

## Some comments on the Ascidians of New Caledonia

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The large exploration program focussed on the littoral marine fauna of New Caledonia (SNOM – SMIB - LAGON) demonstrated the great diversity of ascidians and considerably increased the number of identified species. In addition to this program, conducted in cooperation with the MNHN, several other oceanographic programs have, in turn, examined the fauna of the continental slope surrounding New Caledonia. The results from the examination of the samples collected by divers and from dredges have been published in several papers dating from 1987 onwards by Claude and Françoise Monniot. These authors have described 229 littoral species and 88 deep water species from more than 100m depth, of which numerous were new species. The collections are catalogued at the MNHN. Only two publications dating from before 1987 are known for New Caledonian ascidians: T. Tokioka (1961) who examined 14 species collected from the Aquarium in Noumea and from the hull of a boat; and from P. Vasseur (1967) who cites 12 species from the area surrounding Nouméa. Adding one species described by Pruvot-Fol in 1929 and the deep water species noted by Millar in 1975, this gives a total of 22 species.

The list of species attached shows the great diversity of genera, with all the important families being represented. The order Aplousobranchia (colonial ascidians) dominates in the littoral forms, similar to that observed in other tropical environments. Within this order, the Didemnidae are particularly difficult to identify and consequently, many rest unidentified. The order Stolidobranchia, which are majorly solitary, the Styelidea is the dominant in terms of number of species, as is the case in other parts of the world. The knowledge to date of the fauna of Ascidiocolia in the Tropical west Pacific is insufficient enough to determine if there are endemic species in New Caledonia, this is even more complicated considering the facility with which these species can be transported on boats.

Around 50% of the species presently identified are found on the East Australian coast. A few of the species are found in New Zealand, for which there is little information. At present, species collection by divers is on the increase however, the lack of specialists in the field slows the identification process. The ascidians of New Caledonia are far from totally inventoried. At present, most of the collections come from the south and none from the coral walls. Many of the samples collected were either not mature or were too contracted to permit identification. Moreover, many species are too small or too cryptic and as a consequence have been ignored.

The affinities of the deeper water ascidians vary as a function of their family and their types of adaptation. They are generally similar to the fauna from the deep water species from temperate systems. There is no relation between the surface water species and the deep water species, even though some of the deep water species can be found in depths of less than 100 m.

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## Ascidian from shallow habitats in the vicinity of New Caledonia

### AGNEZIIDAE Monniot & Monniot, 1991

*Adagnesia cautis* C. Monniot, 1991

### ASCIDIIDAE Herdman, 1980

*Ascidia archaia* Sluiter, 1890

*Ascidia dorsalis* C. Monniot, 1987

*Ascidia geminata* Sluiter, 1895

*Ascidia glabra* Hartmeyer, 1922

*Ascidia melanostoma* Sluiter, 1885

*Ascidia munda* Sluiter, 1897

*Ascidia sulca* C. Monniot, 1991

*Ascidia sydneyensis* Stimpson, 1855

*Ascidia sydneyensis samea* (Oka, 1935)

*Ascidia tapuni* Monniot & Monniot, 1987

*Phallusia julinea* (Sluiter, 1919)

### CIONIDAE Lahille, 1887

*Ciona hoshinoi* C. Monniot, 1991

### DIAZONIDAE

*Diazona textura* C. Monniot, 1987

*Rhopalaea respiciens* C. Monniot, 1991

### CORELLIDAE

*Corella japonica* Herdman, 1880

*Corella minuta* Traustedt, 1882

*Rhodosoma turcicum* (Savigny, 1816)

### DIDEMNIDAE Verrill, 1871

*Atriolum marsupialis* F. Monniot, 1989

*Atriolum robustum* Kott, 1983

*Didemnum ahu* Monniot & Monniot, 1987

*Didemnum apuroto* Monniot & Monniot, 1987

*Didemnum biglutinum* F. Monniot, 1994

*Didemnum bimasculum* F. Monniot, 1994

*Didemnum cineraceum* (Sluiter, 1898)

*Didemnum cuculliferum* Sluiter, 1909

*Didemnum diffundum* F. Monniot, 1994

*Didemnum etiolum* Kott, 1982

*Didemnum flavoviride* F. Monniot, 1994

*Didemnum fragilis* (Sluiter, 1909)

*Didemnum granulatum* Tokioka, 1954

*Didemnum hiopaa* Monniot & Monniot, 1987

*Didemnum lacertosum* F. Monniot, 1994

*Didemnum ligulum* F. Monniot, 1983

*Didemnum megasterix* F. Monniot, 1994

*Didemnum molle* (Herdman, 1886)

*Didemnum moseleyi* (Herman, 1886)

*Didemnum nigricans* F. Monniot, 1994

*Didemnum obscurum* F. Monniot, 1969

*Didemnum paa* Monniot & Monniot, 1987

*Didemnum perlucidum* F. Monniot, 1983

*Didemnum pitipiri* Monniot & Monniot, 1987

*Didemnum psammathodes* (Sluiter, 1895)

*Didemnum pseudodiplosoma* Kott, 1962

*Didemnum rodriguessi* Rocha & F. Monniot, 1993

*Didemnum spongioides* Sluiter, 1909

*Didemnum toafene* Monniot & Monniot, 1987

- Didemnum uturoa* Monniot & Monniot, 1987  
*Didemnum vahatuio* Monniot & Monniot, 1987  
*Didemnum viride* (Herdman, 1906)  
*Diplosoma ata* Monniot & Monniot, 1987  
*Diplosoma inflatum* F. Monniot, 1994  
*Diplosoma listerianum* (Milne Edwards, 1841)  
*Diplosoma redika* F. Monniot, 1994  
*Diplosoma similis* (Sluiter, 1909)  
*Diplosoma versicolor* F. Monniot, 1994  
*Diplosoma virens* (Hartmeyer, 1909)  
*Leptoclinides apertus* F. Monniot, 1989  
*Leptoclinides dubius* (Sluiter, 1909)  
*Leptoclinides multipapillatus* F. Monniot, 1989  
*Leptoclinides robiginis* F. Monniot, 1989  
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*Lissoclinum abdominale* Monniot, 1983  
*Lissoclinum badium* Monniot F.& Monniot C. 1996  
*Lissoclinum bistratum* (Sluiter, 1905)  
*Lissoclinum calycis* F. Monniot, 1992  
*Lissoclinum cornutum* F. Monniot, 1992  
*Lissoclinum fragile* (Van Name, 1902)  
*Lissoclinum japonicum* Tokioka, 1958  
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*Lissoclinum ravarava* Monniot & Monniot, 1987  
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*Lissoclinum voeltzkowi* (Michaelsen, 1920)  
*Lissoclinum vulgare* F. Monniot, 1992  
*Polysyncraton lithostrotum* (Brewin, 1956)  
*Polysyncraton multipapillae* F. Monniot, 1993  
*Polysyncraton pavementum* F. Monniot, 1993  
*Polysyncraton purou* Monniot & Monniot, 1987  
*Polysyncraton rugosum* F. Monniot, 1993  
*Polysyncraton pseudorugosum* F. Monniot, 1993  
*Polysyncraton thallomorpha* F. Monniot, 1993  
*Polysyncraton meandratum* F. Monniot, 1993  
*Trididemnum banneri* Eldredge, 1967  
*Trididemnum cerebriforme* Hartmeyer, 1913  
*Trididemnum cyclops* Michaelsen, 1921  
*Trididemnum discrepans* (Sluiter, 1909)  
*Trididemnum miniatum* Kott, 1977  
*Trididemnum nubis* F. Monniot, 1991  
*Trididemnum paracyclops* Kott, 1980  
*Trididemnum spongia* F. Monniot, 1991
- MOLGULIDAE Lacaze Duthiers, 1877**
- Molgula incidata* Kott, 1985  
*Molgula bisinus* C. Monniot, 1990
- PEROPHORIDAE**
- Ecteinascidia aequale* C. Monniot, 1987  
*Ecteinascidia jucerens* Tokioka, 1954  
*Ecteinascidia koumaci* C. Monniot, 1987

*Ecteinascidia ndouae* C. Monniot, 1991  
*Ecteinascidia nexa* Sluiter, 1904  
*Ecteinascidia sluiteri* Herdman, 1906  
*Ecteinascidia vitta* C. Monniot, 1992  
*Perophora fascia* C. Monniot, 1991  
*Perophora modificata* Kott, 1985  
*Perophora multiclathrata* (Sluiter, 1904)  
*Perophora viridis* Verrill, 1871

**POLYCITORIDAE Michaelsen, 1904**

*Archidistoma richeri* F. Monniot, 1988  
*Archidistoma rubripunctum* F. Monniot, 1988  
*Citorclinum laboutei* Monniot & Millar, 1988  
*Clavelina detorta* (Sluiter, 1904)  
*Clavelina fecunda* (Sluiter, 1904)  
*Clavelina flava* F. Monniot, 1988  
*Cystodytes aucklandicus* Nott, 1892  
*Cystodytes fuscus* F. Monniot, 1988  
*Cystodytes luteus* F. Monniot, 1988  
*Cystodytes mucosus* F. Monniot, 1988  
*Cystodytes multipapillatus* F. Monniot, 1988  
*Cystodytes punctatus* F. Monniot, 1988  
*Cystodytes solitus* F. Monniot, 1988  
*Cystodytes violatinctus* F. Monniot, 1988  
*Distaplia stylifera* (Kowalevsky, 1874)  
*Eudistoma album* F. Monniot, 1988  
*Eudistoma fragum* F. Monniot, 1988  
*Eudistoma hospitale* F. Monniot, 1998  
*Eudistoma laysani* (Sluiter, 1900)  
*Eudistoma ovatum* (Herdman, 1886)  
*Eudistoma reginum* Kott, 1990  
*Eudistoma stellatum* F. Monniot, 1988  
*Eudistoma vulgare* F. Monniot, 1988  
*Oxycorynia fascicularis* Drasche, 1882  
*Polycitor circes* Michaelsen, 1930  
*Polycitor crystallinus* (Renier, 1804)  
*Polycitor translucida* Kott, 1957  
*Polycitorella mariae* Michaelsen, 1924  
*Stomozoa murrayi* Kott, 1957

**POLYCLINIDAE Milne Edwards, 1842**

*Aplidiopsis gelidus* F. Monniot, 1987  
*Aplidium caelestis* F. Monniot, 1987  
*Aplidium californicum* (Ritter, 1900) =controversum M&M 1996  
*Aplidium cellis* F. Monniot, 1987  
*Aplidium depressum* Sluiter, 1909  
*Aplidium flavolineatum* (Sluiter, 1898)  
*Aplidium latusexitus* F. Monniot, 1987  
*Aplidium lobatum* Savigny, 1816  
*Aplidium longithorax* F. Monniot, 1987  
*Aplidium mernooensis* (Brewin, 1956)  
*Aplidium multipapillatum* Millar, 1975  
*Aplidium nadaense* (Nishikawa, 1980)  
*Aplidium triggsensis* Kott, 1963  
*Euherdmania claviformis* (Ritter, 1903)  
*Euherdmania dumosa* F. Monniot, 1987  
*Homoeodistoma onasum* F. Monniot, 1987

*Polyclinum constellatum* Savigny, 1816  
*Polyclinum macrophyllum* Michaelsen, 1919  
*Polyclinum pute* Monnier & Monnier, 1987  
*Pseudodistoma arborescens* Millar, 1967  
*Pseudodistoma fragilis* Tokioka, 1958  
*Ritterella circularis* F. Monnier, 1987  
*Synoicum partitionis* F. Monnier, 1987

**PYURIDAE Hartmeyer, 1908**

*Bolteniopsis pacificus* C. Monnier, 1989  
*Halocynthia cactus* (Oka, 1932)  
*Halocynthia hispida* (Herdman, 1881)  
*Herdmania contorta* C. Monnier, 1992  
*Herdmania momus* (Savigny, 1816)  
*Herdmania pallida* (Heller, 1878)  
*Microcosmus exasperatus* Heller, 1878  
*Microcosmus longicloa* Monnier & Monnier, 1991  
*Microcosmus multiplicatus* Tokioka, 1952  
*Microcosmus tuberculatus* Kott, 1985  
*Pyura albanyensis* Michaelsen, 1927  
*Pyura columna* (Monnier & Monnier, 1991) *Herdmania*  
*Pyura confragosa* Kott, 1985  
*Pyura momus* (Savigny, 1816)  
*Pyura sacciformis* (Drasche, 1884)  
*Pyura scortea* Kott, 1985  
*Pyura uatio* C. Monnier, 1991  
*Pyura viarecta* Kott, 1985  
*Pyura vittata* (Stimpson, 1852)

**STYELIDAE Sluiter, 1895**

*Amphicarpa agnata* (Kott, 1985)  
*Amphicarpa duplopicata* (Sluiter, 1913)  
*Amphicarpa laboutei* C. Monnier, 1988  
*Botryllus arenaceus* C. Monnier, 1988  
*Botryllus aster* C. Monnier, 1991  
*Botryllus gracilis* Michaelsen, 1927  
*Botryllus humilis* C. Monnier, 1988  
*Botryllus leptus* (Herdman, 1899)  
*Botryllus niger* (Herdman, 1886)  
*Botryllus ovalis* C. Monnier, 1988  
*Botryllus tuberatus* Ritter & Forsyth, 1917  
*Chorizocarpa guttata* Michaelsen, 1904  
*Cnemidocarpa alisi* C. Monnier, 1992  
*Cnemidocarpa areolata* (Heller, 1878)  
*Cnemidocarpa humilis* (Heller, 1878)  
*Cnemidocarpa irene* (Hartmeyer, 1906)  
*Cnemidocarpa recta* C. Monnier, 1991  
*Cnemidocarpa valborg* Hartmeyer, 1919  
*Eusynstyela aliena* C. Monnier, 1991  
*Eusynstyela grandis* Kott, 1990  
*Eusynstyela misakiensis* (Watanabe & Tokioka, 1972)  
*Eusynstyela phiala* C. Monnier, 1991  
*Metandrocarpa manina* Monnier & Monnier, 1987  
*Metandrocarpa manina reducta* (C. Monnier, 1988)  
*Oculinaria occultare* C. Monnier, 1991  
*Polyandrocarpa glandulosa* C. Monnier, 1987  
*Polyandrocarpa rollandi* Tokioka, 1961

*Polycarpa anguinea* (Sluiter, 1898)  
*Polycarpa argentata* (Sluiter, 1890)  
*Polycarpa aurita* (Sluiter, 1890)  
*Polycarpa circumarata* (Sluiter, 1904)  
*Polycarpa clavata* Hartmeyer, 1919  
*Polycarpa contecta* (Sluiter, 1904)  
*Polycarpa cryptocarpa* (Sluiter, 1885)  
*Polycarpa insulsa* (Sluiter, 1898)  
*Polycarpa moebii* Michaelsen, 1905  
*Polycarpa mytiligera* (Savigny, 1816)  
*Polycarpa nigerrima* Monniot & Monniot, 2001  
*Polycarpa nigricans* Heller, 1878  
*Polycarpa papillata* (Sluiter, 1885)  
*Polycarpa pedunculata* Heller, 1878  
*Polycarpa picteti* Pizon, 1909  
*Polycarpa pigmentata* (Herdman, 1906)  
*Polycarpa procera* (Sluiter, 1885)  
*Polycarpa richeri* C. Monniot, 1987  
*Polycarpa stirpes* Kott, 1985  
*Stolonica variata* C. Monniot, 1988  
*Stryela areolata* Heller, 1878  
*Stryela canopus* (Savigny, 1816)  
*Stryela partita* (Stimpson, 1852)  
*Symplegma alterna* C. Monniot, 1988  
*Symplegma oceania* Tokioka, 1961

## Ascidian from deep habitats in the vicinity of New Caledonia

### AGNESIIDAE Monniot & Monniot, 1991

*Corynascidia alata* Monniot & Monniot, 1991 23°19.6S-168°03.4E

### ASCIDIIDAE Herdman, 1980

*Ascidia alterna* Monniot & Monniot, 1991 24°46.6S-159°40.3E 280m

*Fimbrora calsubia* Monniot & Monniot, 1991 21°26S-166°22.7E 1860m

*Pterygascidia inversa* Monniot & Monniot, 1989 23°07.6S-166°50.5E 850m

### DIAZONIDAE

*Araneum pedunculatum* Monniot & Monniot, 1991 22°53.1S-167°17.1E 600m

### DIDEMNIDAE Verrill, 1871

*Leptoclinides duminus* Millar, 1982 22°39.0S-167°07.4E 230m

### HEXACROBILIDAE

*Asajirus hemisphericus* (Monniot & Monniot, 1990) 20°18.5S-167°17.6E 3700m

*Asajirus gulosus* (Monniot & Monniot, 1984) 20°34S-167°25E 2000-4000m

*Asajirus indicus* (Oka, 1913) 22°46S-166°20E 2000m

*Asajirus longitestis* (Monniot & Monniot, 1990) 24°19.1S-167°48.7E 1400m

*Asajirus ovirarus* (Monniot & Monniot, 1990) 23°05.5S-166°26.4E 1500m

*Oligotrema psammites* Bourne, 1902 24°47S-159°39.2E 270m

*Sorbera unigonas* Monniot & Monniot, 1974 23°43.3S-166°57.1E 1500-1600m

### MOLGULIDAE Lacaze Duthiers, 1877

*Fungulus minutulus* Monniot & Monniot, 1991 22°47.3S-167°14.3E 450m

*Molgula delicata* Monniot & Monniot, 1991 23°08.6S-167°11.0E 500-700m

*Molguloides mollis* Monniot & Monniot, 1991 23°05.3S-167°45.0E 700m

*Molguloides monocarpa* (Millar, 1959) 22°09.0S-167°33.2E 800-2300m

*Molguloides tonsus* Monniot & Monniot, 1991 21°00.9S-160°50.3E 800m

*Molguloides translucidus* Monniot & Monniot, 1991 22°55.1S-167°22.8E 700m

*Protomolgula cornuta* Monniot & Monniot, 1991 22°46.4S-166°19.9E 2100m

## OCTACNEMIDAE

- Dicopia fimbriata* Sluiter, 1905 23°19.8S-167°30.5<sup>E</sup> 1200m  
*Myopegma melanesium* Monniot & Monniot, 2003 22°16.25S-167°15.53<sup>E</sup> 450m  
*Octacnemus bythius* Moseley, 1876 23°19.8S-167°30.5<sup>E</sup> 1200m  
*Octacnemus ingolfi* Madsen, 1947 21°01.5S-166°57.4<sup>E</sup> 2000m  
*Situla cuculli* Monniot & Monniot, 1991 22°45.8S-166°20.3<sup>E</sup> 2040m  
*Situla galeata* Monniot & monniot, 1991 21°16.5S-166°43.6<sup>E</sup> 2340m  
*Situla rineharti* Monniot & Monniot, 1989 20°34.5S-167°24.7<sup>E</sup> 3900m

## PLURELLIDAE

- Microgastra granosa* (Sluiter, 1904)

## POLYCITORIDAE Michaelsen, 1904

- Distaplia progressa* Monniot & Monniot, 1991 22°58S-167°29<sup>E</sup> 520m  
*Protoholozoa anthos* Monniot & Monniot, 1991 23°13.7S-168°04.3<sup>E</sup> 320m  
*Protoholozoa liliun* Monniot & Monniot, 1991 24°28.7S-168°07.7<sup>E</sup> 2160m

## POLYCLINIDAE Milne Edwards, 1842

- Aplidiopsis parvastigma* Monniot & Monniot 1991 23°03.6S-167°27.0<sup>E</sup> 850m  
*Aplidium fistulosum* Monniot & Monniot 1991 23°20S-168°05<sup>E</sup> 230m  
*Aplidium pusillum* Monniot & Monniot, 1991 22°47.3S-167°14.8<sup>E</sup> 450m  
*Aplidium scyphus* Monniot & Monniot, 1991 22°59.5S-167°22.0<sup>E</sup> 500m  
*Pharyngodictyon bisinus* Monniot & Monniot 1991 23°05.8S-167°46.5<sup>E</sup> 600m  
*Pharyngodictyon cauliflos* Monniot & Monniot, 1991 22°59.5S-167°22<sup>E</sup> 500m  
*Pharyngodictyon magnifili* Monniot & Monniot 1991 18°52.8S-163°21.7<sup>E</sup> 545m  
*Ritterella folium* Monniot & Monniot, 1991 18°56.0S-163°20.0<sup>E</sup> 450-660m  
*Ritterella rete* Monniot & Monniot 1991 23°15.6S-168°03.1<sup>E</sup> 300m

## PYURIDAE Hartmeyer, 1908

- Bathypyura asymetrica* Monniot F., 1970 23°43.3S-166°58.1<sup>E</sup> 1500-1600m  
*Boltenia hirta* Monniot & Monniot, 1977 24°19.1S-167°48.7<sup>E</sup> 1400m  
*Culeolus caudatus* Monniot & Monniot, 1991 23°08.6S-167°11.0<sup>E</sup> 600-700m  
*Culeolus elegans* Monniot & Monniot, 1991 24°01.4S-167°08.4<sup>E</sup> 1500m  
*Culeolus herdmani* Sluiter, 1904 22°39.7S-166°27.4<sup>E</sup> 400-1700m  
*Culeolus recumbens* Herdman, 1881 23°05.5S-166°26.4<sup>E</sup> 1900-2000m  
*Herdmania columna* (Monniot & Monniot, 1991) 20°48.7S-165°19.3<sup>E</sup> 110m  
*Herdmania pennata* (Monniot & Monniot, 1991) 24°42.8S-168°09.1<sup>E</sup> 250m

## STYELIDAE Sluiter, 1895

- Bathyoncus tantulus* Monniot & Monniot, 1991 23°43.3S-166°58.1<sup>E</sup> 1500m  
*Bathyoncus lanatus* Monniot & Monniot, 1991 18°48.2S-163°10.8<sup>E</sup> 720m  
*Bathystyeloides miriducta* Monniot & Monniot, 1991 23°56.2S-166°41.1<sup>E</sup> 2650m  
*Cnemidocarpa intestinata* Kott, 1985 23°05.3S-167°45.0<sup>E</sup> 700m  
*Distomus pacificus* Monniot & Monniot, 1991 22°58.7S-167°21.1<sup>E</sup> 550m  
*Polycarpa captiosa* (Sluiter, 1885)  
*Polycarpa carpoicincta* Monniot & Monniot, 2003 22°29S-166°25<sup>E</sup> 250m  
*Polycarpa macra* Monniot & Monniot, 1991 23°56.2S-166°41.1<sup>E</sup> 2650m  
*Polycarpa producta* Monniot & Monniot, 2003 23°22S-168°02<sup>E</sup> 300m  
*Polycarpa reviviscens* Monniot & Monniot, 2001 22°44S-167°17<sup>E</sup> 350m  
*Styela kottae* Monniot & Monniot, 1991 22°45.8S-166°20.3<sup>E</sup> 2000-2600m





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*Aplidium protectans*



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*Ascidia glabra*



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*Atrium robustum*



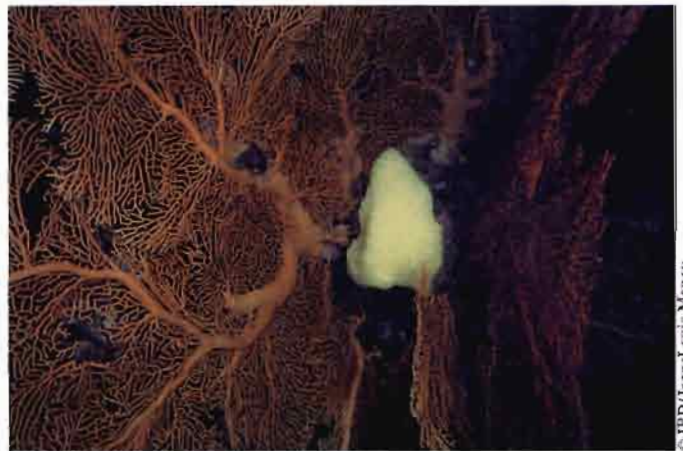
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*Clavelina detorta*



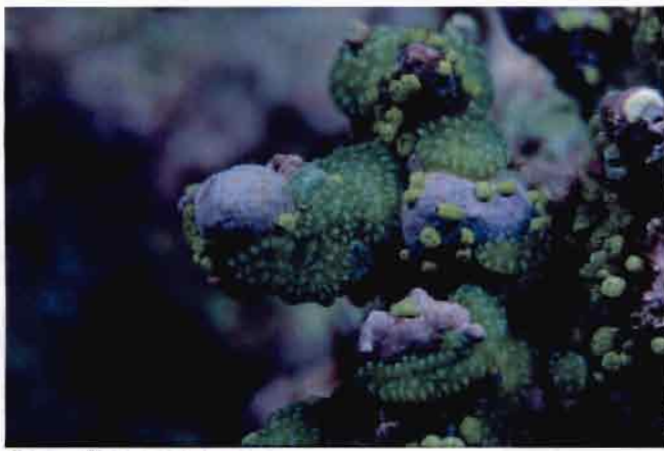
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*Didemnum molle*



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*Eudistoma* sp.



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*Lissoclinum bistratum*



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*Lissoclinum* cf. *vareau*



*Nephtheis fascicularis*

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*Perophora* sp.

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*Polycarpa* cf. *cryptocarpa*

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*Polycarpa* cf. *pigmentata*

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*Pseudodistoma arborescens*

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*Pseudodistoma* cf. *digitata*

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*Ritterella circularis*

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*Stoilonica variata*

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Edited by  
Claude E. PAYRI  
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