

6.9 SPECIES DIVERSITY OF STONY CORALS AND MUSHROOM CORAL SIZES

B.W. Hoeksema

National Museum of Natural History, Leiden

The number of stony corals in the first 10 m of the line transect varies considerably among the stations, namely from 0 to 18. The highest numbers of species were encountered in the southern Seychelles (Amirantes and Alphonse group), in transects 10-23. Another factor related to species diversity is exposure to wave action. The highest numbers were recorded at sheltered sites in the southern island group, such as transects 10, 15 and 19.

Similar patterns can be seen in mushroom coral diversity, especially in transects 13 and 15. Transects that looked much exposed usually showed few mushroom corals. If fungiids were present here, they were usually of a small size, whereas all large specimens (> 20 cm) were found at sheltered sites (transects 13, 15, 19 and 21).

list of records per transect

A preliminary list is given of stony reef coral species

(Scleractinia, *Millepora*, *Heliopora*, and *Tubipora*) in the line transects (under chain over a distance of 10 m) and of mushroom corals (Fungiidae) in the 5x10 m² belt transects. For the mushroom corals, sizes (lengths in cm) and mode of life (free or fixed) are given for an analysis of size distributions and life history characteristics of the fungiids.

Transect 1. 17-12-1992. SW Praslin. Sta 708.

Chain transect species (n=6):

01 *Galaxea fascicularis*

02 *Acropora* sp. 1-1

03 *Stylophora pistillata*

04 *Favia speciosa*

05 *Favites pentagona*

Fungiidae (3 species) in 5x10m² quadrat (l in cm):

01 *Fungia fungites* (n=1) 4.5

02 *Fungia concinna* (n=2) 4.5 9.0

03 *Herpolitha limax* (n=1) 58.0

Transect 2. 18-12-1992. SW Aride. Sta 711.

Chain transect species (n=7):

01 *Acropora stoddarti*

02 *Stylophora mordax*

03 *Favia pallida*

Table. 6.9. Numbers of species per transect: hard corals in 10-m line transect, mushroom corals in 5x10-m² belt transect

Transect no.	Stony coral species	Fungiid species	Size distributions of all fungiids (length in cm)					Total number of fungiids
			0.5-5.0	5.5-10.0	10.5-15.0	15.5-20.0	>20.0	
01	5	3	2	1	0	0	1	4
02	6	2	2	2	1	0	0	5
03	9	1	2	0	0	0	0	2
04	6	1	9	0	0	0	0	9
05	5	1	13	0	0	0	0	13
06	8	1	1	0	0	0	0	1
07	5	1	155	34	0	0	0	189
08	4	0	0	0	0	0	0	0
09	9	3	83	86	4	0	0	173
10	15	5	3	8	5	1	0	17
11	13	6	13	17	7	0	0	37
12	13	0	0	0	0	0	0	0
13	12	9	26	34	25	6	2	93
14	10	2	18	1	0	0	0	19
15	18	9	37	63	44	7	8	159
16	7	0	0	0	0	0	0	0
17	8	1	10	0	0	0	0	10
18	12	4	18	3	1	1	0	23
19	16	6	15	4	1	1	5	26
20	13	3	1	2	0	0	0	3
21	10	5	9	5	9	2	3	28
22	9	1	2	0	0	0	0	2
23	10	0	0	0	0	0	0	0

04 *Pavona venosa*
 05 *Pocillopora damicornis*
 06 *Favia stelligera*
 07 *Pavona varians*
 Fungiidae (2 species) in 5x10m² quadrat (1 in cm):
 01 *Fungia fungites* (n=2) 4.5 9.5
 02 *Fungia scruposa* (n=3) 4.5 5.5 12.0

Transect 3. 19-12-1992. SW Aride. Sta 711.

Chain transect species (n=9):
 01 *Acropora* sp. 3-1
 02 *Acropora* sp. 3-2
 03 *Stylophora mordax*
 04 *Acropora stoddarti*
 05 *Pavona varians*
 06 *Pocillopora damicornis*
 07 *Gardineroseris planulata*
 08 *Psammocora profundacella*
 09 *Pocillopora verrucosa*
 Fungiidae (1 species) in 5x10m² quadrat (1 in cm):
 01 *Fungia fungites* (n=2) 4.0 4.5

Transect 4. 20-12-1992. E Bird Island. Sta 717.

Chain transect species (n=6):
 01 *Porites solida*
 02 *Acropora* sp. 4-1
 03 *Favites flexuosa*
 04 *Pavona varians*
 05 *Acropora* sp. 4-2
 06 *Favia stelligera*
 Fungiidae (1 species) in 5x10m² quadrat (1 in cm):
 01 *Fungia tenuis* (n=9) 2.0(2x) 3.0
 3.5(2x) 4.0(2x) 4.5(2x)

Transect 5. 21-12-1992. NE Bird Island. Sta 723.

Chain transect species (n=5):
 01 *Porites solida*
 02 *Favia pallida*
 03 *Montipora venosa*
 04 *Echinopora gemmacea*
 05 *Acropora* sp. 5-1
 Fungiidae (1 species) in 5x10m² quadrat (1 in cm; f= attached):
 01 *Fungia tenuis* (n=11 + 2f) 1.5f(2x)
 2.0 2.5 3.0(2x) 3.5(3x)
 4.0(3x) 4.5

Transect 6. 22-12-1992. NE Bird Island. Sta 723.

Chain transect species (n=8):
 01 *Porites solida*
 02 *Favites flexuosa*
 03 *Favia pallida*
 04 *Favites pentagona*
 05 *Porites lobata*
 06 *Astreopora myriophthalma*

07 *Pocillopora verrucosa*
 08 *Acropora* sp. 6-1
 Fungiidae (1 species) in 5x10m² quadrat (1 in cm):
 01 *Fungia tenuis* (n=1) 4.5

Transect 7. 23-12-1992. SW La Digue. Sta 737.

Chain transect species (n=5):
 01 *Acropora* sp. 7-1
 02 *Stylophora mordax*
 03 *Acropora stoddarti*
 04 *Millepora platyphylla*
 05 *Fungia fungites*
 Fungiidae (1 species) in 5x10m² quadrat (1 in cm; f= attached):
 01 *Fungia fungites* (n=58 + 131f):
 1.0f(17x) 1.5f(2x) 2.0f(16x) 2.5f(12x)
 3.0f(34x) 3.0 3.5f(20x) 3.5
 4.0f(21x) 4.0(6x) 4.5f(6x) 4.5(7x)
 5.0f 5.0(11x) 5.5f 5.5(11x)
 6.0f 6.0(6x) 6.5(6x) 7.0(4x)
 7.5 8.0(2x) 8.5 9.0

Transect 8. 24-12-1992. E Mahé, Anse Royale, Ile Souris. Sta 741.

Chain transect species (n=4):
 01 *Acropora* sp. 8-1
 02 *Acropora stoddarti*
 03 *Porites rus*
 04 *Galaxea fascicularis*
 Fungiidae (0 species) in 5x10m² quadrat.

Transect 9. 25-12-1992. off NE Mahé, N Ile Moyenne. Sta 749.

Chain transect species (n=9):
 01 *Lobophyllia hemprichii*
 02 *Pocillopora verrucosa*
 03 *Acropora* sp. 9-1
 04 *Acropora* sp. 9-2
 05 *Fungia fungites*
 06 *Stylophora pistillata*
 07 *Fungia repanda*
 08 *Acropora* sp. 9-3
 09 *Millepora platyphylla*
 Fungiidae (3 species) in 5x10m² quadrat (1 in cm; f= attached):
 01 *Fungia concinna* (n=10) 4.0(3x) 5.5
 6.0(2x) 7.5(2x) 9.0 10.0
 02 *Fungia repanda* (n=34) 2.0 2.5
 3.5 4.0(5x) 4.5(4x) 5.5(3x)
 6.0(3x) 6.5(2x) 7.0(3x) 7.5
 8.0(7x) 8.5 9.0 10.0
 03 *Fungia fungites* (n=116 + 13f)
 1.0f(2x) 1.5f 2.0f(4x) 2.5f(4x)
 2.5(9x) 3.0f(2x) 3.0(9x) 3.5(4x)
 4.0(7x) 4.5(12x) 5.0(14x) 5.5(12x)

6.0(11x)	6.5(4x)	7.0(11x)	7.5(2x)
8.0(8x)	8.5(2x)	9.0(5x)	9.5
10.0	11.0(2x)	12.0	13.0

Transect 10. 26-12-1992. NW St. Joseph Atoll. Sta 753.

Chain transect species (n=15):

- 01 *Porites lutea*
- 02 *Fungia concinna*
- 03 *Porites solida*
- 04 *Porites lobata*
- 05 *Platygyra daedalea*
- 06 *Leptastrea transversa*
- 07 *Pocillopora verrucosa*
- 08 *Pocillopora eydouxi*
- 09 *Acropora* sp. 10-1
- 10 *Acropora* sp. 10-2
- 11 *Acropora* sp. 10-3
- 12 *Tubastrea micrantha*
- 13 *Favites pentagona*
- 14 *Millepora exaesa*
- 15 *Galaxea fascicularis*

Fungiidae (5 species) in 5x10m² quadrat (1 in cm; f= attached):

01 <i>Fungia tenuis</i> (n=3)	4.5	5.0	5.5
02 <i>Fungia concinna</i> (n=4)	10.0(2x)	11.0	13.0
03 <i>Fungia scruposa</i> (n=7 + 1f)		3.0f	8.0
8.5(2x)	9.0	10.5	11.5
04 <i>Fungia seychellensis</i> (n=1)			10.0
05 <i>Sandalolitha robusta</i> (n=1)			16.0

Transect 11. 27-12-1992. NE St. Joseph Atoll. Sta 756.

Chain transect species (n=13):

- 01 *Pocillopora eydouxi*
- 02 *Fungia scruposa*
- 03 *Galaxea fascicularis*
- 04 *Pocillopora verrucosa*
- 05 *Porites rus*
- 06 *Acropora* sp. 11-1
- 07 *Acropora* sp. 11-2
- 08 *Stylophora mordax*
- 09 *Pavona varians*
- 10 *Cyphastrea serailia*
- 11 *Seriatopora hystrix*
- 12 *Echinopora gemmacea*
- 13 *Symphyllia radians*

Fungiidae (6 species) in 5x10m² quadrat (1 in cm; f= attached):

01 <i>Fungia tenuis</i> (n=1)	3.0		
02 <i>Fungia repanda</i> (n=2)	10.0	12.5	
03 <i>Fungia granulosa</i> (n=1)	4.5		
04 <i>Fungia scutaria</i> (n=2)	9.5	11.0	
05 <i>Fungia horrida</i> (n=6)	5.5	10.0	
11.0	11.5(2x)	12.0	

06 <i>Fungia scruposa</i> (n=21 + 4f)	1.0f		
1.5f	2.5f	3.0f	3.5
4.0(2x)	4.5(2x)	5.0(2x)	5.5(2x)
6.0	6.5(2x)	7.0(2x)	7.5
8.5	9.5(3x)	10.0	13.5

Transect 12. 28-12-1992. S St. Joseph Atoll. Sta 759

Chain transect species (n=13):

- 01 *Millepora exaesa*
- 02 *Hydnophora exesa*
- 03 *Favia pallida*
- 04 *Stylophora mordax*
- 05 *Heliopora coerulea*
- 06 *Acropora* sp. 12-1
- 07 *Porites lichen*
- 08 *Pocillopora eydouxi*
- 09 *Galaxea fascicularis*
- 10 *Acropora* sp. 12-2
- 11 *Psammocora haimeana*
- 12 *Favites complanata*
- 13 *Montipora foveolata*

Fungiidae (0 species) in 5x10m² quadrat.

Transect 13. 29-12-1992. N Ile Poivre. Sta 767.

Chain transect species (n=12):

- 01 *Acropora* sp. 13-1
- 02 *Acropora* sp. 13-2
- 03 *Seriatopora hystrix*
- 04 *Pocillopora verrucosa*
- 05 *Heliopora coerulea*
- 06 *Acropora* sp. 13-3
- 07 *Pavona varians*
- 08 *Favia stelligera*
- 09 *Porites rus*
- 10 *Acropora* sp. 13-4
- 11 *Pavona explanulata*
- 12 *Acropora* sp. 13-5

Fungiidae (9 species) in 5x10m² quadrat (1 in cm; f= attached):

01 <i>Fungia tenuis</i> (n=4)	2.0	3.5	4.0(2x)
02 <i>Fungia concinna</i> (n=19)	4.5	5.5	
6.5	7.0(2x)	8.0(4x)	8.5
10.0	10.5(2x)	11.0	11.5
12.0(2x)	14.5	17.5	
03 <i>Fungia repanda</i> (n=9)	3.5	4.5	
5.0	7.0	7.5	9.0
9.5	10.0	14.0	
04 <i>Fungia granulosa</i> (n=15)	2.0	2.5	
3.0	3.5	4.0(2x)	4.5(2x)
5.0(2x)	6.0	6.5	8.0
8.5	10.0		
05 <i>Fungia scutaria</i> (n=1)	4.5		
06 <i>Fungia horrida</i> (n=6)	3.5	7.0	
9.0	10.0	10.5	12.0
07 <i>Fungia scruposa</i> (n= 28 + 2f)		2.0f	

3.0f	3.0	3.5(2x)	4.5
5.5	6.5	8.0	8.5(2x)
9.5	10.0(2x)	10.5(2x)	11.0(2x)
12.5	13.0(5x)	13.5(2x)	14.0(2x)
15.0	17.0		
08 <i>Fungia seychellensis</i> (n=3)			7.0
7.5	10.0		
09 <i>Herpolitha limax</i> (n=6)	16.0(3x)		19.5
22.5	23.0		

Transect 14. 30-12-1992. W Ile Desroches. Sta 772.

Chain transect species (n=10):

- 01 *Porites lutea*
- 02 *Galaxea fascicularis*
- 03 *Favia speciosa*
- 04 *Favites pentagona*
- 05 *Acropora* sp. 14-1
- 06 *Montipora venosa*
- 07 *Fungia tenuis*
- 08 *Coscinarea columna*
- 09 *Leptastrea transversa*
- 10 *Pocillopora eydouxi*

Fungiidae (2 species) in 5x10m² quadrat (1 in cm; f= attached):

01 <i>Fungia tenuis</i> (n= 13 + 3f)		2.5f(2x)	
2.5(2x)	3.0(6x)	3.5f	3.5(2x)
4.0	5.0(2x)		
02 <i>Fungia scutaria</i> (n=3)	3.5	4.0	6.0

Transect 15. 31-12-1992. N Ile Poivre. Sta 767.

Chain transect species (n=18):

- 01 *Favia stelligera*
- 02 *Echinopora lamellosa*
- 03 *Porites rus*
- 04 *Heliopora coerulea*
- 05 *Herpolitha limax*
- 06 *Pocillopora verrucosa*
- 07 *Stylophora mordax*
- 08 *Acropora* sp. 15-1
- 09 *Fungia concinna*
- 10 *Cyphastrea serailia*
- 11 *Pavona varians*
- 12 *Symphyllia radians*
- 13 *Acropora* sp. 15-2
- 14 *Fungia scruposa*
- 15 *Psammocora profundacella*
- 16 *Pavona clavus*
- 17 *Acropora* sp. 15-3
- 18 *Acropora* sp. 15-4

Fungiidae (9 species) in 5x10m² quadrat (1 in cm; f= attached):

01 <i>Fungia tenuis</i> (n=6)	2.5	3.0	
3.5	4.0(2x)	4.5	
02 <i>Fungia concinna</i> (n=40 + 2f)		1.0f(2x)	
4.0(3x)	4.5(2x)	6.0	6.5(2x)

7.0(4x)	7.5(2x)	8.5(3x)	9.0(3x)
9.5(6x)	10.0(4x)	10.5(2x)	11.0(4x)
12.0	12.5(2x)	13.0	
03 <i>Fungia repanda</i> (n=36)	2.5		4.5(4x)
5.0(2x)	5.5	6.0(3x)	6.5(2x)
7.0(2x)	8.0(2x)	8.5	9.0
9.5(3x)	10.5(3x)	11.0	11.5
12.0(5x)	12.5	13.0(2x)	13.5
04 <i>Fungia granulosa</i> (n=3)	4.5		5.5 6.5
05 <i>Fungia horrida</i> (n=9)	5.5		6.0
8.0	9.0	9.5(3x)	10.5(2x)
06 <i>Fungia scruposa</i> (n=25 + 7f)			0.5f
1.0f(4x)	2.0f	3.0f	3.5(2x)
5.0	6.0(2x)	6.5	8.0
8.5	9.5(2x)	10.5	11.0(2x)
11.5(2x)	12.0(2x)	12.5(2x)	13.0
13.5(2x)	14.0	15.0	15.5
07 <i>Fungia seychellensis</i> (n=9)			3.5
4.5(2x)	5.0(2x)	6.0	6.5(2x) 7.5
08 <i>Herpolitha limax</i> (n=21)	5.5		9.0
10.0	13.0	14.5(2x)	15.0
17.0(2x)	17.5	18.0	18.5
19.0	21.0(2x)	23.5	25.0
26.0	26.5(2x)	33.5	
09 <i>Sandalolitha dentata</i> (n=1f)			4.0f

Transect 16. 01-01-1993. W Ile Poivre. Sta 780.

Chain transect species (n=6):

- 01 *Leptastrea transversa*
 - 02 *Porites lobata*
 - 03 *Favia speciosa*
 - 04 *Acropora* sp. 16-1
 - 05 *Gardineroseris planulata*
 - 06 *Psammocora profundacella*
- Fungiidae (0 species) in 5x10m² quadrat

Transect 17. 02-01-1993. NW Desnoeufs Island. Sta 783.

Chain transect species (n=8):

- 01 *Pocillopora eydouxi*
 - 02 *Porites lutea*
 - 03 *Pavona clavus*
 - 04 *Leptastrea transversa*
 - 05 *Acropora* sp. 17-1
 - 06 *Stylophora mordax*
 - 07 *Montipora tuberculosa*
 - 08 *Pocillopora verrucosa*
- Fungiidae (1 species) in 5x10m² quadrat (1 in cm):
- | | | |
|--------------------------------|---------|---------|
| 01 <i>Fungia tenuis</i> (n=10) | 3.5(3x) | 4.0(3x) |
| 4.5 | 5.0(3x) | |

Transect 18. 03-01-1993. NW Alphonse Island. Sta 786.

Chain transect species (n=12):

- 01 *Porites solida*

02 *Psammocora profundacella*
 03 *Favia speciosa*
 04 *Pavona varians*
 05 *Leptoseris mycetoseroides*
 06 *Montipora monasteriata*
 07 *Porites lutea*
 08 *Millepora exaesa*
 09 *Pocillopora eydouxi*
 10 *Pocillopora verrucosa*
 11 *Acropora* sp. 18-1
 12 *Pavona clavus*

Fungiidae (4 species) in 5x10m² quadrat (1 in cm; f= attached):

01 <i>Fungia tenuis</i> (n=14 + 2f)	1.5f		
2.5	3.0(2x)	3.5f	3.5
4.0(5x)	4.5(3x)	5.0(2x)	
02 <i>Fungia scutaria</i> (n=3)	2.5	10.5	15.5
03 <i>Fungia granulosa</i> (n=2)	5.0	10.0	
04 <i>Fungia seychellensis</i> (n=2)		6.0	8.0

Transect 19. 04-01-1993. Alphonse Atoll, Lagoon entrance. Sta 788.

Chain transect species (n=16):

01 *Pocillopora verrucosa*
 02 *Porites lutea*
 03 *Montipora venosa*
 04 *Goniastrea pectinata*
 05 *Pavona varians*
 06 *Favia pallida*
 07 *Seriatopora hystrix*
 08 *Favia stelligera*
 09 *Gardineroseris planulata*
 10 *Cyphastrea chalcidicum*
 11 *Porites cylindrica*
 12 *Psammocora explanulata*
 13 *Herpolitha limax*
 14 *Pavona explanulata*
 15 *Pachyseris speciosa*
 16 *Pocillopora damicornis*

Fungiidae (6 species) in 5x10m² quadrat (1 in cm; f= attached):

01 <i>Fungia tenuis</i> (n=3)	4.5	5.0	5.5
02 <i>Fungia granulosa</i> (n=2)	0.9	10.0	
03 <i>Fungia horrida</i> (n=1)	17.0		
04 <i>Fungia scruposa</i> (n=2)	8.0	13.0	
05 <i>Fungia fungites</i> (n=13f)	0.5f(5x)	1.0f(4x)	
1.5f	2.0f	2.5f	3.0f
06 <i>Herpolitha limax</i> (n=5)	30.0	31.0(2x)	
31.5	41.0		

Transect 20. 05-01-1993. St. François, Bay west of entrance lagoon passage. Sta 792.

Chain transect species (n=13):

01 *Porites solida*
 02 *Pavona varians*

03 *Mycedium elephantotus*
 04 *Goniastrea pectinata*
 05 *Pocillopora eydouxi*
 06 *Montipora monasteriata*
 07 *Acropora* sp. 20-1 = 18-1
 08 *Acanthastrea echinata*
 09 *Porites nigrescens*
 10 *Acropora palifera*
 11 *Stylophora mordax*
 12 *Favia pallida*
 13 *Porites lutea*

Fungiidae (3 species) in 5x10m² quadrat (1 in cm):

01 <i>Fungia tenuis</i> (n=1)	5.0
02 <i>Fungia granulosa</i> (n=1)	5.5
03 <i>Fungia seychellensis</i> (n=1)	9.5

Transect 21. 06-01-1993. Alphonse Atoll, Lagoon entrance. Sta 788.

Chain transect species (n=10):

01 *Pavona varians*
 02 *Seriatopora hystrix*
 03 *Cyphastrea microphthalma*
 04 *Psammocora profundacella*
 05 *Goniastrea pectinata*
 06 *Mycedium elephantotus*
 07 *Porites lutea*
 08 *Pocillopora verrucosa*
 09 *Lobophyllia hemprichii*
 10 *Physogyra lichtensteini*

Fungiidae (5 species) in 5x10m² quadrat (1 in cm; f= attached):

01 <i>Fungia tenuis</i> (n=2)	4.5(2x)		
02 <i>Fungia horrida</i> (n=1 + 5f)		0.5f	
2.0f	3.0f(2x)	3.5f	7.0
03 <i>Fungia scruposa</i> (n=4 + 1f)		2.5f	
5.0	8.5	12.0(2x)	
04 <i>Fungia repanda</i> (n=4)	7.5	10.5	
12.0	13.0		
05 <i>Sandalolitha dentata</i> (11 fragments)	6.5		
8.5	12.5	13.5	14.0
14.5	16.0(2x)	21.5	29.5 35.5

Transect 22. 07-01-1993. N Platte Island. Sta 796.

Chain transect species (n=9):

01 *Porites solida*
 02 *Favia pallida*
 03 *Porites lutea*
 04 *Millepora platyphylla*
 05 *Acropora* sp. 22-1 = 18-1

06 *Stylophora mordax*
 07 *Heliopora coerulea*
 08 *Galaxea fascicularis*
 09 *Pavona varians*

Fungiidae (1 species) in 5x10m² quadrat (1 in cm):

01 <i>Fungia tenuis</i> (n=2)	1.0	4.5
-------------------------------	-----	-----

Transect 23. 08-01-1993. N Platte Island. Sta 796.

Chain transect species (n=10):

01 *Acropora* sp. 23-1

02 *Porites lutea*

03 *Porites solida*

04 *Millepora latifolia*

05 *Pocilopora damicornis*

06 *Stylophora mordax*

07 *Favites peresi*

08 *Acanthastrea echinata*

09 *Favites russelli*

10 *Montipora spongodes*

Fungiidae (0 species) in 5x10m² quadrat.