudistoma albatrossi Tokioka, 1967
Eudistoma carolinense Van Name, 1945
Eudistoma marianense Tokioka, 1967
Eudistoma mexicanum Van Name, 1945
Eudistoma platense Van Name, 1945
Eudistoma hepaticus Van Name, 1921
 Genus *Hypodistoma* Tokioka, 1967
Hypodistoma palauense Tokioka, 1970
 Genus *Clavelina* Savigny, 1816
Clavelina puertosecensis Millar and Goodbody, 1974
 Genus *Holozoa* Lesson, 1830
Holozoa bursata Van Name, 1921
Holozoa domuncula Hartmeyer, 1913
 Genus *Protoholozoa* Kott, 1969
Protoholozoa lilium Monniot and Monniot, 1981
Protoholozoa pedunculata Kott, 1969
 Genus *Hypsistozoa* Brewin, 1953
Hysistozoa obscura Kott, 1969
 Genus *Distaplia* Della Valle, 1881
Distaplia megathorax Monniot and Monniot, 1981
Distaplia smithi Abbott and Trason, 1968
- Order PHLEBOBRANCHIA
 Family CIONIDAE Lahille, 1887
 Genus *Ciona* Fleming, 1822
Ciona pomponiae Monniot and Monniot, 1989
 Genus *Ciallusia* Van Name, 1918
Ciallusia longa Van Name, 1918
 Genus *Mysterascidia* Monniot and Monniot, 1981
Mysterascidia symmetrica Monniot and Monniot, 1981
 Genus *Dimeatus* Monniot and Monniot, 1981
Dimeatus mirus Monniot and Monniot, 1981
- Family OCTACNEMIDAE Herdman, 1888
 Genus *Octacnemus* Moseley, 1876
Octacnemus herdmani Ritter, 1906
 Genus *Benthascidia* Ritter, 1907
Benthascidia michaelseni Ritter, 1907
 Genus *Cibacapsa* Monniot and Monniot, 1983
Cibacapsa gulosa Monniot and Monniot, 1983
 Genus *Situla* Vinogradova, 1969
Situla rineharti Monniot and Monniot, 1989
- Family PEROPHORIDAE Giard, 1872
 Genus *Perophora* Wiegmann, 1835
Perophora regina Goodbody and Cole, 1987
Perophora viridis Verrill, 1871
 Genus *Ecteinascidia* Herdman, 1880
Ecteinascidia tortugensis Plough and Jones, 1937
- Family ASCIDIIDAE Herdman, 1880
 Genus *Ascidia* Linnaeus, 1767
Ascidia caguayensis Millar and Goodbody, 1974
Ascidia callosa Stimpson, 1852
Ascidia clementea Ritter, 1907
Ascidia fusca Monniot and Monniot, 1989
Ascidia papillosa Tokioka, 1967
Ascidia xamaycana Millar and Goodbody, 1974
 Genus *Phallusia* Savigny, 1816
Phallusia unalaskensis Ritter, 1913
Phallusia vermiformis Ritter, 1913
- Family CORELLIDAE Lahille, 1888
 Genus *Corynascidia* Herdman, 1882
Corynascidia herdmani Ritter, 1913

- Genus *Chelyosoma* Broderip and Sowerby, 1830
Chelyosoma producta Stimpson, 1864
- Family AGNESIIDAE Huntsman, 1912
- Genus *Agnesia* Michaelsen, 1898
Agnesia beringia Ritter, 1913
Agnesia biscoei Monniot and Monniot, 1983
Agnesia tenue Monniot and Monniot, 1983
- Genus *Adagnesia* Kott, 1963
Adagnesia antarctica Kott, 1969
Adagnesia henriquei Monniot and Monniot, 1983
- Genus *Caenagnesia* Årnback, 1938
Caenagnesia schmitti Kott, 1969
- Order STOLIDOBRANCHIA
- Family STYELIDAE Sluiter, 1895
- Subfamily BOTRYLLINAE Adams and Adams, 1858
- Genus *Botryllus* Gaertner, 1774
Botryllus compositus Tokioka, 1967
- Genus *Botrylloides* Milne Edwards, 1841
Botrylloides violaceus marginatus Tokioka, 1967
- Subfamily STYELINAE Herdman, 1881
- Genus *Diandrocarpa* Van Name, 1902 [= *Symplegma* Herdman, 1886]
Diandrocarpa brakenhielmi var. *stuhmanni* Michaelsen, 1904
- Genus *Polyandrocarpa* Michaelsen, 1904
Polyandrocarpa floridana Van Name, 1921
Polyandrocarpa sabanilla Van Name, 1921
- Genus *Stolonica* Lacaze-Duthiers and Delage, 1892
Stolonica styeliformis Van Name, 1918
Stolonica vesicularis Van Name, 1918
- Genus *Polycarpa* Heller, 1877 [= *Pandocia* Fleming, 1822]
Polycarpa melanosiphonica Tokioka, 1967
Pandocia albatrossi Van Name, 1912
Pandocia nigricans Heller, 1877
- Genus *Oligocarpa* Hartmeyer, 1911
Oligocarpa megalorchis Hartmeyer, 1911
- Genus *Cnemidocarpa* Huntsman, 1913
Cnemidocarpa chinensis Tokioka, 1967
Cnemidocarpa victoriae Monniot and Monniot, 1983
- Genus *Styela* Fleming, 1822
Styela hemicaespitosa Ritter, 1913
Styela izuana hawaiiensis Tokioka, 1967
Styela macreteron Ritter, 1913
Styela materna Monniot and Monniot, 1983
Styela psoliformis Monniot and Monniot, 1989
Styela sabulifera Ritter, 1913
Styela schmitti Van Name, 1945
Styela tinaktae Van Name, 1918
- Genus *Tethyum* Bohadsch, 1761
Tethyum atlanticum Van Name, 1912
- Family PYURIDAE Hartmeyer, 1908
- Genus *Pyura* Molina, 1782
Pyura antillarum Van Name, 1921
Pyura duplicata Van Name, 1918
Pyura inflata Van Name, 1918
Pyura lycoperdon Monniot and Monniot, 1983
Pyura multiruga Monniot and Monniot, 1982
Pyura tunica Kott, 1969
- Genus *Halocynthia* Verrill, 1879
Halocynthia haustor foliacea Ritter, 1913
Halocynthia okai Ritter, 1907
Halocynthia washingtonia Ritter, 1913
- Genus *Boltenia* Savigny, 1816
Boltenia echinata Ritter, 1907
Boltenia rubra Stimpson, 1852
- Genus *Culeolus* Herdman, 1881
Culeolus easteri Tokioka, 1967
Culeolus pinguis Monniot and Monniot, 1982
Culeolus pyramidalis Ritter, 1907
Culeolus sluiteri Ritter, 1913
Culeolus tanneri Verrill, 1885
- Genus *Microcosmus* Heller, 1878
Microcosmus nacreus Van Name, 1912
Microcosmus transversus Ritter, 1907
- Genus *Hartmeyeria* Ritter, 1913
Hartmeyeria chinensis Tokioka, 1967
Hartmeyeria triangularis Ritter, 1913
- Genus *Bathypora* Michaelsen, 1904
Bathypora goreau Millar and Goodbody, 1974
- Genus *Ctenyura* Van Name, 1918
Ctenyura intermedia Van Name, 1918
- Family MOLGULIDAE Lacaze-Duthiers, 1877
- Genus *Molgula* Forbes, 1848 [= *Caesira* Fleming, 1822]
Molgula estadose Monniot and Monniot, 1983
Molgula habanensis Van Name, 1945
Molgula oregonia Ritter, 1913
Molgula pigalettae Monniot and Monniot, 1983
Molgula platana Van Name, 1945
Molgula regularis Ritter, 1907
Caesira intumescens Van Name, 1912
Caesira lutulenta Van Name, 1912
Caesira martensii Traustedt, 1885
Caesira robusta Van Name, 1912
Caesira singularis Van Name, 1912
Caesira verrilli Van Name, 1912
- Genus *Molguloides* Huntsman, 1922
Molguloides cyclocarpa Monniot and Monniot, 1982
- Genus *Halomolgula* Ritter, 1907
Halomolgula ovoida Ritter, 1907
- Genus *Paramolgula* Traustedt, 1885
Paramolgula canioi Monniot and Monniot, 1983
- Genus *Eugyrioides* Seeliger, 1906
Eugyrioides dalli Ritter, 1913
Eugyrioides polyducta Monniot and Monniot,

1983

Genus *Bostrichobranchus* Traustedt, 1883*Bostrichobranchus digonas* Abbott, 1951

Class APPENDICULARIA

Family FRITILLARIDAE Seeliger, 1895

Genus *Fritillaria* Quoy and Gaimard, 1834*Fritillaria taeniogona* Tokioka, 1957Genus *Sinisteroffia* Tokioka, 1957*Sinisteroffia scrippsi* Tokioka, 1957

Class THALIACEA

Order DOLIOLIDA

Family DOLIOLIDAE Uljanin, 1884

Genus *Doliolina* Borgert, 1894*Doliolina obscura* Tokioka and Berner, 1958*Doliolina separata* Tokioka and Berner, 1958*Doliolina undulatum* Tokioka and Berner, 1958Genus *Doliopsoides* Krüger, 1939*Doliopsoides horizonsi* Tokioka and Berner, 1958

Order SALPIDA

Family SALPIDAE Franstedt, 1885

Genus *Salpa* Forskål, 1775*Salpa maxima tuberculata* Metcalf and Bell, 1918*Salpa younti* Van Soest, 1973Genus *Cyclosalpa* de Blainville, 1827*Cyclosalpa pinnata quadriluminis* Berner, 1955*Cyclosalpa strongylenteron* Berner, 1955Genus *Brooksia* van Soest, 1975*Brooksia bernerii* van Soest, 1975Genus *Thalia* Browne, 1756*Thalia democratica* Forskål, 1775Genus *Traustedia* Metcalf and Bell, 1918*Traustedia multitentaculata bicristata* Metcalf and Bell, 1918

Order PYROSOMIDA

Family PYROSOMIDAE

Genus *Pyrosoma* Peron, 1804*Pyrosoma atlanticum atlanticum* Metcalf and Hopkins, 1919*Pyrosoma atlanticum dipleurosoma* Metcalf and Hopkins, 1919*Pyrosoma atlanticum echinatum* Metcalf and Hopkins, 1919*Pyrosoma atlanticum hawaiiensis* Metcalf and Hopkins, 1919*Pyrosoma atlanticum paradoxum* Metcalf and Hopkins, 1919*Pyrosoma ellipticum* Metcalf and Hopkins, 1919*Pyrosoma hybridum* Metcalf and Hopkins, 1919*Pyrosoma paradoxum* Metcalf and Hopkins, 1919*Pyrosoma verticillatum cylindricum* Metcalf and Hopkins, 1919

Alphabetical List of Tunicate Types and Noted Name Changes

Adagnesia antarctica Kott, 1969:99, holotype, USNM 11966; 2 paratypes, USNM 11967, west of Macquarie Island, south Pacific Ocean.*Adagnesia henriquei* Monniot and Monniot, 1983:58-60, holotype, USNM 15317, Tierra del Fuego.*Agnesia beringia* Ritter, 1913:493, 9 syntypes, USNM 5689, eastern Bering Sea, Alaska. This species is a junior synonym of *Agnesia septentrionalis* Huntsman, 1911, which is the name that Van Name (1945) used. *Agnesia septentrionalis* is also the name that Van Name used when he identified a specimen (USNM 10633) in the United States National Museum. Ritter, however, did not agree that the two species were the same.*Agnesia biscoei* Monniot and Monniot, 1983:56-57, holotype, USNM 14493; 35 paratypes, USNM 14500, South Shetland Islands.*(Agnesia septentrionalis: see Agnesia beringia* Ritter, 1913.)*Agnesia tenue* Monniot and Monniot, 1983:57-58, holotype, USNM 14489; 2 paratypes, USNM 14494, Isla de Los Estados.*Amaroucium constellatum* Verrill, 1871:359, 30 syntypes, USNM 4642; 15 syntypes, USNM 102, Vineyard Sound, Massachusetts; 1 syntype, USNM 4643, Woods Hole, Massachusetts. In the original description of this species, the genus was spelled *Amouroucium*. The spelling was changed by Verrill and Smith (1873) to *Amaroecium*. In 1879 it was spelled *Amoroecium* in a publication by Verrill and Rathbun (1879:231), and Hartmeyer (1909) changed the spelling to *Amaroucium*. However, the practice within the last thirty years has been to refer to this genus using the original generic name *Aplidium* (Savigny, 1816). The name *Amaroucium* was used by Milne Edwards for any colony that was massive or capitate with zooids divided into three parts and more than 10 rows of stigmata (Milne Edwards, 1841). *Amaroucium* is now considered as only a subgenus of *Aplidium*; thus, *Amaroucium constellatum* is known as *Aplidium (Amaroucium) constellatum*.*Aplidiopsis amoyense* Tokioka, 1967:45, holotype, USNM 11529, probably vicinity of Amoy, China.*Aplidium abyssum* Kott, 1969:47, holotype, USNM 11970, Peru-Chile Trench.*Aplidium balleniae* Monniot and Monniot, 1983:13-14, 1 paratype, USNM 14504, Balleny Islands, Antarctica.*Aplidium bilinguae* Monniot and Monniot, 1983:14-15, holotype, USNM 14498, off Wilkes Land, Antarctica.*(Aplidium constellatum: see Amaroucium constellatum* Verrill, 1871.)*Aplidium gracile* Monniot and Monniot, 1983:17-18, holotype, USNM 14496; 12 paratypes, USNM 14503, off Tierra del Fuego.

- Aplidium miripartum* Monniot and Monniot, 1983:24–25, holotype, USNM 14486, off Antarctic Peninsula, Antarctica (64°47'30"S, 64°07'12"W).
- Aplidium pellucidum* Kott, 1971:11–82, holotype, USNM 12012, Chile.
- Aplidium siderum* Monniot and Monniot, 1983:28, holotype, USNM 14491, Antarctic Peninsula, Antarctica.
- (*Aplidium spauldingi*: see *Psammaplidium spauldingi* Ritter, 1907.)
- Aplidium yezoense* Tokioka, 1967:28, holotype, USNM 11802; 6 paratypes, USNM 11803, Hokkaido Island, Japan.
- Ascidia caguayensis* Millar and Goodbody, 1974:153–155, holotype, USNM 12286; 7 paratypes, USNM 12287, Port Royal, Jamaica.
- Ascidia callosa* Stimpson, 1852:228, 25 syntypes, USNM 5157, Maine. Traustedt (1883) decided that this species should be placed in a new genus that he named *Phallusia*, and for years, this species was referred to as *Phallusia callosa*. In more recent works, however, there has been a return to the original name and description (Van Name, 1945).
- Ascidia clementea* Ritter, 1907:32–35, 1 syntype, USNM 5309, San Clemente Island, California. The same applies for this species as for *A. callosa*; labelled *A. clementea*, then *P. clementea*, and once again *A. clementea*.
- Ascidia fusca* Monniot and Monniot, 1989, holotype, USNM 18248, off Isla Barla Bartholome, Galapagos Islands (00°03.91'N, 90°19.21'W).
- Ascidia papillosa* Tokioka, 1967:145–147, holotype, USNM 11732, Honshu, Japan.
- (*Ascidia unalaskensis*: see *Phallusia unalaskensis* Ritter, 1913.)
- (*Ascidia vermiformis*: see *Phallusia vermiformis* Ritter, 1913.)
- Ascidia xamaycana* Millar and Goodbody, 1974:150–152, 7 syntypes, USNM 12283, Discovery Bay, Jamaica.
- Bathypora goreau* Millar and Goodbody, 1974:156–158, holotype, USNM 12292; 1 paratype, USNM 12293; 1 paratype, USNM 12294; 1 paratype, USNM 12295, Discovery Bay, Jamaica.
- Benthascidia michaelsoni* Ritter, 1907:24–32, 2 syntypes, USNM 5310, near San Diego, California.
- Boltenia echinata* Ritter, 1907:14–16, 1 syntype, USNM 5290; 1 syntype, USNM 5291, Point Loma Lighthouse, California.
- (*Boltenia ovifera*: see *Boltenia rubra* Stimpson, 1852.)
- Boltenia rubra* Stimpson, 1852:232, 30 syntypes, USNM 3206, Massachusetts Bay, Massachusetts. This species has been referred to by many different synonyms, as shown by Van Name (1945), but the name now used by most ascidian specialists is *Boltenia ovifera*, used by Hartmeyer (1903) with reference to his redescription of a species that was originally named *Vorticella ovifera* (Linnaeus, 1767).
- Bostrichobranchus digonas* Abbott, 1951:302–307, holotype, USNM 10976; 17 paratypes, USNM 10977, Saint George Sound, Florida.
- Botrylloides violaceus marginatus* Tokioka, 1967:160–162, holotype, USNM 11447; 1 paratype, USNM 11455, East Reef, Ngaremdiu, Palau Islands.
- Botryllus compositus* Tokioka, 1967:155–156, holotype, USNM 11709, Rangoon, Burma.
- Brooksia bernerii* van Soest, 1975:117–118, holotype, USNM 12686; 3 paratypes, USNM 12685 (31°41'N, 63°47'W); 1 paratype, USNM 12687 (32°00'N, 64°00'W), Bermuda.
- Caenagnesia schmitti* Kott, 1969:94–96, holotype, USNM 11968, Relay Bay, Ross Sea, Antarctica; 1 paratype, USNM 12262; 1 paratype, USNM 12365, Antarctic Peninsula, Antarctica.
- Caesira intumescens* Van Name, 1912:482–484, 1 syntype, USNM 669, Grand Bank, Newfoundland. This species, described by Van Name, was identical to a poorly described species that Macleay (1825) had previously described and named *Cystingia griffithsii*. Huntsman (1922b) transferred the species to *Molgula griffithsii*.
- Caesira lutulenta* Van Name, 1912:468–471, 1 syntype, USNM 3505, off Martha's Vineyard, Massachusetts. This species has been transferred to the genus *Molgula* by Hartmeyer (1914).
- Caesira martensii* Traustedt, 1885:19, 1 syntype, USNM 5557, northwest Australia. This species has been transferred to the genus *Molgula* by Sluiter (1900).
- Caesira robusta* Van Name, 1912:505–509, 2 syntypes, USNM 4034, Woods Hole, Massachusetts. This species has been transferred to the genus *Molgula* by Hartmeyer (1914).
- Caesira singularis* Van Name, 1912:518–520, 1 syntype, USNM 5598, Long Island Sound, Massachusetts. Van Name (1945) later agreed with Årnbäck Christie Linde's (1928) description of a new genus in which she named a new species, *Heterostigma separ*, that resembled Van Name's species. Van Name (1945) followed her course and from then on referred to this species as *Heterostigma singulare*. Current specialists seem to follow this course too, and so the name currently used is *H. singulare*.
- Caesira verrilli* Van Name, 1912:516–518, holotype, USNM 687, North Atlantic Ocean, southeast of Georges Bank. This species has been transferred to the genus *Molgula* by Hartmeyer (1923).
- Chelyosoma producta* Stimpson, 1864:153–161, holotype, USNM 3144, Puget Sound, Washington.
- Ciallusia longa* Van Name, 1918:124–126, holotype, USNM 6039; 1 paratype, USNM 18250, off Toccanhi Point, Sulu Archipelago, Philippines. The paratype was originally cataloged under the same USNM number as the holotype but the paratype was subsequently recataloged.
- Cibacapsa gulosa* Monniot and Monniot, 1983:50–53, holotype, USNM 14497, Ross Sea, Antarctica.

- Ciona pomponiae* Monniot and Monniot, 1989, holotype, USNM 18247, James Bay, off Isla San Salvador, Galapagos Islands (00°10.50'S, 90°53.25'W).
- Clavelina puertosecensis* Millar and Goodbody, 1974:143–146, holotype, USNM 12288, Rio Bueno, Jamaica; 1 paratype, USNM 12289; 1 paratype, USNM 12290; 1 paratype, USNM 12291, Discovery Bay, Jamaica.
- Cnemidocarpa chinensis* Tokioka, 1967:188–190, holotype, USNM 11799; 9 paratypes, USNM 11800, China. (*Cnemidocarpa rhizopus*: see *Styela sabulifera* Ritter, 1913.)
- Cnemidocarpa victoriae* Monniot and Monniot, 1983:73–74, holotype, USNM 14495 (with two slides), Falkland Islands; 1 paratype, USNM 14487, Isla de Los Estados.
- Corynascidia herdmani* Ritter, 1913:491–493, holotype, USNM 5683, Bering Sea, Alaska.
- Ctenyura intermedia* Van Name, 1918:71–73, holotype, USNM 6036; 10 paratypes, USNM 6035, between Negros and Siquijor, Philippines.
- Culeolus easteri* Tokioka, 1967:220–222, holotype, USNM 11769, off Marquesas Islands (0°50'00"N, 137°54'00"W).
- Culeolus pinguis* Monniot and Monniot, 1982:95–130, holotype, USNM 12918, Antarctic Peninsula, Antarctica.
- Culeolus pyramidalis* Ritter, 1907:16–18, 1 syntype, USNM 5294, near San Diego, California (33°10'N, 121°32'W); 1 syntype, USNM 5295, west of San Diego, California (32°54'N, 121°15'W).
- Culeolus sluiteri* Ritter, 1913:463–465, 2 syntypes, USNM 5688, just south of Aleutian Islands, Alaska. (*Culeolus suhmi*: see *Culeolus tanneri* Verrill, 1885.)
- Culeolus tanneri* Verrill, 1885:503–699, holotype, USNM 4944, off Nantucket, Massachusetts. Van Name (1945) mentioned that no sufficient characters separated the specimens that Verrill described and named *C. tanneri* from specimens that Herdman (1881) had described earlier and named *Culeolus suhmi*; this species is generally considered a junior synonym of *Culeolus suhmi* Herdman, 1881.
- Cyclosalpa pinnata quadriluminis* Berner, 1955:251–253, holotype, USNM 11284; 10 paratypes, USNM 11285, South of Point Conception and North of Sebastian Viscaïno Bay of Baja California.
- Cyclosalpa strongyleron* Berner, 1955:247–251, holotype, USNM 11281, west of Isla Isabela, Galapagos Islands (4°56'N, 107°29'W); 1 paratype, USNM 11282, off Baja California, Pacific Ocean side; 10 paratypes, USNM 11283, west of Isla Isabela, Galapagos Islands (0°01.5'S, 99°08.5'W).
- Diandrocarpa brakenhielmi* var. *stuhmanni* Michaelsen, 1904:50, 1 syntype, USNM 5556, Dar-es-Salaam, Tanganyika. This species is a junior synonym of *Symplegma viride* Herdman, 1886, which is the name that is currently used.
- Didemnopsis jolense* Van Name, 1918:147–148, holotype, USNM 6040; 1 paratype, USNM 5926, near Jolo Light, Philippines. Tokioka (1967) later treated this species as a variety of *Trididemnum savignii* instead of as a distinct species, thus listing it as *T. savignii* var. *jolense*. (*Didemnum candidum fusiferum*: see *Didemnum fusiferum* Van Name, 1921.)
- Didemnum fusiferum* Van Name, 1921:283–494, holotype, USNM 7006, Florida. Originally described as a species, but Van Name (1945) later regarded it as a subspecies of *D. candidum*. Thus, the taxon is currently known as *Didemnum candidum fusiferum*.
- Didemnum macrospiculatum*. Tokioka, 1967:71–72, holotype, USNM 11489; 1 paratype, USNM 11808, Onotoa Atoll, Gilbert Islands.
- Didemnum nekozita* Tokioka, 1967:67–70, holotype, USNM 11381; 34 paratypes, USNM 11801, barrier reef 8 miles northwest of Koror Island, Palau Islands; 10 paratypes, USNM 11418, Peleliu boat channel between Ngargersal and Kongauru Islands, Palau Islands.
- Didemnum opacum* Ritter, 1907:42–44, holotype, USNM 5297, San Nicolas Island, California.
- Didemnum santa elenae* Van Name, 1945:92–93, 3 syntypes, USNM 10493, Salinas, Ecuador.
- Didemnum siphonale* Tokioka, 1967:72–74, holotype, USNM 11804; 7 paratypes, USNM 11805, Honshu Island, Japan.
- Didemnum sphaericum* Tokioka, 1967:70–71, holotype, USNM 11431, 11 paratypes, USNM 11809, Palau Islands.
- Didemnum studeri* Hartmeyer, 1911:403–406, 3 syntypes, USNM 6099, Kerguelen Island, Indian Ocean.
- Dimeatus mirus* Monniot and Monniot, 1981, holotype, USNM 12911; 5 paratypes, USNM 12912 (with 2 slides), Pacific Antarctic Basin (60°24'S, 115°01'W).
- Diplosoma antarcticum* Kott, 1969:83, holotype, USNM 11969, Knox Coast, Vincennes Bay, Wilkes Land, Antarctica.
- Distaplia megathorax* Monniot and Monniot, 1981, holotype, USNM 12914, Ross Sea, Antarctica. (*Distaplia skoogi*: see *Holozoa domuncula* Hartmeyer, 1913.)
- Distaplia smithi* Abbott and Trason, 1968:143–153, holotype, USNM 11953, Carmel Cove, Monterey County, California; 11 paratypes, USNM 11954, Pescadero Point, Monterey County, California. (*Distaplia stylifera*: see *Holozoa bursata* Van Name, 1921.)
- Doliolina obscura* Tokioka and Berner, 1958:317–319, holotype, USNM 11371; 10 paratypes, USNM 11372, Peru (13°43'30"S, 81°08'30"W).
- Doliolina separata* Tokioka and Berner, 1958:319–320, 2 syntypes, USNM 11373, Peru (13°43'30"S, 81°08'30"W).
- Doliolina undulatum* Tokioka and Berner, 1958:137–138, holotype, USNM 11369; 4 paratypes, USNM 11370, Peru.
- Doliopsoides horizoni* Tokioka and Berner, 1958:135–137, 3 syntypes, USNM 11368, Peru.
- Echinoclinum philippinense* Tokioka, 1967:93–94, holotype, USNM 11790; 1 paratype, USNM 11791, Punta Natangol, Basilan Island, Philippines.

- Ecteinascidia tortugensis* Plough and Jones, 1937:100–101, 6 paratypes, USNM 10613, Dry Tortugas, Florida.
- Eudistoma albatrossi* Tokioka, 1967:124, holotype, USNM 11811, 1 paratype, USNM 11812, off Omai Zaki Light, Honshu, Japan.
- Eudistoma carolinense* Van Name, 1945:123–124, holotype, USNM 10497, Charleston, South Carolina.
- Eudistoma hepaticus* Van Name, 1921:348, 3 syntypes, USNM 239: 1 syntype, USNM 7009, Jamaica. The subgenus *Eudistoma* was given generic rank by Caullery (1909).
- Eudistoma marianense* Tokioka, 1967:122–123, holotype, USNM 11470; 1 paratype, USNM 11810, entrance of Tanapag Harbor, lagoon west of Saipan, Mariana Islands.
- Eudistoma mexicanum* Van Name, 1945:125–126, holotype, USNM 10647, northern end of Gulf of California.
- Eudistoma platense* Van Name, 1945:124–125, holotype, USNM 10496, near mouth of the La Plata River, Puerto Rico.
- Eugyrioides dalli* Ritter, 1913:441–443, 2 syntypes, USNM 5678, Kyska Harbor, Alaska. This species has been transferred to the genus *Pareugyrioides* by Hartmeyer (1914).
- Eugyrioides polyducta* Monniot and Monniot, 1983:115, holotype, USNM 15319 (with two slides), South Shetland Islands; 2 paratypes, USNM 14501, off Tierra del Fuego, South America.
- Euherdmania morgani* Millar and Goodbody, 1974:147–150, holotype, USNM 12284, South Knolls, west of Drunkenman Cay, Jamaica; 1 paratype, USNM 12285, Drunkenman Cay, Jamaica.
- Friüllaria taeniogona* Tokioka, 1957:363–364, 7 syntypes, USNM 11376, off Costa Rica and Peru.
- Halocynthia haustor foliacea* Ritter, 1913:447–448, 6 syntypes, USNM 5681, Oregon. This is a junior synonym of *Pyura haustor* (Stimpson, 1864).
- (*Halocynthia hilgendorfi igaboja*: see *Halocynthia okai* Ritter, 1907.)
- (*Halocynthia hispida*: see *Halocynthia okai* Ritter, 1907.)
- Halocynthia okai* Ritter, 1907:11–13, 1 syntype, USNM 5312, Point Pinos Light, California. Abbott and Newberry (1980) take this to be *Halocynthia hilgendorfi igaboja* Oka, 1906 (which Kott (1968) included in *Halocynthia hispida* Verrill, 1879).
- Halocynthia washingtonia* Ritter, 1913:445–446, 2 syntypes, USNM 5680, Strait of San Juan de Fuca, Washington. This is a junior synonym of *Pyura haustor* (Stimpson, 1864).
- Halomolgula ovoida* Ritter, 1907:3–8, 60 syntypes, USNM 5300; 3 syntypes, USNM 5301; 2 syntypes, USNM 5302, San Nicolas Island, California.
- Hartmeyeria chinensis* Tokioka, 1967:225–228, holotype, USNM 11806; 3 paratypes, USNM 11807, China, probably Amoy.
- Hartmeyeria triangularis* Ritter, 1913:461–463, 13 syntypes, USNM 5679, Kyska Harbor, Aleutian Islands, Alaska.
- (*Heterostigma singulare*: see *Caesira singularis* Van Name, 1912.)
- Holozoa bursata* Van Name, 1921:366, 2 syntypes, USNM 7240, Key West, Florida Keys, Florida. This is a junior synonym of *Distaplia stylifera* (Kowalevsky, 1874).
- Holozoa domuncula* Hartmeyer, 1913:125–144, 1 syntype, USNM 6111, Cape Colony, South Africa. This is a senior synonym of *Distaplia skoogi* Michaelsen, 1934.
- Hypodistoma palauense* Tokioka, 1970:75, holotype, USNM 11414, Iwayama Bay, Palau Islands.
- Hypsistozoa obscura* Kott, 1969:33–35, holotype, USNM 11975, Peru-Chile Trench.
- Leptoclinides hawaiiensis* Tokioka, 1967:92–93, holotype, USNM 11792; 2 paratypes, USNM 11793, Auau channel, between Maui and Lanai, Hawaii.
- (*Microcosmus glacialis*: see *Microcosmus nacreus* Van Name, 1912.)
- Microcosmus nacreus* Van Name, 1912:439–619, holotype, USNM 690, off Nova Scotia, Canada. This is a junior synonym of *Microcosmus glacialis* (Kiaer, 1893).
- Microcosmus transversus* Ritter, 1907:18–20, holotype, USNM 5303, San Nicolas Island, California.
- Molgula estadose* Monniot and Monniot, 1983:109, holotype, USNM 15322; 12 paratypes, USNM 13579; paratype (1 slide), USNM 15323, Tierra del Fuego, South America.
- (*Molgula griffithsii*: see *Caesira intumescens* Van Name, 1912.)
- Molgula habanensis* Van Name, 1945:402–403, 8 paratypes, USNM 5810, off Havana, Cuba.
- (*Molgula lutulenta*: see *Caesira lutulenta* Van Name, 1912.)
- (*Molgula martensii*: see *Caesira martensii* Traustedt, 1885.)
- Molgula oregonia* Ritter, 1913:435–437, 11 syntypes, USNM 5682; 3 syntypes, USNM 5830, Oregon (44°28'N, 124°25'30"W).
- Molgula pigalettae* Monniot and Monniot, 1983:111, holotype (2 slides), USNM 15316, Tierra del Fuego, South America.
- Molgula platana* Van Name, 1945:405–406, 4 Paratypes, USNM 10494, near the mouth of the La Plata River, Argentina (36°42'S, 56°23'W).
- Molgula regularis* Ritter, 1907:8–11, 1 syntype, USNM 5304, Point Loma Light, California.
- (*Molgula robusta*: see *Caesira robusta* Van Name, 1912.)
- (*Molgula verrilli*: see *Caesira verrilli* Van Name, 1912.)
- Molguloides cyclocarpa* Monniot and Monniot, 1982:95–130, holotype, USNM 12904; 7 paratypes, USNM 12905, South Pacific Ocean (56°04'S, 133°59'W).
- Mysterascidia symmetrica* Monniot and Monniot, 1981, holotype, USNM 12910, Ross Sea, Antarctica.
- Octacnemus herdmani* Ritter, 1906:250, 3 syntypes, USNM 5149, off Ecuador (05°17'S, 85°20'W); 1 syntype, USNM 5151, off Ecuador (6°55'S, 83°34'W).

- Oligocarpa megalorchis* Hartmeyer, 1911:403, 1 syntype, USNM 6107, off Ecuador.
- Pandocia albatrossi* Van Name, 1912:579–580, 1 syntype, USNM 4726, off Nantucket Shoals, Massachusetts. This species was transferred to the genus *Polycarpa* by Hartmeyer (1923).
- Pandocia nigricans* Heller, 1877:241–275, 3 syntypes, USNM 5558, Mauritius, Africa. A senior synonym of *Polycarpa nigricans* Heller, 1878.
- Paramolgula canioi* Monniot and Monniot, 1983:117–119, holotype (2 slides), USNM 15320; 14 paratypes, USNM 14499, Chile.
- (*Pareugyrioides dalli*: see *Eugyrioides dalli*.)
- Perophora regina* Goodbody and Cole, 1987:246–254, holotype, USNM 16288; 1 paratype, USNM 16289; 2 paratypes, USNM 16290; 1 paratype, USNM 16291, Twin Cays, Belize.
- Perophora viridis* Verrill, 1871:359, 5 syntypes, USNM 3231, Woods Hole, Massachusetts.
- (*Phallusia callosa*: see *Ascidia callosa* Stimpson, 1852.)
- (*Phallusia clementea*: see *Ascidia clementea* Ritter, 1907.)
- Phallusia unalaskensis* Ritter, 1913:497–499, holotype, USNM 5685, mouth of Unalaska Island, Alaska. Ritter described this species during the period that ascidian specialists were following Traustedt's (1883) convention of placing all taxa of the genus *Ascidia* into a genus that he called *Phallusia*, as discussed above in the explanation of name changes for the genus *Ascidia*. As also discussed earlier, it was determined that the original generic name, *Ascidia*, was more appropriate for most taxa of this genus, and only a few are properly referable to *Phallusia*. This species is now recognized as *Ascidia unalaskensis* (Ritter).
- Phallusia vermiformis* Ritter, 1913:496–497, holotype, USNM 5792, off southern California (34°N, 119°29'30"). The same applies for this species as in the case of *P. unalaskensis*. The proper combination now recognized is *Ascidia vermiformis* (Ritter).
- Placentela translucida* Kott, 1969:42–44, holotype, USNM 11977; 2 paratypes, USNM 11978, Antarctic Peninsula, Antarctica.
- Polyandrocarpa floridana* Van Name, 1921:417, holotype, USNM 6959, west coast of Florida (29°43'40"N, 83°49'45"W).
- Polyandrocarpa sabanilla* Van Name, 1921:409, holotype, USNM 1559, Sabanilla, Colombia.
- (*Polycarpa albatrossi*: see *Pandocia albatrossi* Van Name, 1912.)
- Polycarpa melanosiphonica* Tokioka, 1967:178–180, holotype, USNM 11499, Onotoa Atoll, Gilbert Islands; 1 paratype, USNM 11508, lagoon west of Saipan, Mariana Islands.
- (*Polycarpa nigricans*: see *Pandocia nigricans* Heller, 1877.)
- (*Polycitor (Eudistoma) hepaticus*: see *Eudistoma hepaticus* Van Name, 1921.)
- Polyclinum indicum* Sebastian, 1952:316–317, 7 paratypes, USNM 11205, off Madras Coast, India.
- Polyclinum johnsoni* Monniot and Monniot, 1989, holotype, USNM 18247, off the north coast of Isla Fernandino, Galapagos Islands (00°15'16"S, 91°27.93'W).
- Polyclinum laxum* Van Name, 1945:71, 1 syntype, USNM 10498, Espíritu Santo Island, Brazil.
- Protoholozoa lilium* Monniot and Monniot, 1981, holotype, USNM 12916; 1 paratype, USNM 12917, South Atlantic Ocean (51°02'S, 142°47'W).
- Protoholozoa pedunculata* Kott, 1969:35–36, holotype, USNM 11976, Drake Passage, south of Tierra del Fuego, South America.
- Psammaplidium spauldingi* Ritter, 1907:41–42, holotype, USNM 5305, San Nicolas Island, California. The name was changed to *Amaroucium spauldingi* by Hartmeyer (1909). Because *Amaroucium* has come to be recognized as a subgenus of *Aplidium*, the taxon is currently referred to as *Aplidium spauldingi*.
- Pyrosoma atlanticum atlanticum* and *Pyrosoma atlanticum dipleurosoma* Metcalf and Hopkins, 1919:239–246, holotype, USNM 6471, Philippines.
- Pyrosoma atlanticum dipleurosoma* and *Pyrosoma paradoxum* Metcalf and Hopkins, 1919:249–251, holotype, USNM 6469 (hybrid); 1 paratype, USNM 6420, Capitancillo Island Light, off northern Cebu Island, Philippines.
- Pyrosoma atlanticum echinatum* Metcalf and Hopkins, 1919:257–258, holotype, USNM 6437, Mediterranean Sea.
- Pyrosoma atlanticum hawaiiensis* Metcalf and Hopkins, 1919:246–248, holotype, USNM 6443; 4 paratypes, USNM 3069, north Pacific Ocean, between Hawaii and California.
- Pyrosoma atlanticum paradoxum* Metcalf and Hopkins, 1919:248–249, holotype, USNM 6409, northwest of Hawaii (25°10'N, 166°20'W).
- Pyrosoma ellipticum* Metcalf and Hopkins, 1919:231–233, holotype, USNM 6416, vicinity of Formosa, China Sea.
- Pyrosoma hybridum* Metcalf and Hopkins, 1919:229–230, holotype, USNM 6470; 5 paratypes, USNM 6408, vicinity of Formosa, China Sea.
- Pyrosoma verticillatum cylindricum* Metcalf and Hopkins, 1919:227–229, holotype, USNM 6468; 1 paratype, USNM 6412, Nugas Island, Sulu Sea, vicinity of southern Panay, Philippines.
- Pyura antillarum* Van Name, 1921:451, holotype, USNM 7032, Lesser Antilles, Caribbean.
- Pyura duplicata* Van Name, 1918:79–81, holotype, USNM 6038, Catabalogan, Samar, Philippines.
- (*Pyura haustor*: see *Halocynthia haustor foliacea* Ritter, 1913 and *Halocynthia washingtonia* Ritter, 1913.)
- Pyura inflata* Van Name, 1918:74–76, holotype, USNM 6037, near Observation Island, Philippines.
- Pyura lycoperdon* Monniot and Monniot, 1983:91–92, holotype, USNM 14488, South Shetland Islands.
- Pyura multiruga* Monniot and Monniot, 1982, holotype,

- USNM 12906; 20 paratypes, USNM 12907 (with 7 slides); 1 paratype, USNM 12908 (tunic only), Ross Sea, Antarctica.
- Pyura tunica* Kott, 1969:137–138, holotype, USNM 11962; 27 paratypes, USNM 11963, Knox Coast, Vincennes Bay, Wilkes Land, Antarctica.
- Ritterella mirifica* Monniot and Monniot, 1983:34, holotype, USNM 14492, Bransfield Strait, Antarctic.
- Ritterella rubra* Abbott and Trason, 1968:143–147, holotype, USNM 11951; 20 paratypes, USNM 11952, Monterey County, California.
- Salpa maxima tuberculata* Metcalf and Bell, 1918:87–88, holotype, USNM 6472; 2 paratypes, USNM 6454, Pamilacan Island, vicinity of western Bohol, Philippines.
- Salpa younti* Van Soest, 1973:9–15, holotype, USNM 12014 (32°08'N, 63°47'W); 1 paratype, USNM 12015 (32°08'N, 63°47'W); 1 paratype, USNM 12016 (32°20'N, 63°33'W); 4 paratypes, USNM 12017; 2 paratypes, USNM 12018 (31°50'N, 63°52'W), Bermuda.
- Sinisteroffia scrippsi* Tokioka, 1957:359–362, 3 syntypes, USNM 11375, off Peru.
- Situla rineharti* Monniot and Monniot, 1989, holotype, USNM 18244, north of Seymour Island, Galapagos Islands (00°21.88'S, 90°15.75'W); 1 paratype, USNM 18245, Tower Island, Galapagos Islands (00°16.98'N, 89°59.81'W).
- Stolonica styeliformis* Van Name, 1918:107–109, 13 syntypes, USNM 6042, off Jolo Light, Philippines.
- Stolonica vesicularis* Van Name, 1918:109–111, holotype, USNM 6034, off Jolo Light, Philippines.
- (*Styela atlanticum*: see *Tethyum atlanticum* Van Name, 1912.)
- Styela hemicaespitosa* Ritter, 1913:471–475, holotype, USNM 5684; 7 paratypes, USNM 11627; 29 paratypes, USNM 11628, southern California.
- Styela izuana hawaiiensis* Tokioka, 1967:193–195, holotype, USNM 11794; 9 paratypes, USNM 11975, Oahu, Hawaii.
- Styela macreteron* Ritter, 1913:466–471, holotype, USNM 5686, Bering Sea, Pribilof Islands, Alaska.
- Styela materna* Monniot and Monniot, 1983:81–82, holotype (three slides), USNM 15324, South Georgia Island, south Atlantic Ocean.
- Styela psoliformis* Monniot and Monniot, 1989, holotype, USNM 18246, north of Isla Española, Galapagos Islands (01°18.72'S, 89°48.81'W).
- Styela sabulifera* Ritter, 1913:475–476, 50 syntypes, USNM 5687, in Bristol Bay, Bering Sea, Alaska. Van Name (1945) lists this species as a junior synonym of *Cnemidocarpa rhizopus* (Redikorzev, 1907).
- Styela schmitti* Van Name, 1945:298–299, 5 paratypes, USNM 10495, off Montevideo, Uruguay (36°42'S, 56°23'W).
- Styela tinaktae* Van Name, 1918:88–91, holotype, USNM 6041; 1 paratype, USNM 18260, off Tinakta Island, Sulu Archipelago, Philippines.
- (*Symplegma viride*: see *Diandrocarpa brakenhielmi* var. *stuhmanni* Michaelsen, 1904).
- Synoicum ostentor* Monniot and Monniot, 1983:33, holotype, USNM 14490; 100 paratypes, USNM 14502, Balleny Islands, Antarctica.
- Synoicum ramulosum* Kott, 1969:66–68, holotype, USNM 11971; 12 paratypes, USNM 11972, Knox Coast, Wilkes Land, Antarctica.
- Synoicum tentaculatum* Kott, 1969:69–70, holotype, USNM 11973; 1 paratype, USNM 11974, South Orkney Islands.
- Tethyum atlanticum* Van Name, 1912:552, 1 syntype, USNM 5599, off Martha's Vineyard, Massachusetts. This species has been transferred to the genus *Styela* by Van Name (1921).
- Thalia democratica* Forskål, 1775:112–117, holotype, USNM 6473; 1 paratype, USNM 6474, Luzon, Philippines.
- Traustedia multitentaculata bicristata* Metcalf and Bell, 1918:143–147, 1 syntype, USNM 6430, off Martha's Vineyard, Massachusetts.
- (*Trididemnum savignii* var. *jolense*: see *Didemnopsis jolense* Van Name, 1918.)

Selected References

(including all literature cited)

- Abbott, D.P.
1951. *Bostrichobranchus digonas*, a New Molgulid Ascidian from Florida. *Journal of the Washington Academy of Sciences*, 41(9): 302-307.
- Abbott, D.P., and A.T. Newberry
1980. Chordata: The Tunicates. In R.H. Morris, D.P. Abbott, and E.C. Haderlie, editors, *Intertidal Invertebrates of California*, pages 177-225. Stanford, California: Stanford University Press.
- Abbott, D.P., and W.B. Trason
1968. *Ritterella rubra* and *Distaplia smüthi*: Two New Colonial Ascidiaceans from the West Coast of North America. *Bulletin of the Southern California Academy of Sciences*, 63(3):143-153.
- Adams, H., and A. Adams
1858. *The Genera of Recent Mollusks Arranged According to Their Organization*, 2:587-609. London: John van Voorst.
- Åmbäck Christie Linde, A.
1928. Northern and Arctic Invertebrates in the Collection of the Swedish State Museum (Riksmuseum) 9: Tunicata, 3: Molgulidae and Pyuridae. *Koninklijke Svenska Handlingar*, series 3, 4(9):1-101.
1938. Ascidiacea, Part 1. In *Further Zoological Results Swedish Antarctic Expedition, 1901-1903*, 3(4):1-54.
- Berner, L.D.
1955. Two New Pelagic Tunicates from the Eastern Pacific Ocean. *Pacific Science*, 9(2):247-253.
- Bjerkan, P.
1905. Ascidian von dem norwegischen Fishereidampfer "Michael Sars" in den Jahren 1900-1904 gesammelt. *Bergens Museums Aarbog Afhandlingar og Arsberetning*, 1905(5):1-29.
- Bohadsch, J.B.
1761. De Tethys. In *J.B. Bohadsch de Quibusdam Animalibus Marinis Eorumque Protietatibus*, 4:128-135. Dresden.
- Borgert, A.H.C.
1894. Vertheilung der Doliolen. In V.A.C. Hensen, *Ergebnisse der in dem Atlantischen Ocean von Mitte Juli bis Anfang November 1889 ausgeführten Plankton-Expedition der Humboldt-Stiftung: Auf Grund von gemeinschaftlichen Untersuchungen einer Reihe von Fach-Forschern herausgegeben von V. Hensen*, volume 2, part E(B): 68 pages, 2 plates, 1 map, 1 diagram. Kiel and Leipzig.
- Brewin, B.I.
1953. Australian Ascidiaceans of the Sub-Family Holozoinae and a Review of the Sub-Family. *Transactions of the Royal Society of New Zealand*, 81(1):53-64.
- Broderip, W.J., and B.G. Sowerby
1830. Observations on New or Interesting Mollusca, Contained for the Most Part in the Museum of the Zoological Society. *Zoological Journal*, 5:46-51.
- Brooks, W.K.
1906. *Dipleurosoma*, a New Genus of *Pyrosoma*. *Johns Hopkins University Circular*, 26(5):98-99.
- Brown, P.
1756. *The Civil and Natural History of Jamaica*. Pages 383, 384. London.
- Caulery, M.
1909. Recherches sur les *Synascidies* du genre *Colella* et considérations sur la famille des *Distomidae*. *Bulletin Scientifique de France et de la Belgique*, 42:1-59.
- Della Valle, A.
1881. Nuove. Contribuzioni alla Storia Naturale delle Ascidie Composte del Golfo di Napoli. *Atti. Accademia dei Lincei*, 10(3):431-498.
- Fleming, J.
1822. *The Philosophy of Zoology*, 2(2):508-518. Edinburgh and London.
- Forbes, E., and S.C.T. Hanley
1848. A History of British Mollusca and Their Shells, (Tunicates, 1848). In *Archiv für Naturgeschichte* (Wiegmann, 1849), 15(2):106. [F.H. Troschel lists the new species published in volume 1 of Forbes and Hanley.]
- Forskål, P.
1775. *Descriptiones Animalium*, 4:112-117. Haumiae.
- Gaertner, J.
1774. Zoophyta Quaedam Minuta. In P.S. Pallas, *Spicilegium Zoologicum quibus novae Imprimis et Obscurae. Animalium Species Iconibus, Descriptionibus Atque Commentariis Illustrantur*, 1(10):34-41.
- Giard, A.
1872. Recherches sur les Ascidies Composees ou Synascidies. *Archives de Zoologie Experimentale et Generale*, 1:501-704.
- Goodbody, I.
1982. Tunicata. In S.P. Parker, editor, *Synopsis and Classification of Living Organisms*, 2:822-829. New York City: McGraw Hill Book Company.
- Goodbody, I., and L. Cole
1987. A New Species of *Perophora* (Ascidiacea) from the Western Atlantic, Including Observations on Muscle Action in Related Species. *Bulletin of Marine Science*, 40(2):246-254.
- Harant, H.
1931. Contribution a l'histoire naturelle des Ascidies et leurs parasites. *Annales de l'Institut Océanographique de Monaco*, 8:229-389.
- Hartmeyer, R.
1903. Die Ascidien der Arktis. In Römer and Schaudinn, *Fauna Arctica*, 3(2):93-412.
1908. Zur Terminologie der Familien und Gattungen der Ascidien. *Zoologische Annalen*, 3:1-63.
1909. Ascidien [continuation of work by Seeliger]. In H.G. Bronn, *Die Klassen und Ordnungen des Tier-reichs*, 3(1):1466. Leipzig. [Abstract, repeating lists of species by A. Schepotieff, in *Archiv Naturgeschichte*, 1911, 6:3-27].
1911. Die Ascidien der deutschen sudpolar Expedition, 1901-1903. *Deutsche Sudpolar Expedition*, 12:403-406.
1913. Tunicata. *Denkschriften der Medizinische Gesellschaft*, 17: 125-144.
1914. Diagnosen einiger neuer Molgulidae aus der Sammlung des berliner Museums nebst bemerkungen über die Systematik und Nomenklatur dieser Familie. *Sitzungsberichte Gesellschaft Naturforschender Freunde zu Berlin*, 1914:1-27.
1923. Ascidiacea. *Danish Ingolf Expedition*, 2(6-7):1-368.
- Heller, C.
1877. Untersuchungen über die Tunicaten des Adriatischen und Mittelmeeres. *Denkschriften der Akademie der Wissenschaften, Wien*, 37: 241-275.
1878. Beiträge zur nahern kenntnis der Tunicaten. *Sitzungsberichte der*

- Akademie der Wissenschaften, Wien*, section 1, 77:83-110.
- Herdman, W.A.
 1880. Preliminary Report on the Tunicata of the *Challenger* Expedition. *Proceedings of the Royal Society of Edinburgh*, 10(1):458-472; 10(2):714-726.
 1881. Preliminary Report on the Tunicata of the *Challenger* Expedition. *Proceedings of the Royal Society of Edinburgh*, 11(1):52-88.
 1882. Report on the Tunicata Collected during the Voyage of H.M.S. *Challenger* during the Years 1873-1876. In C.W. Thompson, and J. Murray, *Report on the Scientific Results of the Voyage of H.M.S. Challenger during the Years 1873-1876 (Zoology)*, 6(1):1-296.
 1886. Report on the Tunicata Collected during the Voyage of H.M.S. *Challenger* during the Years 1873-1876, Part 2: Ascidiaceae Compositae. *Zoological Report on the Challenger Expedition*, 14(38):1-429.
 1888. Report on the Tunicata Collected by H.M.S. *Challenger* during the Years 1873-1876, Part 3: the Ascidiaceae Salpiformes, the Thaliaceae, the Larvacea. In C.W. Thompson, and J. Murray, *Report on the Scientific Research of the Voyage of H.M.S. Challenger during the Years 1873-1876 (Zoology)*, 27(76):1-166.
- Huntsman, A.G.
 1912. Ascidiaceae from the Coasts of Canada. *Transactions of the Royal Canadian Institute, Annals*, 1911:111-148.
 1913. The Classification of the Styelidae. *Zoologischer Anzeiger*, 41: 482-501.
 1922a. Ascidiaceae. *Report on the Canadian Arctic Expedition, 1913-1918*, 6:3, 4b-14b.
 1922b. The Ascidian Family Caesiriidae. *Proceedings and Transactions of the Royal Society of Canada*, series 3, 16(5):211-234.
- Kiaer, J.
 1893. Oversigt over Norges Ascidiaceae Simpliciter. *Forhandlinger i Videnskabselskabet i Kristiania*, 9: 105 pages.
- Kott, P.
 1963. *Adagnesia opaca* gen. nov., sp. nov., A Remarkable Ascidian of the Family Agnesiidae from Moreton Bay, Queensland. *University of Queensland Papers, Department of Zoology*, 2(3):75-79.
 1968. A Review of the Genus *Halocynthia* Verrill, 1879. *Proceedings of the Linnean Society of New South Wales*, 93(1):76-89.
 1969. Antarctic Ascidiaceae. *Antarctic Research Series*, 13:35-138.
 1971. Antarctic Ascidiaceae, II. *Antarctic Research Series*, 16(4):1-60.
 1985. The Australian Ascidiaceae, Part I: Phlebobranchia and Stolidobranchia. *Memoirs of the Queensland Museum*, 23:1-438.
- Kowalevsky, A.O.
 1874. Ueber die Knospung der Ascidien. *Arkiv für Mikrobiologie Anatomischer*, 10:443.
- Krüger, H.
 1939. Die Thaliaceen der "Meteor" Expedition. *Wissenschaftliche Ergebnisse der Deutschen Atlantischen Expedition auf dem Forschungs- und Vermessungsschiff "Meteor" 1925-1927*, 13(2):111-152.
- Lacaze-Duthiers, H. de
 1877. Histoire des Ascidiées simples des côtes de France, 2. *Archives de Zoologie Experimentale et Generale*, 6:457-673.
- Lacaze-Duthiers, H. de, and V. Delage
 1892. Faune des Cynthiades de Roscoff et côtes de Bretagne. *Mémoires de l'Académie des Sciences de l'Institut de France*, 45(2):1-323.
- Lahille, F.
 1887. Sur la classification des Tuniciers. *Compte Rendu de l'Académie des Sciences*, 102 pages.
 1888. Étude systématique des Tuniciers. *Compte Rendu de l'Association Française pour l'Avancement des Sciences*, 1887(2):667-677.
 1890. Tunicata. *Zoologische Jahresberichte*, 1888:5-6.
- Lesson, R.P.
 1830. Zoologie. In *Voyage autour du monde sur la corvette La Coquille, pendant 1881-1825*, 2(1):1-471. Paris.
- Linnaeus, C.
 1767. *Systema Naturae*. 12th edition, 2:1087, 1089, 1294, 1295, 1319. Stockholm.
- MacDonald, J.D.
 1859. On the Anatomical Characters of Three Australian Species of Tunicata Referable to Savigny's Subgenus *Caesira*. *Transactions of the Linnean Society of London*, 22:367-371.
- MacLeay, W.S.
 1825. Anatomical Observations on the Natural Group of the Tunicata, with the Description of three Species Collected in Fox Channel. *Transactions of the Linnean Society of London*, 14:527-555.
- Metcalf, M.M., and M.M. Bell
 1918. The Salpidae: a Taxonomic Study. *Bulletin of the United States National Museum*, 100, 2(2):87-147.
- Metcalf, M.M., and H.S. Hopkins
 1919. *Pyrosoma*, a Taxonomic Study Based upon the Collections of the States Bureau of Fisheries and the United States National Museum. *Bulletin of the United States National Museum*, 100, 2(3): 227-258.
- Michaelsen, W.
 1898. Vorläufige mitteilung über einige Tuniciaten aus dem magalhaenischen gebiet, sowie van Sud-Georgien. *Zoologischer Anzeiger*, 21:363-371.
 1904. Revision der Compositen Styeliden oder Polyzinen. *Jahrbuch der Hamburgischen Wissenschaftlichen Anstalten*, supplement, 21(2):1-124.
 1930. Ascidiaceae Krikobranchiae. *Fauna Südwest Australiens*, 5:461-558.
- Millar, R.H.
 1955. On a Collection of Ascidiaceae from South Africa. *Proceedings of the Zoological Society of London*, 125:169-221.
 1962. Further Descriptions of South African Ascidiaceae. *Annals of the South African Museum*, 46:113-221.
- Millar, R.H., and I. Goodbody
 1974. New Species of Ascidiaceae from the West Indies. *Studies on the Fauna of Curaçao and Other Caribbean Islands*, 45:143-158.
- Milne-Edwards, H.
 1841. Observations sur les Ascidiées composées des côtes de la Manche. *Mémoires de l'Académie des Sciences de l'Institut de France*, 18:217-326.
- Monniot, C., and F. Monniot
 1972. Clé Mondiale des Genres d'Ascidiées. *Archives de Zoologie Expérimentale et Générale*, 113(3):311-367.
 1982. Biology of the Antarctic Seas; Some Antarctic Deep Sea Tunicates in the Smithsonian Collections. *Antarctic Research Series*, 32:95-130.
 1983. Ascidiées antarctiques et subantarctiques: Morphologie et biogéographique. *Mémoires du Muséum d'Histoire Naturelle*, new series (A), zoology, 125:14-119.
 1989. Ascidiaceae Collected around the Galapagos Islands by the Johnson-Sea-Link Research Submersible. *Proceedings of the Biological Society of Washington*, 102(1):14-32.
- Moseley, H.N.
 1876. On two New Forms of Deep-Sea Ascidiaceae, Obtained during the Voyage of H.M.S. *Challenger*. *Transactions of the Linnean Society of London*, 1(2):287-294.
- Oka, A.
 1906. Notizen über japanische Ascidiaceae, 1. *Annotationes Zoologicae Japonenses*, 6(1):37-52.
- Péron, F.
 1804. Mémoire sur le nouveau genre *Pyrosoma*. *Annuaire du Muséum National d'Histoire Naturelle*, 437-446.
- Phipps, C.F.
 1774. *A Voyage towards the North Pole Undertaken by His Majesty's Command*, 1773:194-200. London.

- Plough, H.H.
1978. *Sea Squirts of the Atlantic Continental Shelf from Maine to Texas*, pages 1–118. Baltimore, Maryland: The Johns Hopkins University Press.
- Plough, H.H., and N. Jones
1937. Investigations on Ascidians. *Carnegie Institute of Washington Year Book*, 36:100–101.
- Quoy, J., and P. Gaimard
1834. Mollusques. *Voyages de Découvertes de l'Astrolabe 1826–29*, (*Zoologie*), 3:952.
- Redikorzev, V.
1907. Die Ascidien der russischen polar Expedition, 1900–1903. *Zoologischer Anzeiger*, 31:521–525.
- Renier, S.A.
1804. Prospetto della classe dei vermi. In *Tavola Alfabetica delle Conchiglie Adriatiche*, pages 10–13.
- Ritter, W.E.
1904. *Euherdmania* vs. *Herdmania* Preoccupied. *Zoologischer Anzeiger*, 27:650–651.
1906. *Octacnemus*. In Reports on the Scientific Results of the Expedition of the Eastern Tropical Pacific, in Charge of Alexander Agassiz, by the US Fish Commission Steamer Albatross from Oct 1904 to Mar 1905. *Bulletin of the Museum of Comparative Zoology at Harvard College*, 46(13):231–252.
1907. The Ascidians Collected by the United States Fisheries Bureau Steamer Albatross on the Coast of California during the Summer of 1904. *University of California Publications in Zoology*, 4(1):3–44.
1913. The Simple Ascidians form the Northeastern Pacific in the Collection of the United States National Museum. *Proceedings of the United States National Museum*, 45:427–505.
- Savigny, J.C.
1816. *Mémoires sur les animaux sans vertèbres*, 2:1–260. Paris.
- Sebastian, V.O.
1952. A New Species of *Synascidian* from Madras. *Current Science*, 21(11):316–317.
- Seeliger, O.
1893–1907. Tunicata (Manteltiere). In H.G. Bronn, *Die Klassen und Ordnungen des Tier-Reichs*, 3(supplements 26–80): 385–1280. Leipzig: C.F. Winter. [Continued by Hartmeyer 1901–1911].
- Sluiter, C.P.
1895. Tunicaten. In R. Semon, *Zoologische Forschungsreisen in Australien und den Malagischen Archipel. Denkschriften der Medizinisch Naturwissenschaftlichen Gesellschaft zu Jena*, 8:163–186.
1900. Tunicaten aus dem Stillen Ocean. *Zoologische Jahrbuecher Abteilung für Systematik Oekologie und Geographie der Tiere*, 13:1–35.
- Stimpson, W.
1852. Several New Ascidians from the Coast of the United States. *Proceedings of the Boston Society of Natural History*, 4:228–232.
1864. Descriptions of New Species of Marine Invertebrata from Puget Sound Collected by the Naturalists of the Northwest Boundary Commission. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 16:153–161.
- Tokioka, T.
1957. Two New Appendicularians from the Eastern Pacific, with Notes on the Morphology of *Fritillaria aequatorialis* and *Tectillaria Fertilis*. *Transactions of the American Microscopical Society*, 76(4):359–364.
1967. Pacific Tunicata of the United States National Museum. *Bulletin of the United States National Museum*, 251:1–228.
1970. Ascidians from Mindoro Island, the Philippines. *Publications of the Seto Marine Biological Laboratory*, 18(2):75–107.
- Tokioka, T., and L. Berner
1958a. Two New Doliolids from the Eastern Pacific Ocean. *Pacific Science*, 12(2):135–138.
1958b. On Certain Thaliacea (Tunicata) from the Pacific Ocean, with Descriptions of Two New Species of Doliolids. *Pacific Science*, 12(4):317–320.
- Traustedt, M.P.A.
1882. Vestindiske Ascidae Simplicis. *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening i Kjøbenhavn*, 1881:257–288.
1883. Vestindiske Ascidae Simplicis Anden Afdeling, Molgulidae og Cynthiadae. *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening i Kjøbenhavn*, 1882:108–136.
1885. Ascidae Simplicis fra det Stille Ocean. *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening i Kjøbenhavn*, 1884:1–60.
- Uljanin, B.N.
1884. Die arten Galtung Doliolum im Golfe von Neapel un den angrenzenden Meeresabschnitten. *Fauna und Flora des Golfes von Neapel*, 10:140.
- Van Name, W.G.
1912. Simple Ascidians of the Coasts of New England and Neighboring British Provinces. *Proceedings of the Boston Society of Natural History*, 34:439–619.
1918. Ascidians of the Philippines and Adjacent Waters. *Bulletin of the United States National Museum*, 100:1(2):49–174.
1921. Ascidians of the West Indian Region and Southeastern United States. *Bulletin of the American Museum of Natural History*, 44:283–494.
1945. The North and South American Ascidians. *Bulletin of the American Museum of Natural History*, 84:1–476.
- Van Soest, R.W.M.
1973. A New Species in the Genus *Salpa* Forskal, 1775. *Beaufortia*, 21(273):9–15.
1975. Thaliacea of the Bermuda Area. *Bulletin Zoologisch Museum, Universiteit van Amsterdam*, 5(2):8–10.
1975. Observations on Taxonomy and Distribution of Some Salps (Tunicata, Thaliacea), with Descriptions of Three New Species. *Beaufortia*, 23(302):117–118.
- Verrill, A.E.
1871. Descriptions of Some Imperfectly Known and New Ascidians from New England. *American Journal of Science*, series 3, 1:54–58, 93–100, 211–212, 288–294, 443–446.
1879. *Preliminary Check-list of the Marine Invertebrates of the Atlantic Coast from Cape Cod to the Gulf of St. Lawrence*. 32 pages. New Haven.
1885. Results of the Explorations Made by the Steamer Albatross off the Northern Coast of the United States in 1883. In *Report of United States Commission of Fish and Fisheries for 1883*, pages 503–699.
- Verrill, A.E., and R. Rathbun
1879. List of Marine Invertebrata from the New England Coast, Distributed by the United States Commission of Fish and Fisheries. *Proceedings of the United States National Museum*, 2:227–232.
- Verrill, A.E., and S.I. Smith
1873. Report on the Invertebrate Animals of Vineyard Sound and Adjacent Waters with an Account of the Physical Features of the Region. *Report of the United States Commission of Fish and Fisheries for 1873*, 1:295–778.
- Vinogradova, N.G.
1969. [On the Finding of a New Aberrant Ascidian in the Ultrabyssal of the Kurile-Kamchatka Trench.] *Byulleten Moskovskogo Obshchestva Ispytatelei Prirody, Otdel Biologicheskii*, 3:27–42. [In Russian.]
- Wiegmann, Fr. A.
1835. Bericht über die Fortschritte der Zoologie im Jahre 1834. *Archiv für Naturgeschichte*, 3:309–311.

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