

Echinodermata of New Caledonia

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Prior to the research efforts conducted by the IRD (Institut pour la Recherche et le Développement) and the MNHN (Muséum National d'Histoire Naturelle de Paris) during the project MUSORSTOM, very few studies had examined the Echinodermata of New Caledonia (Cherbonnier 1980; Conand, 1979; Intes & Menou, 1979). However, the 1980's saw an increase in the research effort on littoral echinoderms of New Caledonia (Cherbonnier & Féral, 1984a et b; Guille & Vadon, 1985; Jangoux, 1984), cumulating in the Guide to the Echinoderms (Guille *et al.*, 1986), which is to date the most complete guide to this fauna in the region. With the increase in fieldwork, researchers in systematics became interested in the deep water echinoderms of New Caledonia (Bourseau *et al.*, 1991; Gebruk, 1997; Mah, 1999; O'Hara & Stöhr, in press; Smirnov, 1997, 1999; Vadon, 1991).

The littoral New Caledonian fauna is highly diverse and comprises of: 257 species, in 135 genera, from 61 families, divided into 18 orders that are spread across 5 classes. 11% of the species are from the Crinoidea, 22% the Asteroidea, 26% the Ophiuroidea, 18% the Echinoidea and 23% in the Holothuroidea. This is in comparison to 378 species observed in a study from China and 300 from the Philippines. Of the species observed in New Caledonian waters, 41% have a large distribution area and are found in the Pacific Ocean covering a region from Japan to Hawaii as well as in the Indian Ocean. 54% of them are found in the Western Indo-Pacific province and 5% of them have been observed in Australia, notably on the Great Barrier Reef. Only 4% of the echinoderm species observed are endemic to New Caledonia. Finally, the remaining 1% are cosmopolitan and are observed all over, including the Mediterranean and the Caribbean. This diversity probably represents only a small percentage of the species living in this region as several littoral echinoderms widely distributed in the west Indo-Pacific, from the Australian coast to the Indian Ocean, are not yet recorded from NC.

Indeed, fieldwork has produced samples that are rich, abundant and well conserved, but sadly, still very little studied. The focus to date has essentially been on the littoral and deep water Ophiuroidea, the littoral Holothuroidea and the stalked Crinoidea. Moreover, with each new investigation new species are described as highlighted in several recent publications (Goppard, 2006 ; Messing, 2003; O'Hara & Stöhr, 2006). The number of echinoderms found in New Caledonia should increase once all of the material collected will have been studied. The present underestimated diversity is the result of the low number of specialists working in the field combined with the relative inaccessibility of the study sites. The Echinodermata are inaccessible for the following reasons:

Cryptic species;

Species living off substrates that are difficult to access (eg. stalked Crinoidea from the Holopodia and Eudesicrinidia are small and colonise the escarpments of submarine mountains);

Cavity dwelling species;

Nocturnal species (essentially littoral species);

Species with a small size;

The low rates of endemnicity of the littoral fauna are more related to the lack of focussed study on the already collected samples rather than the lack of species. Only the common species have been inventoried while the rest is still remains to be analysed. The deep water fauna of New Caledonia possesses a high degree of endemnicity. The fauna also presents several pedomorphic forms, such as the ophiurians *Ophiphycis guillei* and *Ophiopyrgus trispinosus*. This deep water fauna is composed of

many archaic taxons such as *Gymnochrinus richeri* (a stalked crinoid) that was discovered for the first time in New Caledonia in 1987. This gender belongs to the family Hemicrinidae, thought to have been extinct since the Cretacean. Similarly, *Prosiocrinus ruberrimus* is the only representative of the Jurassic family the Millericrinidae and *Proeudesicrinus lifouensis*, an endemic genre and species, is the only representative of the liasic family of the Eudesicrinidae.

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Some comments on the Species List of New Caledonia

ASTERIDES

BRISINGIDA

BRISINGASTERIDAE

**Brisingaster robillardii* Loriol, 1883

**Novodinia* sp. Mah, in prep.

FORCIPULATIDA

ASTERIIDAE

Coronaster pauciporis Jangoux, 1984 NC

ZOROASTERIDAE

**Zoroaster* sp. Mah, in prep.

NOTOMYOTIDA

BENTHOPECTINIDAE

*benthopecinids *juvenils* Mah, in prep.

PAXILLOSIDA

ASTROPECTINIDAE

Astropecten polyacanthus Müller & Troschel, 1842

GONIASTERIDAE

Iconaster uchelbeluuensis Mah, 2005

Tosia queenslandensis Livingstone, 1932

LUIDIIDAE

Luidia maculata Müller & Troschel, 1842

Luidia savignyi (Audouin, 1826)

SPINULOSIDA

ECHINASTERIDAE

Echinaster callosus von Marenzeller, 1895

Echinaster luzonicus (Gray, 1840)

Echinaster varicolor H.L. Clark, 1938

VALVASTERIDAE

Valvaster striatus (Lamarck, 1816)

VALVATIDA

ACANTHASTERIDAE

Acanthaster planci (Linné, 1758)

ARCHASTERIDAE

Archaster typicus Müller & Troschel, 1840

ASTERINIDAE

Asterina burtoni Gray, 1840

Disasterina abnormalis Perrier, 1875

Nepanthia briareus (Bell, 1894)

Patriella exigua (Lamarck, 1816)

ASTERODISCIDIDAE

Asterodiscides helenotus (Fisher, 1913)

Asterodiscides soelae Rowe, 1985

ASTEROPSEIDAE

Asteropsis carinifera (Lamarck, 1816)

CHAETASTERIDAE

Chaetaster moorei Bell, 1894

MITHRODIIDAE

Mithrodia clavigera (Lamarck, 1816)

Thromidia catalai Pope & Rowe, 1977

OPHIDIASTERIDAE

Celerina heffernani (Livingstone, 1931)

Cistina columbiae Gray, 1840

Fromia indica (Perrier, 1869)

Fromia milleporella (Lamarck, 1816)

Fromia monilis Perrier, 1875

Fromia pacifica H.L. Clark, 1921

Gomophia egyptiaca Gray, 1840

Gomophia watsoni (Livingstone, 1936)

Heteronardoa carinata (Koehler, 1910)

Leiaster coriaceus Peters, 1852
Leiaster leachi (Gray, 1840)
Leiaster speciosus von Martens, 1866
Linckia guildingi Gray, 1840
Linckia laevigata (Linné, 1758)
Linckia multifora (Lamarck, 1816)
Nardoa frianti Koehler, 1910
Nardoa gomophia (Perrier, 1875)
Nardoa novaecaledoniae (Perrier, 1875)
Nardoa tuberculata Gray, 1844
Neoferdina cumingi (Gray, 1840)
Neoferdina offreti (Koehler, 1910)
Ophidiaster cribrarius Lütken, 1871
Ophidiaster granifer Lütken, 1871
Ophidiaster helicostichus Sladen
Ophidiaster hemprichi Müller & Troschel, 1842
Tamaria fusca (Gray, 1840)
**Tamaria* sp. Mah, in prep.

OREASTERIDAE

Choriaster granulatus Lütken, 1869
Culcita novaeguineae Müller & Troschel, 1842
Halityle regularis Fisher, 1913
Pentaceraaster alveolatus (Perrier, 1875)
Pentaceraaster regulus (Müller & Troschel, 1842)
Poraster superbus (Moebius, 1859)
Protoreaster nodosus (Linné, 1758)

VELATIDA

PTERASTERIDAE

Euretaster attenuatus Jangoux, 1984 NC
Euretaster insignis (Sladen, 1882)

SOLASTERIDAE

Seriaster regularis Jangoux, 1984

ECHINIDES

CIDAROIDA

CIDARIDAE

Chondrocidaris brevispina (H.L. Clark, 1925)
Chondrocidaris gigantea A. Agassiz, 1863
Eucidaris metularia (Lamarck, 1816)
Phyllacanthus imperialis (Lamarck, 1816)
Prionocidaris australis (Ramsay, 1885)
Prionocidaris baculosa (Lamarck, 1816)
Prionocidaris bispinosa (Lamarck, 1816)

ECHINOIDA

ECHINOMETRIDAE

Echinometra mathaei (de Blainville, 1825)
Echinostrephus aciculatus A. Agassiz, 1863
Heterocentrotus mammillatus (Linné, 1758)
Heterocentrotus trigonarius (Lamarck, 1816)

PARASALENIIDAE

Parasalenia gratiosa A. Agassiz, 1863
Parasalenia pöhlii Pfeffer, 1887

TOXOPNEUSTIDAE

Gymnechinus epistichus H.L. Clark, 1912
Pseudoboletia indiana (Michelin, 1862)

Toxopneustes pileolus (Lamarck, 1816)

Tripneustes gratilla (Linné, 1758)

DIADEMATOIDA

DIADEMATIDAE

Astropyga radiata (Leske, 1778)

Diadema savignyi (Michelin, 1845)

Diadema setosum (Leske, 1778)

Echinothrix calamaris (Pallas, 1774)

Echinothrix diadema (Linné, 1758)

ECHINOTHURIOIDA

ECHINOTHURIIDAE

Asthenosoma varium Grube, 1868

PHYMOSOMATOIDA

STOMOPNEUSTIDAE

Stomopneustes variolaris (Lamarck, 1816)

ARBACIIDAE

Coelopleurus n.sp. (Coppard, in press) NC

TEMNOPLEUROIDA

TEMNOPLEURIDAE

Mespilia globulus (Linné, 1758)

Salmacis belli Döderlein, 1902

Temnopleurus toreumaticus (Leske, 1778)

SPATANGOIDA

BRISSIDAE

Brissopsis luzonica (Gray, 1851)

Brissus latecarinatus (Leske, 1778)

Eupatagus rubellus Mortensen, 1948

Metalia angustus de Ridder, 1984

Metalia spatagus (Linné, 1758)

Metalia sternalis (Lamarck, 1816)

SCHIZASTERIDAE

Schizaster lacunosus (Linné, 1758)

SPATANGIDAE

Maretia planulata (Lamarck, 1816)

LOVENIIDAE

Lovenia elongata (Gray, 1845)

CLYPEASTEROIDA

CLYPEASTERIDAE

Clypeaster humilis (Leske, 1778)

Clypeaster latissimus (Lamarck, 1816)

Clypeaster oshimensis Ikeda, 1935

Clypeaster reticulatus (Linné, 1758)

LAGANIDAE

Laganum depressum tonganense L. Agassiz, 1841

Peronella lesueuri (L. Agassiz, 1841)

SCUTELLIDAE

Echinodiscus auritus Leske, 1778

Echinodiscus bisperforatus truncatus (L. Agassiz, 1841)

Echinodiscus tenuissimus (L. Agassiz, 1847)

HOLOTHURIDES

APODIDA

CHIRIDOTIDAE

Polycheira rufescens (Brandt, 1835)

**Trochodota neocaledonica* Smirnov, 1997 NC

SYNAPTIDAE

- Euapta godeffroyi* (Semper, 1868)
- **Labidoplax georgii* Smirnov, 1997 NC
- Opheodesoma australiensis* Heding, 1931
- Opheodesoma spectabilis* Fisher, 1907
- Polyplectana kefersteini* (Selenka, 1867)
- **Rynkatorpa coriolis* Smirnov, 1997 NC
- Synapta maculata* (Chamisso & Eysenhardt, 1821)
- Synapta ooplax* Wien, 1881
- Synapta reticula* Semper, 1868
- Synaptula media* Cherbonnier & Féral, 1984

ASPIDOCHIROTIDA

HOLOTHURIIDAE

- Actinopyga albonigra* Cherbonnier & Féral, 1984
- Actinopyga crassa* Panning, 1944
- Actinopyga echinites* (Jaeger, 1833)
- Actinopyga flammea* Cherbonnier, 1979
- Actinopyga fusca* Cherbonnier, 1980 NC
- Actinopyga lecanora* (Jaeger, 1833)
- Actinopyga mauritiana* (Quoy & Gaimard, 1833)
- Actinopyga miliaris* (Quoy & Gaimard, 1833)
- Actinopyga palauensis* Panning, 1944
- Actinopyga spinea* Cherbonnier, 1980
- Bohadschia argus* Jaeger, 1833
- Bohadschia graeffei* (Semper, 1868)
- Bohadschia maculisparsa* Cherbonnier & Féral, 1984 NC
- Bohadschia marmorata* (Jaeger, 1833)
- Bohadschia similis* (Semper, 1868)
- Bohadschia tenuissima* (Semper, 1868)
- Bohadschia vitiensis* (Semper, 1867)
- Holothuria altaturricula* Cherbonnier & Féral, 1984 NC
- Holothuria artensis* Cherbonnier & Féral, 1984
- Holothuria atra* Jaeger, 1833
- Holothuria cinerascens* Brandt, 1835
- Holothuria coluber* Semper, 1868
- Holothuria conusalba* Cherbonnier & Féral, 1984
- Holothuria coronopertusa* Cherbonnier, 1980
- Holothuria decorata* Marenzeller, 1881
- Holothuria difficilis* Semper, 1868
- Holothuria dura* Cherbonnier & Féral, 1981
- Holothuria edulis* Lesson, 1830
- Holothuria flavomaculata* Semper, 1868
- Holothuria fuscocinerea* Jaeger, 1833
- Holothuria fuscogilva* Cherbonnier, 1980
- Holothuria fuscopunctata* Jaeger, 1833
- Holothuria hilla* Lesson, 1830
- Holothuria impatiens* (Forskäl, 1775)
- Holothuria leucospilota* (Brandt, 1835)
- Holothuria maculosa* Pearson, 1913
- Holothuria monacaria* Lesson, 1830
- Holothuria nobilis* (Selenka, 1967)
- Holothuria ocellata* (Jaeger, 1833)
- Holothuria pardalis* Selenka, 1867
- Holothuria pervicax* Selenka, 1867
- Holothuria rigida* (Selenka, 1867)

Holothuria scabra Jaeger, 1833
Holothuria turriscelsa Cherbonnier, 1980
Holothuria verrucosa Selenka, 1867

STICHOPODIDAE

Stichopus chloronotus Brandt, 1835
Stichopus horrens Selenka, 1867
Stichopus noctivagus Cherbonnier, 1980
Stichopus pseudhorrens Cherbonnier, 1967
Stichopus variegatus Semper, 1868
Thelenota ananas (Jaeger, 1833)
Thelenota anax H.L. Clark, 1921
Thelenota rubricolineata Massin & Lane, 1991

DENDROCHIROTIDA

CUCUMARIIDAE

Pentacta pentagona Quoy & Gaimard, 1833
Plesiocolochirus australis (Ludwig, 1875)

PHYLLOPHORIDAE

Cladolabes aciculus (Semper, 1868)
Neothyonidium magnum (Ludwig, 1882)
Ohshimella castanea Cherbonnier, 1980

ELPIDIIDAE

**Peniagone thieli* Gebruk, 1997 NC

MYRIOTROCHIDAE

**Myriotrochus neocaledonicus* Smirnov, 1999 NC
**Prototrochus belyaevi* Smirnov, 1997 NC

CRINOIDES

COMATULIDA

ANTEDONIDAE

Antedon parviflora (A.H. Clark, 1912)

CALOMETRIDAE

Reometra mariae (A.H. Clark, 1912)

COLOBOMETRIDAE

Cenometra bella (Hartlaub, 1890)
Colobometra perspinosa (Carpenter, 1881)
Colobometra perspinosa vepretum Clark, 1909
Oligometra serripinna (Carpenter, 1881)
Pontiometra andersoni (Carpenter, 1888)

COMASTERIDAE

Capillaster multiradiatus (Linné, 1758)
Comactinia titan Messing, 2003 NC
Comantheria briareus (Bell, 1882)
Comanthina schlegeli (Carpenter, 1888)
Comanthus bennetti (Müller, 1841)
Comanthus parvicirrus (Müller, 1841)
Comaster distinctus (Carpenter, 1888)
Comaster multibrachiatus (Carpenter, 1888)
Comaster multifidus (Müller, 1841)
Comatella maculata (Carpenter, 1888)
Comatella nigra (Carpenter, 1888)
Comatula pectinata (Linné, 1758)

HIMEROMETRIDAE

Himerometra robustipinna (Carpenter, 1881)

MARIAMETRIDAE

Dichrometra flagellata (J. Müller, 1841)

Lamprometra palmata (J. Müller, 1841)
Oxymetra erinacea (Hartlaub, 1890)
Stephanometra echinus (A.H. Clark, 1908)
Stephanometra oxyacantha (Hartlaub, 1890)
Stephanometra spicata (P.H. Carpenter, 1881)

TROPIOMETRIDAE

Tropiometra afra (Hartlaub, 1870)

ZYGOMETRIDAE

Catoptometra magnifica (A.H. Clark, 1908)

ISOCRINIDA

PENTACRINIDAE

**Metacrinus levii* Améziere-Cominardi, 1990 NC
**Metacrinus musorstomae* Roux, 1981
**Saracrinus nobilis* (Carpenter, 1884)
**Endoxocrinus (Diplocrinus) alternicirrus* (Carpenter, 1884)
**Endoxocrinus (D.) sibogae* (Döderlein, 1907)

MILLERICRINIDA

MILLERICRINIDAE

**Proisocrinus ruberrimus* A.H. Clark, 1910

BOURGUETICRINIDAE

**Porphyrocinus* sp. NC

BATHYCRINIDAE

**Bathycrinus* sp. NC
**Caldeonicrinus vaubani* Avocat & Roux, 1990 NC
**Naumachocrinus hawaiiensis* A.H. Clark, 1912

CYRTOCRINIDA

HEMICRINIDAE

**Gymnocrinus richeri* Bourseau *et al.*, 1987

HYOCRINIDAE

**Hyocrinus cyanae* Bourseau *et al.*, 1991 NC
**Thalassocrinus aff. pontifer* A.H. Clark, 1911

HOLOPODIDAE

**Holopus alidis* Bourseau *et al.*, 1991 NC

EUDESICRINIDAE

**Proeudesicrinus lifouensis* Améziere & Bourseau, 1991 NC

INCERTAE SEDIS

**Guillecrinus neocaledonicus* Bourseau *et al.*, 1991 NC

OPHIURIDES

EURYALIDA

ASTEROSCHEMATIDAE

Astrobrachion constrictum (Farquhar, 1900)

EURYALIDAE

Asteromorpha tenax Baker,
Euryale aspera Lamarck, 1816

GORGONOCEPHALIDAE

Astroboa granulatus (H.L. Clark, 1938)
Astroboa nuda (Lyman, 1874)
Astrocladus exiguus (Lamarck, 1816)
Astrocladus tonganus Döderlein, 1911
Astroglymma sculptum (Döderlein, 1896)

OPHIURIDA

AMPHIURIDAE

Amphiura luetkeni Duncan, 1879
Ophiocentrus asper (Koehler, 1905)
Ophiocentrus dilatatus (Koehler, 1905)

Ophiodaphne formata (Koehler, 1905)

HEMIEURYALIDAE

**Ophiomoeris nodosa* (Koehler, 1905)

OPHIACANTHIDAE

**Amphilimna transacta* (Koehler, 1930)

**Ophiacantha levispina* Lyman, 1878

**Ophiacantha longidens* Lyman, 1878

**Ophiacantha levispina* Lyman, 1878

**Ophiacantha pentagona* (Koehler, 1897)

**Ophiacantha plicata* (Lyman, 1878)

**Ophiacantha renekoehleri* (Koehler, 1904)

**Ophiacantha rosea* Lyman, 1878

**Ophiacantha yaldwyni* Fell, 1958

**Ophiacantha* n.sp. 1 O'Hara & Stöhr, in press NC

**Ophiacantha* n.sp. 2 O'Hara & Stöhr, in press NC

**Ophiocamax vitrea* Lyman, 1878

**Ophiologimus quadrispinus* H.L. Clark, 1925

**Ophiomitrella granulosa* (Lyman, 1878)

**Ophiomitrella* n.sp. 1 O'Hara & Stöhr, in press NC

**Ophiomitrella* n.sp. 2 O'Hara & Stöhr, in press NC

**Ophioplinthaca* n.sp. O'Hara & Stöhr, in press NC

**Ophioplinthaca bythiaspis* (H.L. Clark, 1911)

**Ophiurothamnus clausa* (Lyman, 1878)

*n. gen. n.sp. O'Hara & Stöhr, in press NC

OPHIACTIDAE

Ophiosphaera insignis Brock, 1888

OPHIOCOMIDAE

Ophiarthrum elegans Peters, 1851

Ophiocoma dentata Müller & Troschel, 1842

Ophiocoma erinaceus Müller & Troschel, 1842

Ophiocoma pusilla (Brock, 1888)

Ophiocoma scolopendrina (Lamarck, 1816)

Ophiomastix annulosa (Lamarck, 1816)

Ophiomastix asperula Lütken, 1869

Ophiomastix caryophyllata Lütken, 1869

Ophiomastix mixta Lütken, 1869

Ophiomastix palaoensis Murakami, 1943

Ophiomastix variabilis Koehler, 1095

Ophiopsila multipapillata Guille, 1978

Ophiopsila timida Koehler, 1930

**Ophiotreta stimulea* (Lyman, 1878)

OPHIODERMATIDAE

Cryptopelta longibrachialis Koehler, 1930

Ophiarachna delicata (H.L. Clark, 1932)

Ophiarachna incrassata (Lamarck, 1816)

Ophiarachnella gorgonia (Müller & Troschel, 1842)

Ophiarachnella infernalis (Müller & Troschel, 1842)

Ophiarachnella macracantha H.L. Clark, 1909

Ophiarachnella septemspinosa (Müller & Troschel, 1842)

Ophiarachnella snelli (A.H. Clark, 1964)

Ophioclastus hataii Murakami, 1943

**Ophioconis cupida* Koehler, 1905

Ophiostegastus novaecaledoniae Guille & Vadon, 1985 NC

OPHIOMYXIDAE

Ophiomyxa australis Lütken, 1869

**Ophiomyxa brevirima* H.L. Clark, 1915

OPHIONEREIDAE

- **Ophiochiton lentus* Lyman, 1874
- Ophionereis dubia* (Müller & Troschel, 1842)
- Ophionereis fusca* Brock, 1888
- **Ophionereis lamellosa* Matsumoto, 1915
- Ophionereis porrecta* Lyman, 1860

OPHIOTRICHIDAE

- Gymnolophus obscura* (Ljungman, 1867)
- Macrophiothrix belli (Döderlein, 1896)
- Macrophiothrix longipeda* (Lamarck, 1816)
- Macrophiothrix propinqua* (Lyman, 1861)
- Macrophiothrix rugosa* H.L. Clark, 1938
- **Ophiogymna pellicula* (Duncan, 1887)
- Ophiolophus novarae* Marktanner, 1887
- Ophiomaza cacaotica* Lyman, 1871
- Ophiopteron elegans* Ludwig, 1888
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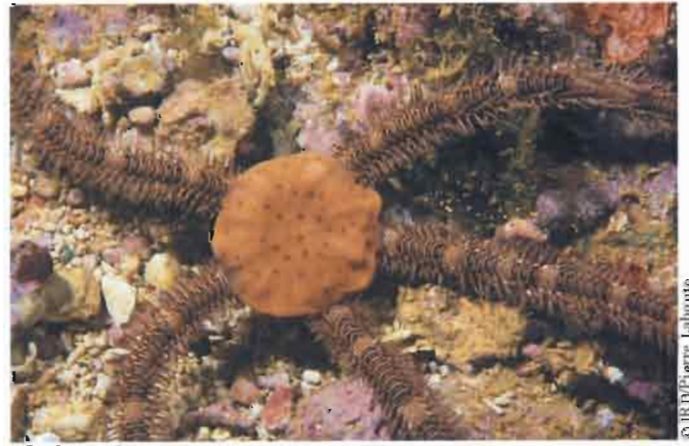
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Thromidia catalai



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Macrophiothrix sp.



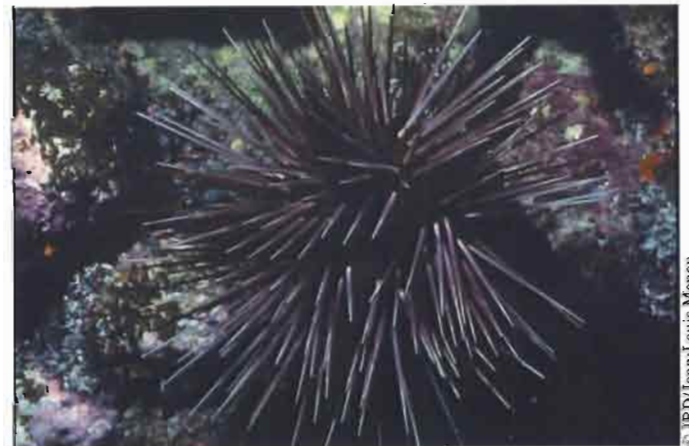
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II7

Volume spécial

COMPENDIUM
of marine species from
New Caledonia



Edited by
CLAUDE E. PAYRI
Bertrand RICHER DE FORGES



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