CHAPTER 3

OCTOCORALLIA FROM THE SEYCHELLES ISLANDS

WITH SOME ECOLOGICAL OBSERVATIONS

BY

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INTRODUCTION

Octocorals are among the prominent components of reef communities of the Seychelles, but little faunistic information has been available (Thomson and Mackinnon 1910, Verseveldt 1976). Practically nothing is known about their vertical distribution on tropical reefs. This paper is a preliminary report on the identification of the octocoral collections made during the voyage of the R/V Akademik A. Nesmeyanov from January to March 1989, with some ecological observations. The following checklist presents a survey of the species collected during this voyage in addition to species recorded earlier.

LIST OF SPECIES

Order Helioporacea
Family Helioporacea
1. *Heliopora coerulea* (Pallas)(Cöetivy, Aldabra, D'Arros, depth 5-13m)

Order Alcyonacea
Family Coelogorgiidae
2. *Coelogorgia palmosa* (Milne Edwards et Haime)(Aldabra, depth 9m)
Family Tubiporidae
3. *Tubipora musica* Linné (Cöetivy, D'Arros, Desroches, depth 10-34m)
Family Alcyoniidae
4. *Alcyonium flaccidum* Tixier-Durivault (Aldabra, depth 8m)
5. *Cladiella australis* (Macfadyen)(Mahé, depth 16m)
6 *Cladiella krempfi* (Hickson)(Cöetivy, depth 8m)
7. *Cladiella sphaerophora* (Ehrenberg)(Praslin, depth 7m)
8. *Cladiella* sp. (Cöetivy, Aldabra, Praslin, depth 5-8m)
9. *Dampia pocilloporaeformis* Alderslade (Bird, depth 12m)
10. *Lobophytum altum* Tixier-Durivault (Cöetivy, depth 5-10m)
11. *Lobophytum borbonicum* Marenzeller (D'Arros, Desroches, La Digue, Farquhar, depth 8-12m)
12. *Lobophytum crebriplicatum* Marenzeller (African, depth 14m)
13. *Lobophytum irregulare* Tixier-Durivault (Cöetivy, Desroches, depth 13-16m)
14. *Lobophytum michaelae* Tixier-Durivault (Farquhar, depth 15m)
15. *Lobophytum mirabile* Tixier-Durivault (Desroches, depth 12m)
16. *Lobophytum patulum* Tixier-Durivault (Cöetivy, Desroches, La Digue, Cosmoledo, depth 5-14)

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17. *Lobophytum variatum* Tixier-Durivault (Farquhar, depth 16m)
18. *Lobophytum* sp. (Mahé, depth 4m)
19. *Parerythropodium fulvum* (Forskål)(Cöetivy, Aldabra, D'Arros, Mahé, Farquhar, St. Joseph, depth 6-24m)
20. *Sarcophyton ehrenbergi* Marenzeller (Cöetivy, D'Arros, Aldabra, Mahé, depth 3-16m)
21. *Sarcophyton elegans* Moser (D'Arros, depth 26m)
22. *Sarcophyton glaucum* (Quoy et Gaimard)(D'Arros, Desroches, Farquhar, depth 11-27m)
23. *Sarcophyton infundibuliforme* Tixier-Durivault (Cöetivy, African, Mahé, depth 6-15m)
24. *Sarcophyton roseum* Pratt (Cöetivy, depth 7m)
25. *Sarcophyton trocheliophorum* Marenzeller (Cöetivy, Desroches, Mahé, La Digue, Farquhar, depth 12-21m)
26. *Sarcophyton turschi* Verseveldt (Praslin, depth 8m)
27. *Sinularia cruciata* Tixier-Durivault (Cöetivy, depth 22m)
28. *Sinularia densa* (Whitelegge)(Cöetivy, depth 8m)
29. *Sinularia dura* (Pratt)(Cöetivy, depth 16m)
30. *Sinularia fishelsoni* Verseveldt (Cöetivy, D'Arros, Desroches, La Digue, Farquhar, depth 8-15m)
31. *Sinularia gibberosa* Tixier-Durivault (Cöetivy, D'Arros, Mahé, La Digue, depth 4-16m)
32. *Sinularia heterospiculata* Verseveldt (Cöetivy, Aldabra, Desroches, Farquhar, depth 13-17m)
33. *Sinularia humesi* Verseveldt (Farquhar, depth 15m)
34. *Sinularia leptoclados* (Ehrenberg)(Mahé, depth 14m)
35. *Sinularia lochmodes* Kolonko (Mahé, Bird, depth 12-14m)
36. *Sinularia mayi* Lüttschwager (Cöetivy, Farquhar, African, depth 6-12m)
37. *Sinularia muralis* May (Desroches, depth 12m)
38. *Sinularia numerosa* Tixier-Durivault (Cöetivy, Desroches, Farquhar, depth 10-17)
39. *Sinularia polydactyla* (Ehrenberg)(Cöetivy, D'Arros, Desroches, Farquhar, Cosmoledo, depth 12-26m)
40. *Sinularia querciformis* (Pratt)(Mahé, depth 16m)
41. *Sinularia* aff. *robusta* Macfadyen (Cöetivy, depth 16m)
42. *Sinularia terspilli* Verseveldt (Mahé, depth 10m)
43. *Sinularia* sp. (Cöetivy, Farquhar, Cosmoledo, depth 12-15m)

Family Nephtheidae

44. *Capnella bouilloni* Verseveldt (D'Arros, Desroches, African, St. Joseph, depth 5-25m)
45. *Capnella parva* Light (Cöetivy, D'Arros, Desroches, depth 8-24m)
46. *Lemnalia bournei* Roxas (Cöetivy, African, depth 5-14)
47. *Lemnalia tenuis* Verseveldt (Cöetivy, Aldabra, African, depth 16-32m)
48. *Litophyton arboreum* Forskål (Farquhar, depth 25m)
49. *Nephthea chabrolii* Audouin (Cöetivy, depth 10m)
50. *Nephthea hirsuta* Tixier-Durivault (Desroches, depth 13m)
51. *Spongodes mucronata* Pütter (Desroches, Praslin, Cosmoledo, depth 14-32m)
52. *Spongodes* sp.1 (Desroches, Cosmoledo, depth 24-33m)
53. *Spongodes* sp.2 (Cosmoledo, depth 31m)
54. *Stereonephthya acaulis* Verseveldt (Cöetivy, Aldabra, Desroches, Cosmoledo, depth 8-25m)

Family Nidaliidae

55. *Siphonogorgia hicksoni* Thomson et Mackinnon (Desroches, depth 28m)
56. *Siphonogorgia* sp. (Desroches, depth 31m)

Family Xeniidae

57. *Anthelia glauca* Lamarck (Cöetivy, Aldabra, Farquhar, depth 3-6m)
58. *Cespitularia coerulea* May (Cöetivy, Farquhar, depth 4-16m)
59. *Heteroxenia elizabethae* Kölliker (Cöetivy, depth 4m)
60. *Sympodium caeruleum* Ehrenberg (D'Arros, Desroches, depth 8-12m)
61. *Xenia umbellata* Savigny (Mahé, depth 4m)
62. *Xenia* sp. (Cöetivy, Desroches, Mahé, depth 3-11m)

Order Gorgonacea
Family Subergorgiidae
63. *Subergorgia koellikeri* Wright et Studer (Praslin, African, depth 30-34m)
64. *Subergorgia mollis* (Nutting)(D'Arros, depth 22m)
65. *Subergorgia* sp. (D'Arros, Desroches, depth 18-30m)
Family Melithaeidae
66. *Melithaea ochracea* (Linné), Praslin, Farquhar, depth 14-33m)
67. *Wrightella coccinea* (Ellis et Solander)(Cöetivy, depth 8m)
Family Acanthogorgiidae
68. *Acanthogorgia* sp. (Desroches, depth 31m)
Family Plexauridae
69. *Euplexaura* aff. *erecta* Kükenthal (D'Arros, depth 28m)
70. *Paracis* sp. (Cöetivy, Praslin, Cosmoledo, depth 12-20m)
Family Gorgoniidae
71. *Rumphella aggregata* (Nutting)(Cöetivy, Desroches, Farquhar, Cosmoledo, depth 12-15m)

DISTRIBUTIONAL OBSERVATIONS

Stoddart (1984) distinguishes three main types of reefs in the Seychelles region, namely fringing reefs (Mahé, Praslin and other granitic islands), platform reefs (Cöetivy, Providence, African Banks, D'Arros and Desroches) and atoll reefs (Aldabra, Cosmoledo, Farquhar and St. Joseph). There are differences in the vertical distribution of octocorals on these reef types.

Fringing reefs. Octocorals on the reefs of this type are concentrated in the lower horizons of the reef slopes and sloping platforms. Colonies are situated well away from each other, therefore the alcyonacean living cover is not very high and does not exceed 25%. Usually 2-3 species dominate on these slopes. On the upper reef slope and reef-flat, alcyonaceans are uncommon. Only several species were found in these zones (*Sarcophyton ehrenbergi*, *Lobophytum* sp. and some xeniids). It is interesting that the domination by certain representatives of the family *Alcyoniidae* is noted for all the reefs studied in the Seychelles and also for other localities in the Indian Ocean, for example, Madagascar and Mozambique (personal observations). I have noted the same situation on most reefs of the South China Sea. Alcyoniids also contribute the main part of the reef octocoral fauna in Vietnam, moreover 84-92% of species belong to only four genera, namely *Sinularia*, *Sarcophyton*, *Lobophytum* and *Cladiella* (Malyutin, in press). A similar situation was noted in Thailand (Alderslade, personal communication), but on the Great Barrier of Australia, Dinesen (1983) noted the predominance of *Xeniidae* and *Nephtheidae*.

Platform reefs. One of the prominent features of these reefs is the absence of steep reef slopes with the reef surfaces inclining only slightly toward the open sea. Alcyonaceans are the most noticeable component of coral communities at depths of 4-6m and greater. Their vertical distribution is uniform and living cover averages 48%, but sometimes it may reach as much as 85% (Desroches Island), where the reef appears to be a peculiar "soft-coral platform." By comparison, the living cover of scleractinian and milleporid corals does not exceed 20%. Platform reefs are consistently dominated by representatives of the same genera, namely *Sinularia* (*S. polydactyla*, *S. heterospiculata*, *S. numerosa*, *S. fishelsoni* and several others), Sarcophyton (*S. trocheliophorum*, *S. ehrenbergi*), *Lobophytum* (*L. borbonicum*, *L. patulum*) and settlements are polyspecific. Representatives of other genera are uncommon here and settle singly or in small groups (*Capnella parva*).

Similar reefs were studied in Vietnam. The scheme of vertical distribution of octocorals on these reefs corresponds to those described above, and average living cover is approximately 70% for

similar "soft-coral platforms."

Atolls. With respect to octocoral distribution, atolls can be thought of as formations having the combined characters of both fringing and platform reefs. Variations in the distribution seem to be dependent upon the geomorphological peculiarities of each atoll. For example, the vertical distribution of octocorals on the eastern side of Farquhar is similar to that of platform reefs. The height and living cover of alcyonaceans (53% on average) and polyspecific settlement are evidence of this similarity. A definite reef slope is absent. An analogous situation occurs on the eastern rise of Cosmoledo, but the alcyonacean living cover is less (34% on average).

In contrast, the scheme of octocoral vertical distribution in some other atolls such as the north-western side of Farquhar, the western area of Aldabra and on some localities of St. Joseph correspond more closely with the characteristics of fringing reefs. Presence of a definite reef slope leads to concentrations of octocorals in the lower reef horizons. The average living cover of alcyonaceans near the base of the reef slope is about 30%, and values on the upper reef slope usually do not exceed 15%.

CONCLUSIONS

It appears that the vertical distribution of octocorals is influenced by the geomorphological peculiarities of each reef type. If a definite reef slope exists, octocorals are concentrated on the lower horizons of the reef. This is probably due to the tendency of dissolved and suspended organic matter and minerals to be directed down along the reef profile (Preobrazhensky, 1986). Octocorals tend to settle in these zones of organic matter transport and accumulation. In cases when there is a lack of definite reef slope, nutrients are distributed more uniformly along the reef profile and this presumably results in a uniformity of octocoral distribution.

REFERENCES

Dinesen, Z.D. 1983. Patterns in the distribution of soft corals across the central Great Barrier Reef. Coral Reefs 1:229-236.

Preobrazhensky, B.V. 1986. Modern Reefs. Nauka, Moscow:1-245 (in Russian).

Stoddart, D.R. 1984. Coral reefs of the Seychelles and adjacent regions. Pages 63-81. In: Stoddart, D.R. (ed) Biogeography and ecology of the Seychelles Islands. (Dr. W. Junk Publishers, The Hague, Boston, Lancaster), 691pp.

Thomson, J.A. and D.L. Mackinnon. 1910. Alcyonarians collected on the Percy Sladen Trust Expedition by Mr. Stanley Gardiner. II. The Stolonifera, Acyonacea, Pseudaxonia and Stelechotokea. Trans. Linn. Soc. London, Zool. (2)13(8):165-211.

Verseveldt, J. 1976. Alcyonacea from the Seychelles (Coelenterata:Octocorallia). Rev. Zool. Afr. 90(3):497-513.