

Corals and Echinoderms of the Western Indian Ocean Islands, Mauritius, Madagascar and Mahé (Seychelles)

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西インド洋の島々(モーリシャス、マダガスカル、マヘ)の サンゴ類と棘皮動物類について

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ABSTRACT

A survey has been carried out on three Islands in the Western Indian Ocean; Mauritius, Madagascar, and Mahé (Seychelles) for about two months, from August to September in 1995. The results of the survey were as follows: 98 species and one variety of invertebrates which were classified in two Phyla, namely, Cnidaria and Echinodermata, have been listed. In the Phylum Cnidaria, one Class, Anthozoa and two Orders, Coenothecalia with one species, *Heliopora coerulea*, and Scleractinia with 35 species, were recognized. In the Phylum Echinodermata, four Classes: Asteroidea, Ophiuroidea, Echinoidea and Holothuroidea were recognized. In the Class Asteroidea, two Orders, Phanerozonia with 5 species and Spinulosa with 3 species were recognized. In the Class Ophiuroidea, one Order, Myophiuroida with 8 species were identified. In the Class Echinoidea, 5 Orders, Cidaroida with one species, *Phyllacanthus imperialis*, Diadematoidea with 4 species, Arbacioida with one species, *Stomopneustes variolaris*, Echinoidea with 9 species and one variety, *Echinometra mathaei violacea*, and Clypeasteroida with 3 species were recognized. In the Class Holothuroidea, unidentified specimens which the authors think can be classified into 7 different species and two Orders, Aspidochirotida with 19 and Apodida with 2 species were also recognized.

When compared with previous reports, it seems possible that 17 species all found in Mauritius are newly recorded in this paper; 11 species in the Phylum Cnidaria, 6 species in the phylum Echinodermata, one of which is from the Class Asteroidea, and 5 from the Class Holothuroidea.

要 約

1995年の8月から9月にかけての約2ヶ月間、西インド洋の島々(モーリシャス、マダガスカル、マヘ)で行われた調査で記録された98種と1変種の海産無脊椎動物(刺胞動物門、棘皮動物門)について報告する。刺胞動物門では花虫綱の共莖目1種(アオサンゴ)とイシサンゴ目35種を確認する。棘皮動物門ではヒトデ綱、クモヒトデ綱、ウニ綱、ナマコ綱を確認する。ヒトデ綱では頭帯目5種と有棘目3種、クモヒトデ綱では閉蛇尾目8種、ウニ綱ではキダリス目1種(バクダンウニ)、ガンガゼ目4種、アルバシア目1種(クロウニ)、ホンウニ目9種1変種、タコノマクラ目3種を確認する。ナマコ綱では7種に分けられると思われる未同定種と楯手目19種と無足目2種を確認する。

これまでの報告と比較を行った結果、刺胞動物門11種、棘皮動物目ではヒトデ目1種とナマコ目5種の合計6種で、全体では17種がモーリシャスにおいて本調査ではじめて記録された新記録種であると思われる。

INTRODUCTION

Organisms exhibit tremendous diversity. It is said that about 2 million species are Known in the world. The species composition, Biota, is unique in every area of the world. Each area has its own endemic species but there are many species which are common among the areas. With regard to Corals and Echinoderms, it is known that the Indo-Pacific has very abundant fauna but all of the species in this area are not known yet. Many new species and newly recorded species have yet to be found in this area.

In this report, the results of the research done in the Islands of the Western Indian Ocean-Mauritius, Madagascar, and Mahé-from August to September in 1995, are reported.

MATERIALS AND METHODS

Animals which were encountered in the field at the different sites surveyed were photographed and/or collected for identification. The taxonomy of these animals is based on the following references; the Phylum Cnidaria: Nishihira & Veron (1995); the Phylum Echinodermata: Uchida (1974); the Class Asteroidea: Hayashi (1974); the Class Ophiuroidea: Irimura (1974); the Class Echinoidea: Shigei (1974); the Class Holothuroidea: Oguro (1974).

Many of the specimens collected were identified only by photographs taken, although in general practice, identification is carried out on the animals themselves. This has been the case for all the representatives of the Phylum Cnidaria, the Class Asteroidea, and the Class Holothuroidea. Those of the Class Ophiuroidea and the Class Echinoidea were identified by both photographs and specimens or specimens only. The identification was done by the following persons; the Phylum Cnidaria (No.1 to No.36) Mr. K. Yanagiya, the Class Asteroidea (No.37, No.39 to No.43) Mr. M. Saba, (No.38, No.44) the author the Class Ophiuroidea (No.45 to No.52, No.46: specimen only) Mrs. H. Yoshino, the Class Echinoidea (No.53 to No.71) the author the Class Holothuroidea, the specimens which were unidentified were classified into 7 kinds based on morphological differences by the authors as different species (No.72 to No.78), (No.79 to No.99) Dr. M. Shigei, (No.100) the author Those species listed with a question mark have been difficult to identify from the photographs alone but they positively belong to the identified species.

Surveys were carried out in 15 sites; 10 in Mauritius, 1 in Madagascar and 4 in the Seychelles (Mahé), by either SCUBA diving, snorkeling or walking on the reef edge or shore.

Mauritius

10 sites were selected and categorized in three groups: moats (lagoons) protected by coral reefs, rocky shore exposed to strong wave action and beyond the outer reef.

The moats are shallow, 1 m deep, but wide, ranging from 100 m at their narrowest to 1000 m at their broadest. The beach sand is powdery white and the substratum of the moat is covered with such sand up to the mid-distance from the coastline to the reef. The further half has coral growths. Research was done by snorkeling in the moat and by walking on the reef flat. Sites belonging to this category are as follows; Trou aux Biches, Albion, Flic en Flac, Riambel, Blue Bay, and Ile aux Cerfs.

The rocky shores are subjected to wave action being unprotected by reefs, at Pte aux Caves, Gris Gris, and Poste Lafayette. Although Gris Gris has a reef, the reef is narrow (about 20m in wide), so within the reef no sand substratum is formed and wave action is strong both inside the reef and at the reef edge. In these sites, research was done by walking on the rocky shore.

The site beyond the reef, off Pointe aux Cannoniers, that was studied by SCUBA diving, had a depth of about 20m.

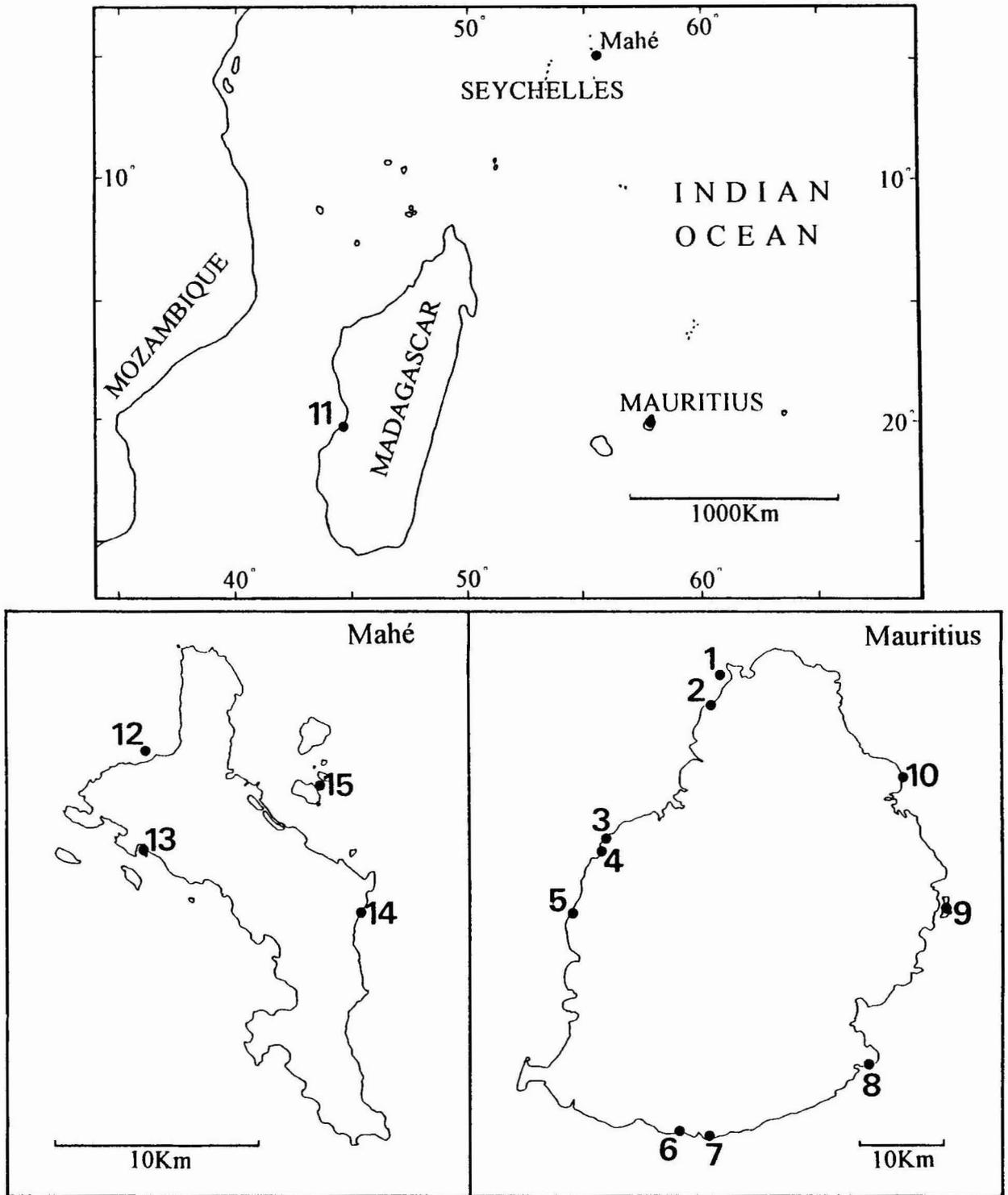


Figure 1. Maps of West Indian Ocean. Upper one is a map of the whole region and lower ones are the enlarged maps of Mahé (left) and Mauritius (right). Figures in maps indicate the region where the research was conducted. 1, Off pointe aux Cannoniers; 2, Trou aux Biches; 3, Pte aux Caves; 4, Albion; 5, Flic en Flac; 6, Riambel; 7, Gris; Grisi 8, Blue Bay; 9, Ile aux Cerfs; 10, Poste Lafayette; 11, Morondava; 12, Beau Vallon; 13, Anse L'islette; 14, Anse aux Pins; 15, Ste. Anne Marine National Park.

Madagascar

The survey was conducted only at Morondava by walking along the sea shore during the lowest low tide. The seashore and the sea bed were covered with sand. There is no reef, hence wave action is relatively strong

and the water is turbid due to grains of sand in constant suspension.

Seychelles-Mahé

Three sites, Anse L'islette, Anse aux Pins, and Ste. Anne Marine National Park, were studied in coral reef-protected moats, and another site, Beau Vallon, was along a patch reef. The substratum of the moat at these sites is mostly sand and sea weeds flourish. Along the reef flat and the reef edge, coral does not flourish. The research was done by snorkeling in the moat, about 1 m in depth, and on the reef flat. At Beau Vallon, the research was done by SCUBA diving along a patch reef, about 10m in depth.

RESULTS

In this paper are listed 98 species and one variety of invertebrates, belonging to two Phyla, Cnidaria and Echinodermata. In the former, specimens belong to the Class Anthozoa and two Orders, Coenothecalia and Scleractinia. The Order Coenothecalia has only one species, *Heliopora coerulea*, but of the 35 species of Scleractinia, 27 species were identified definitely, whereas 3 have been identified with a question mark. The other 5 which were generically identified were classified into three kinds of spp. in the Genus *Acropora* and into two kinds of spp. in the Genus *Porites* based on morphological differences by the authors. In total of the 36 species that were identified, 30 species occurred only in Mauritius, 4 species only in Mahé (Seychelles), and 2 species occurred in both Mauritius and Mahé.

In the Phylum Echinodermata, four Classes have been recognized: Asteroidea with two Orders, Phanerozonia and Spinulosa, Ophiuroidea with one Order, Myophiroida, Echinoidea with 5 Orders, Cidaroida, Diadematoidea, Arbacioida, Echinoidea, and Clypeasteroidea, and Holothuroidea with two Orders, Aspidochirotida and Apodida. In the Class Asteroidea, 5 species have been specifically identified from the Order Phanerozonia, but one species, *Nardova variolata*, is with a question mark. From the Order Spinulosa, 3 species have been specifically identified, but one species, *Echinaster purpureus*, is with a question mark. Of a total of 8 species from the Class Asteroidea, 6 species were from Mauritius and 2 species from Mahé.

In the Class Ophiuroidea, 8 species of the Order Myophiroida have been specifically identified, but one species, *Ophiocoma brevipes*, is with a question mark. Of these 8 species, 6 species were from Mauritius and one species, *Ophiocoma pica*, from Mahé and the last species, *Ophiocoma dentata*, from both Mauritius and Mahé.

In the Class Echinoidea, 5 Orders have been recognized: the Order Cidaroida with one species, *Phyllacanthus imperialis*, the Order Diadematoidea with 4 species, the Order Arbacioida with one species, *Stomopneustes variolaris*, the Order Echinoidea with 9 species and one variety, *Echinometra mathaei violacea*, and the Order Clypeasteroidea with 3 species. This gives a total of 18 species and one variety. Among these species, 8 species were from Mauritius, 7 species and one variety from both Mauritius and Mahé, 2 species from Mahé, and one species, *Echinodiscus bisperforatus*, from Madagascar.

In the Class Holothuroidea, 28 species were recognized. Seven kinds of unidentified animals were classified by the authors as different species based on morphological differences. The 21 identified species were classified into 2 Orders, Aspidochirotida with 19 species and Apodida with 2 species. Out of these 21 species, 14 species have been specifically identified but 2 species have a question mark. The animals generically identified were classified into four kinds of spp. in the Genus *Stichopus*, two kinds of spp. in the Genus *Thelenota*, and one kind of sp. in the Genus *Bohadschia* based on morphological differences by the authors. With respect to *T. ananas*, two morphs were recognized: one from Mauritius and the other from Mahé. The sample from Mauritius (Pl. XII, 2, 3) is typical of this species but the one from Mahé (Pl. XII, 4, 5) is not. In the list, the latter is listed with a question mark and this one is not included in the number of the species with a question mark above. Out of these 21 species, 15 species were from Mauritius, 2 species from Mahé and the other 4 species were from both Mauritius and Mahé. Of the 7 unidentified species, 5 kinds were only from Mauritius, one from Mahé, and the other was from both Mauritius and Mahé.

LIST OF SPECIES: THE PHYLUM CNIDARIA AND THE PHYLUM
ECHINODERMATA
PHYLUM CNIDARIA
CLASS ANTHOZOA

Order Coenothecalia

Family Helioporidae

1. *Heliopora coerulea* (Pallas, 1766) (Pl. I, 1)

Loc. Mahé: Ste. Anne Marine National Park.

Order Scleractinia

Family Pocilloporidae

2. *Pocillopora verrucosa* (Ellis & Solander, 1786) (Pl. I, 2)

Loc. Mauritius: Off Pointe aux Cannoniers.

3. *Pocillopora meandrina* Dana, 1846 (Pl. I, 3)

Loc. Mauritius: Ile aux Cerfs.

4. *Seriatopora hystrix* Dana, 1846 (Pl. I, 4)

Loc. Mauritius: Ile aux Cerfs.

Family Acroporidae

5. *Montipora monasteriata* (Forskål, 1775) (Pl. I, 5)

Loc. Mauritius: Albion.

6. *Montipora mollis* Bernard, 1897? (Pl. I, 6)

Loc. Mauritius: Albion.

7. *Montipora turgescens* Bernard, 1879 (Pl. I, 7)

Loc. Mauritius: Trou aux Biches.

8. *Montipora aequituberculata* Bernard, 1897 (Pl. I, 8)

Loc. Mauritius: Trou aux Biches, Albion.

9. *Acropora (Isopora) palifera* (Lamarck, 1816) (Pl. II, 1)

Loc. Mahé: Ste. Anne Marine National Park.

10. *Acropora gemmifera* (Brook, 1892) (Pl. II, 2)

Loc. Mauritius: Albion.

11. *Acropora danai* (Edwards & Haime, 1860) (Pl. II, 3)

Loc. Mauritius: Flic en Flac.

12. *Acropora formosa* (Dana, 1846) (Pl. II, 4)

Loc. Mauritius: Trou aux Biches.

13. *Acropora austera* (Dana, 1846) (Pl. II, 5)

Loc. Mauritius: Flic en Flac.

14. *Acropora hyacinthus* (Dana, 1846) (Pl. II, 6)

Loc. Mauritius: Trou aux Biches.

15. *Acropora divaricata* (Dana, 1846)? (Pl. II, 7)

Loc. Mauritius: Albion.

16. *Acropora* sp.1 (Pl. II, 8)

Loc. Mauritius: Trou aux Biches.

17. *Acropora* sp.2 (Pl. III, 1)

Loc. Mauritius: Off Pointe aux Cannoniers.

18. *Acropora* sp.3 (Pl. III, 2)

Loc. Mauritius: Blue Bay.

19. *Astreopora myriophthalma* (Lamarck, 1861) (Pl. III, 3)

Loc. Mauritius: Flic en Flac.

Family Poritidae

20. *Porites annae* Crossland, 1952 (Pl. III, 4)

Loc. Mahé: Ste. Anne Marine National Park.

21. *Porites (Synaraea) rus* (Forskål, 1775) (Pl. III, 5)

Loc. Mauritius: Trou aux Biches.

22. *Porites* sp.1 (Pl. III, 6)

Loc. Mauritius: Trou aux Biches.

23. *Porites* sp.2 (Pl. III, 7)

Loc. Mauritius: Flic en Flac; Mahé: Ste. Anne Marine National Park.

24. *Goniopora tenuidens* (Quelch, 1886) (Pl. III, 8)

Loc. Mauritius: Blue Bay.

25. *Alveopora japonica* Eguchi, 1968? (Pl. IV, 1)

Loc. Mauritius: Trou aux Biches.

Family Agariciidae

26. *Pavona frondifera* (Lamarck, 1816) (Pl. IV, 2)

Loc. Mauritius: Trou aux Biches.

Family Fungiidae

27. *Fungia (Fungia) fungites* (Linnaeus, 1758) (Pl. IV, 3)

Loc. Mauritius: Trou aux Biches, Flic en Flac; Mahé: Ste. Anne Marine National Park.

Family Oculinidae

28. *Galaxea fascicularis* (Linnaeus, 1767) (Pl. IV, 4)

Loc. Mauritius: Trou aux Biches, Flic en Flac; Mahé: Ste. Anne Marine National Park.

Family Mussidae

29. *Lobophyllia hemprichii* (Ehrenberg, 1834) (Pl. IV, 5)

Loc. Mauritius: Off Pointe aux Cannoniers.

30. *Lobophyllia corymbosa* (Forskål, 1775) (Pl. IV, 6)

Loc. Mauritius: Off Pointe aux Cannoniers.

Family Merulinidae

31. *Hydnophora microconos* (Lamarck, 1816) (Pl. IV, 7)

Loc. Mauritius: Trou aux Biches.

32. *Hydnophora bonsai* Veron, 1990 (Pl. IV, 8)

Loc. Mauritius: Flic en Flac.

Family Faviidae

33. *Favia rotundata* (Veron, Pichon & Wijsman-Best, 1977) (Pl. V, 1)

Loc. Mauritius: Off Pointe aux Cannoniers.

34. *Goniastrea australensis* (Edwards & Haime, 1857) (Pl. V, 2)

Loc. Mauritius: Trou aux Biches.

35. *Platygyra lamellina* (Ehrenberg, 1834) (Pl. V, 3)

Loc. Mauritius: Albion.

36. *Echinopora lamellosa* (Esper, 1759) (Pl. V, 4)

Loc. Mahé: Ste. Anne Marine National Park.

PHYLUM ECHINODERMATA

CLASS ASTEROIDEA

Order Phanerozonia

Family Archasteridae

37. *Archaster angulatus* Müller & Troschel, 1842 (Pl. V, 5)

Loc. Mauritius: Blue Bay.

Family Oreasteridae

38. *Protoreaster nodosus* (Linnaeus, 1758) (Pl. V, 6)

Loc. Mahé: Ste. Anne Marine National Park.

39. *Pentaceraster horridus* (Gray, 1840) (Pl. V, 7, 8)

Loc. Mauritius: Albion.

Family Ophidiasteridae

40. *Linckia multifora* (Lamarck, 1816) (Pl. VI, 1)

Loc. Mahé: Ste. Anne Marine National Park.

41. *Nardoa variolata* (Retzius, 1805)? (Pl. VI, 2)

Loc. Mauritius: Flic en Flac, Ile aux Cerfs, Off Pointe aux Cannoniers.

Order Spinulosa

Family Echinasteridae

42. *Echinaster luzonicus* (Gray, 1840) (Pl. VI, 3)

Loc. Mauritius: Trou aux Biches, Blue Bay.

43. *Echinaster purpureus* (Gray, 1840)? (Pl. VI, 4)

Loc. Mauritius: Trou aux Biches.

Family Acanthasteridae

44. *Acanthaster planci* (Linnaeus, 1758) (Pl. VI, 5)

Loc. Mauritius: Riambel.

CLASS OPHIUROIDEA

Order Myophiuroida

Family Ophiotrichidae

45. *Macrophiothrix longipeda* (Lamarck, 1816) (Pl. VI 6)

Loc. Mauritius: Flic en Flac.

Family Ophiuridae

46. *Ophioplocus imbricatus* (Müller & Troschel, 1842)

Loc. Mauritius: Flic en Flac.

47. *Ophiolepis cincta* Müller & Troschel (Pl. VI 7)

Loc. Mauritius: Flic en Flac.

Family Ophiocomidae

48. *Ophiocoma scolopendrina* (Lamarck, 1816) (Pl. VI 8)

Loc. Mauritius: Poste Lafayette.

49. *Ophiocoma erinaceus* Müller & Troschel, 1842 (Pl. VII, 1)

Loc. Mauritius: Flic en Flac, Blue Bay.

50. *Ophiocoma dentata* Müller & Troschel, 1842 (Pl. VII, 2)

Loc. Mauritius: Ile aux Cerfs; Mahé: Ste. Anne Marine Nation Park.

51. *Ophiocoma brevipes* Peters, 1851? (Pl. VII, 3)

Loc. Mauritius: Ile aux Cerfs.

52. *Ophiocoma pica* Müller & Troschel, 1842 (Pl. VII, 4)

Loc. Mahé: Beau Vallon.

CLASS ECHINOIDEA

Order Cidaroida

Family Cidaridae

53. *Phyllacanthus imperialis* (Lamarck, 1816) (Pl. VII, 5)

Loc. Mahé: Beau Vallon.

Order Diadematoida

Family Diadematidea

54. *Diadema setosum* (Leske, 1778) (Pl. VII, 6)

Loc. Mauritius: Trou aux Biches, Flic en Flac, Ile aux Cerfs, Riambel, Poste Lafayette, Blue Bay.

55. *Diadema savigny* (Audouin, 1828) (Pl. VII, 7)

Loc. Mauritius: Ile aux Cerfs; Mahé: Anse L'islette, Anse aux Pins.

56. *Echinothrix calamaris* (Pallas, 1774) (Pl. VII, 8)

Loc. Mauritius: Trou aux Biches, Flic en Flac, Ile aux Cerfs, Riambel, Off Pointe aux Cannoniers, Blue Bay;
Mahé: Anse l'islette, Ste. Anne Marine National Park, Anse aux Pins.

57. *Echinothrix diadema* (Linnaeus, 1758) (Pl. VIII, 1)

Loc. Mauritius: Ile aux Cerfs, Albion, Blue Bay; Mahé: Anse aux Pins.

Order Arbacioida

Family Stomopneustidae

58. *Stomopneustes variolaris* (Lamarck, 1816) (Pl. VIII, 2, 3)

Loc. Mauritius: Trou aux Biches, Flic en Flac, Ile aux Cerfs, Riambel, Poste Lafayette, Pte aux Caves, Albion,
Blue Bay; Mahé: Anse L'islette.

Order Echinoida

Family Toxopneustidae

59. *Toxopneustes pileolus* (Lamarck, 1816) (Pl. VIII, 4)

Loc. Mauritius: Trou aux Biches, Flic en Flac, Ile aux Cerfs, Riambel, Poste Lafayette, Albion, Blue Bay;
Mahé: Anes L'islette, Anes aux Pins.

60. *Tripneustes garatilla* (Linnaeus, 1758) (Pl. VIII, 5)

Loc. Mauritius: Trou aux Biches, Flic en Flac, Ile aux Cerfs, Riambel, Poste Lafayette, Albion, Blue Bay;
Mahé: Anes L'islette, Anes aux Pins.

61. *Pseudoboletia indiana* (Michelin, 1862) (Pl. VIII, 6)

Loc. Mahé: Anse L'islette.

Family Echinometridae

62. *Echinostrepus molaris* (Blainville, 1825) (Pl. VIII, 7)

Loc. Mauritius: Albion.

63. *Echinometra mathaei* (Blainville, 1825) (Pl. VIII, 8, IX, 1)

Loc. Mauritius: Trou aux Biches, Flic en Flac, Ile aux Cerfs, Gris Gris, Riambel, Poste Lafayette, Pte aux
Caves, Albion, Blue Bay; Mahé: Anse L'islette

64. *Echinometra mathaei violacea* Michelin, 1845 (Pl. IX, 2)

Loc. Mauritius: Trou aux Biches, Flic en Flac, Ile aux Cerfs, Gris Gris, Riambel, Poste Lafayette, Albion, Blue
Bay; Mahé: Anse L'islette.

65. *Echinometra oblonga* (Blainville, 1825) (Pl. IX, 3)

Loc. Mauritius: Gris Gris, Poste Lafayette, Pte aux Caves, Albion.

66. *Heterocentrotus mammillatus* (Linnaeus, 1758) (Pl. IX, 4)

Loc. Mauritius: Riambel, Blue Bay.

67. *Heterocentrotus trigonarius* (Lamarck, 1816) (Pl. IX, 5, 6)

Loc. Mauritius: Trou aux Biches, Riambel, Poste Lafayette, Pte aux Caves, Albion, Blue Bay.

68. *Colobocentrotus atratus* (Linnaeus, 1758) (Pl. IX, 7)

Loc. Mauritius: Poste Lafayette, Pte aux Caves.

Order Clypeasteroidea

Family Laganidae

69. *Laganum depressum* Lesson (Pl. IX, 8)

Loc. Mauritius: Blue Bay.

Family Astringipidae

70. *Echinodiscus auritus* Leske, 1778 (Pl. X, 1)

Loc. Mauritius: Blue Bay.

71. *Echinodiscus bisperforatus* Leske, 1778 (Pl. X, 2)

Loc. Madagascar: Morondava.

CLASS HOLOTHUROIDEA

72. Unidentified species 1 (Pl. X, 3)

Loc. Mauritius: Flic en Flac.

73. Unidentified species 2 (Pl. X, 4)

Loc. Mauritius: Flic en Flac.

74. Unidentified species 3 (Pl. X, 5)

Loc. Mauritius: Ile aux Cerfs.

75. Unidentified species 4 (Pl. X, 6)

Loc. Mauritius: Gris Gris, Albion; Mahé: Anse L'islette.

76. Unidentified species 5 (Pl. X, 7)

Loc. Mahé: Anse L'islette, Anse aux Pins.

77. Unidentified species 6 (Pl. X, 8)

Loc. Mauritius: Albion.

78. Unidentified species 7 (Pl. X I, 1)

Loc. Mauritius: Albion.

Order Aspidochirotida

Family Stichopidae

79. *Stichopus chlorontus* Brandt (Pl. XI, 2)

Loc. Mauritius: Trou aux Biches, Flic en Flac; Mahé: Anse L'islette, Ste. Anne Marine National Park.

80. *Stichopus herrens* Selenka (Pl. XI, 3)

Loc. Mauritius: Albion.

81. *Stichopus variegatus* Stemper (Pl. XI, 4, 5)

Loc. Mahé: Ste. Anne Marine National Park.

82. *Stichopus* sp.1 (Pl. XI, 6)

Loc. Mauritius: Trou aux Biches, Ile aux Cerfs.

83. *Stichopus* sp.2 (Pl. XI, 7)

Loc. Mauritius: Flic en Flac, Ile aux Cerfs.

84. *Stichopus* sp.3 (Pl. XI, 8)

Loc. Mauritius: Flic en Flac.

85. *Stichopus* sp.4 (Pl. XII, 1)

Loc. Mahé: Anse L'islette.

86. *Theleota ananas* (Jaeger) (Pl. XII, 2, 3)

Loc. Mauritius: Off Pointe aux Cannoniers.

87. *Theleota ananas* (Jaeger)? (Pl. XII, 4, 5)

Loc. Mahé: Anse L'islette.

88. *Theleota* sp.1 (Pl. XII, 6)

Loc. Mauritius: Ile aux Cerfs.

89. *Theleota* sp.2 (Pl. XII, 7)

Loc. Mauritius: Ile aux Cerfs.

Family Holothuriidae

90. *Bohadschia vitiensis* (Semper) (Pl. XII, 8)

Loc. Mauritius: Trou aux Biches, Riambel; Mahé: Ste. Anne Marine National Park.

91. *Bohadschia graeffei* (Semper) (Pl. XIII, 1)

Loc. Mauritius: Albion.

92. *Bohadschia* sp. (Pl. XIII, 2, 3)

Loc. Mauritius: Blue Bay.

93. *Labidodemas semprianum* Selenka (Pl. XIII, 4)

Loc. Mauritius: Ile aux Cerfs, Albion, Blue Bay.

94. *Holothuria (Cystipus) rigida* (Selenka)? (Pl. XIII, 5)

Loc. Mahé: Anse L'islette.

95. *Holothuria (Halodeima) atra* Jaeger (Pl. XIII, 6, 7)

Loc. Mauritius: Trou aux Biches, Flic en Flac, Ile aux Cerfs; Mahé: Anse L'islette, Ste. Anne Marine National Park, Anse aux Pins.

96. *Holothuria (Thyrmiosycia) altaturricula* (Pl. XIII, 8)

Loc. Mauritius: Flic en Flac.

97. *Holothuria (Mertensiothuria) leucospilota* Brandt (Pl. XIV, 1)

Loc. Mauritius: Trou aux Biches, Flic en Flac, Ile aux Cerfs; Mahé: Anse L'islette, Ste. Anne Marine National Park, Anse aux Pins.

98. *Holothuria (Microthele) nobilis* (Selenka) (Pl. XIV, 2)

Loc. Mauritius: Flic en Flac.

Order Apodida

Family Synaptidae

99. *Polyplectana kefersteini* (Selenka)? (Pl. XIV, 3)

Loc. Mauritius: Trou aux Biches,

100. *Synapta maculata* (Chamisso & Eysenhardt) (Pl. XIV, 4)

Loc. Mauritius: Trou aux Biches, Riambel, Albion.

DISCUSSION

In the phylum Cnidaria, 36 species were recorded of which 31 species were specifically identified and of which 20 species were not recorded in the recent report on Mauritius by Michel (1974). These species are as follows: in the Family Pocilloporidae, *P. mandrina*, *S. hystrix*; in the Family Acroporidae, *M. monasteriata*, *M. mollis*, *M. turguescens*, *M. aequituberculata*, *A. gemmifera*, *A. danai*, *A. formosa*, *A. austera*, *A. hyacinthus*, *A. divaricata*, in the Family Poritidae, *P.(S.) rus*, *G. tenuidens*, *A. japonica*; in the Family Merulinidae, *H. microconos*, *H. bonsai*; in the Family Faviidae, *F. rotundata*, *G. australensis*, *P. lamellina*. Compared with other reports (Veron, 1986; Nishihira & Veron, 1995), 11 species were not listed for the region around

Mauritius, namely, the Mascarene Islands. The species, which occur in the Western Indian Ocean but not in the Mascarene Islands region are as follows; *A. divaricata*, from the Seychelles to the east; *A. gemmifera*, *P. (S.) rus*, and *H. microconos*, from the Red Sea to the east; *M. mollis*, from the Persian Gulf to the east. The species, which occurs in the Eastern Indian Ocean is only *G. tenuidens*, from the Nicobar Islands to the east. The species which were found in the Pacific Ocean are as follows: *P. meandrina*, from Australia to the east; *F. rotundata*, only known from Australia, *G. australensis*, Australia and the West Pacific Ocean; *H. bonsai*, endemic species of Japan; *A. japonica*, which was first described in the Japanese Seas by the difference in the calice size (larger calice than *A. verrilliana*) and of which distribution in Japan was known but was not described elsewhere (Eguchi, 1968). Considering the distribution which is already known for these 11 species, these corals seem to be newly recorded species in Mauritius, of these at least 6 species occur in the Eastern Indian Ocean and the Pacific Ocean.

In the Phylum Echinodermata, 61 species and one variety are listed. In the Class Asterozoa, 7 species were found in Mauritius, of which 2 species, *P. nodosus* and *E. luzinicus*, were not found in previous research (Michel, 1974), although *P. nodosus* was reported in the Mascarene Islands (Clark & Rowe, 1971). This sea star is probably not a newly recorded species in Mauritius. As concerns *E. luzinicus*, the distribution of this species in the Indian Ocean is from the Islands of the Western Indian Ocean (Clark & Rowe, 1971). Through the Mascarene Islands, which adjoin the South border of the Islands of Western Indian Ocean (according to the area division of Clark & Rowe, 1971), it is possible that this sea star is a newly recorded species in Mauritius. Thus in the Class Asterozoa, one species, *E. luzinicus*, is a possibly new record.

In the Class Ophiurozoa, 7 species were found in Mauritius. But all of these species were already reported by Michel (1974) and Clark & Rowe, (1971). Thus, in this Class, there is no newly recorded species.

In the Class Echinozoa, 15 species and one variety were recognized and all of these were already reported in former reports (Mortensen, 1928, 1935, 1940, 1943a, 1943b, 1948; Clark & Rowe, 1971; Michel, 1974). Mortensen considered *E. mathaei violacea* as a variety, although he gave it a trinomial name, as if it were a subspecies (Mortensen, 1943b). In Michel's report (1974), there was no description of *E. mathaei violacea* although this variety is very common in Mauritius (Mortensen, 1943b; our observation). It is probable that Michel treated *E. mathaei violacea* as *E. mathaei* but not as a variety. On the other hand, Clark & Rowe (1971) did not report *E. oblonga* and *E. mathaei violacea*. They may have considered them as species of the Genus *Echinometra*, hence *E. mathaei*. Such confusions are likely due to the peculiarities of *E. mathaei*, namely, the extraordinary variability of this species, particularly with regard to the color of the spine, and to a lesser degree in the shape of the test (Mortensen, 1943b).

In the Genus *Heterocentrotus*, two species, *H. mammillatus* and *H. trigonarius*, were seen in Mauritius. These two species also have very great variation in regard to the shape and color of primary and secondary spines that had led to the establishing of a number of species, subspecies or variation (Mortensen, 1943b). *H. mammillatus* of Mauritius has very slender and long primary spines. This characteristic is very similar to that of the individuals of the Bonin Islands (southern Japan) which were formerly treated as *H. trigonarius* (Ooishi, 1968). In Japan, it is thought that individuals which have club-shaped primary spines are common in this species, but these two morphs differ in their ecological behavior: the individuals with club-shaped spines are completely nocturnal and are inclined to hide themselves in holes in coral reefs, whereas individuals with slender spines are not so; they are easily observed during day time (observation by the author at Bonin Islands). The individuals of *H. trigonarius* in Mauritius are also classified into two morphs, the individuals with slender, pointed triangle-shaped spines (Pl. IX, 5) and those with club-shaped spines (Pl. IX, 6). Such difference in the shape of the spines was also formerly reported (Mortensen, 1943b). These morphs, too, show different ecological inclinations. Individuals with slender, pointed triangle-shaped spines are inclined to be distributed in the sites where they are subjected to strong wave action, such as Poste Lafayette and Pte aux Caves. They do not hide themselves in holes but stick strongly to the surface of rocks, even during day time. On the other hand, the individuals with club-shaped spines are inclined to be distributed on reef edges exposed to strong wave action also, e.g. along the reef edge of Albion, however, they hide themselves partially in holes made in the reef edges. Individuals with slender, pointed triangle-shaped spines are also distributed in the same

environmental conditions as individuals with club-shaped spines, such as the reef edges of Trou aux Biches, Riambel. But, even in these circumstances they do not hide themselves in holes as individuals with club-shaped spines do. Hence, these two morphs have completely different ecological inclinations.

In the Class Holothuroidea, 14 species were specifically identified of which 6 species were not reported in the Michel's report in Mauritius (1974). These species are as follows, in the Family Stichopidae, *S. herrens*, in the Family Holoturiidae, *B. vitiensis*, *B. graeffei*, *L. semprianum*, *H.(T.) altaturricula*, in the Family Synaptidae, *P. kefersteini*. Clark & Rowe (1971) report the distribution of these spp. as follows: in the Western Indian Ocean, *B. graeffei* and *P. kefersteini*, from the Red Sea to the east; in the Eastern Indian Ocean, *S. herrens*, from East Indies to the east; *B. vitiensis*, from Sri Lanka to the east, *L. semprianum*, from the Maldives(?) and Bay of Bengal to the east. The distribution of *H. (T.) altaturricula* was not known because there was no description in the Clark & Rowe's report (1971). Considering the distribution of these 5 species, 2 species, *B. graeffei* and *P. kefersteini*, are probably newly recorded species and 3 species, *S. herrens*, *B. vitiensis*, and *L. semprianum*, are highly probably newly recorded species in Mauritius. Concerning *H. (T.) altaturricula*, it is difficult to say whether this species is newly recorded in Mauritius or not because of lack of information. However, the authors consider that this species is possibly a newly recorded species because this was not recorded by Michel (1974).

In this study, 17 newly recorded species from the Phylum Cnidaria (with 11 species), the Class Asteroidea (with one species, *E. luzinicus*), and the Class Holothuroidea (with 5 species), were reported but within a degree of uncertainty because the identification of many animals was done only by photographs. The authors, however, think that it is worth introducing these species into the list to indicate at least their possible existence in the sea around the Western Indian Ocean Islands, Mauritius, Madagascar and Mahé. The authors are sure themselves that this list will contribute to the precise understanding of the fauna in this area as well as the species distribution and the species diversity.

*Additional remark: Photographs of the species discussed in this paper are available from the authors.

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