

## RESULTS

There had been a marked reduction in hard coral cover on the upper reef slope of the entire south face of Snapper Island between early 1995 and early 1997. Total hard coral decreased by about 85% from 88% cover to less than 15% cover (table 1, figure 3). Acroporids were the most severely affected with almost 100% mortality. Other coral groups were not as badly affected as the acroporids, with mortalities of between 70–80% of the area covered (figure 3).

**Table 1.** Abundance of encrusting organisms in the survey sites. Figures are means from groups of five 20-metre line intersect transects with standard deviations in italics beneath.

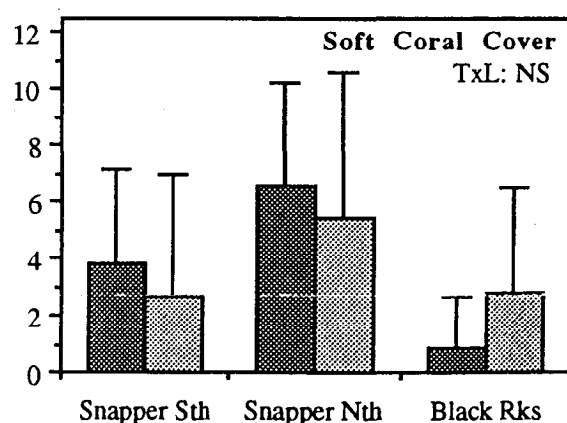
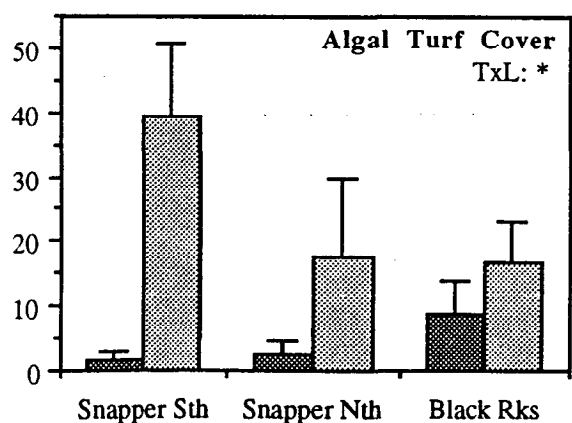
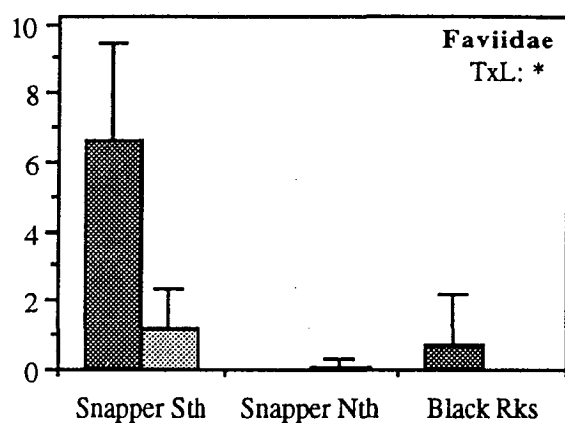
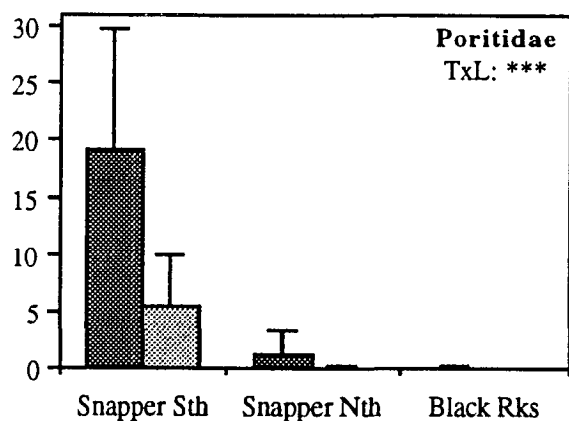
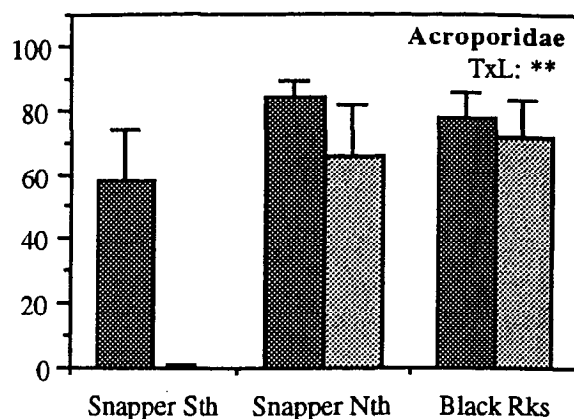
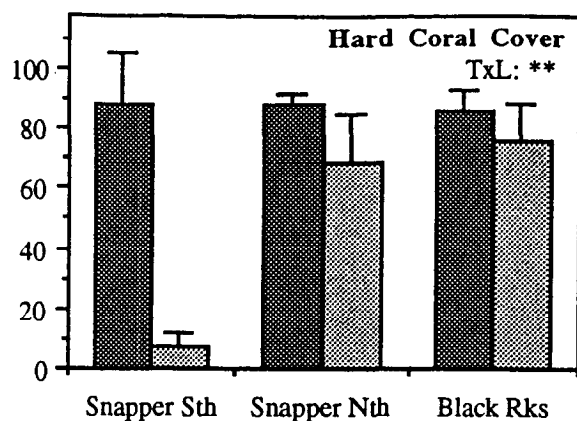
Location/site		Hard coral	Acroporids	Poritids	Faviids	Turf algae	Soft coral
Snapper Is. Sth:	1	19.1	0.1	15.7	2.5	17.6	3.7
		<i>5.1</i>	<i>0.1</i>	<i>3.6</i>	<i>1.2</i>	<i>8.6</i>	<i>2.0</i>
	2	7.2	0.2	5.8	0.7	42.3	1.4
		<i>6.2</i>	<i>0.4</i>	<i>6.4</i>	<i>0.4</i>	<i>13.1</i>	<i>3.1</i>
	3	6.9	0.2	5.0	1.7	36.8	4.0
		<i>3.1</i>	<i>0.5</i>	<i>2.1</i>	<i>1.3</i>	<i>10.1</i>	<i>5.3</i>
	4	14.5	5.0	7.8	1.3	50.9	0.3
		<i>10.3</i>	<i>5.9</i>	<i>3.9</i>	<i>1.0</i>	<i>20.6</i>	<i>0.6</i>
Snapper Is. Nth:	1	68.8	68.0	0.2	0.2	19.3	7.6
		<i>17.0</i>	<i>17.2</i>	<i>0.3</i>	<i>0.3</i>	<i>12.8</i>	<i>5.9</i>
	2	68.4	66.0	0.0	0.0	16.3	3.3
		<i>16.8</i>	<i>17.0</i>	<i>0.0</i>	<i>0.0</i>	<i>13.9</i>	<i>3.7</i>
	3	68.8	67.1	0.0	0.1	7.5	19.9
		<i>4.7</i>	<i>4.2</i>	<i>0.0</i>	<i>0.2</i>	<i>6.5</i>	<i>4.7</i>
	4	76.1	73.8	0.0	0.8	15.4	1.7
		<i>13.9</i>	<i>14.5</i>	<i>0.0</i>	<i>1.2</i>	<i>13.9</i>	<i>1.7</i>
Black Rocks:	1	82.3	76.3	0.0	0.0	15.8	0.8
		<i>9.8</i>	<i>8.8</i>	<i>0.0</i>	<i>0.0</i>	<i>8.4</i>	<i>0.9</i>
	2	69.8	66.7	0.0	0.0	17.7	4.7
		<i>11.7</i>	<i>12.4</i>	<i>0.0</i>	<i>0.0</i>	<i>4.8</i>	<i>4.6</i>

On the north side of Snapper Island there were some patches of dead acroporids, mainly staghorn growth form, but coral cover had only decreased by about 20%. There was a nominal reduction of about 10% in total coral cover on Black Rocks.

The marked reduction in the cover of all hard coral groups on the south face of Snapper Island gave a strongly significant location effect in the north/south four site comparison (table 2), and a significant time x location interaction in the three location 1995–1997 comparison.

KEY: ■ Jan 1995

▨ Jan 1997



**Figure 3.** Changes in the cover of encrusting organisms: 1995–1997. Graphs show percentage cover from ten 20-metre line intersect transects at each location. Error bars are standard deviations. Significance of tests for the interaction between time and location (TxL) are shown.

Turf algae increased on the south side of Snapper Island, covering some of the dead coral, and giving a significant location and time x location interaction for this encrusting life form as well. Soft coral cover was low in all three locations and did not change significantly between 1995 and 1997 (figure 3).

The major death of hard corals on the south side of Snapper Island was limited to depths shallower than about 3.4 metres below low tide level, although there was some mortality of acroporids evident to depths of almost four metres. Cover of all coral groups was significantly higher in the deep strata group of transects than in the shallow transects at the same site (tables 2 and 3).

The mortality affected the entire range of coral colony sizes present on the south side of the island, from small newly established individuals to massive poritids over two metres in diameter.

**Table 2.** Summary of ANOVA results for the survey data. Significance of difference for the factors in the three series of analyses are shown. Note: NS = not significant; \* =  $0.01 < p < 0.05$ ; \*\* =  $0.001 < p < 0.01$ ; \*\*\*  $p < 0.001$

Comparison: - factors	Hard coral	Acroporids	Poritids	Faviids	Turf algae	Soft coral
Snapper Is.						
Nth/Sth 4 sites:						
- Location	***	***	*	*	*	NS
- Site (location)	NS	NS	***	NS	*	***
Three locations 1995-1997:						
- Time	***	**	***	**	**	NS
- Location	**	***	***	*	*	NS
- Site (location)	NS	NS	NS	NS	NS	NS
- T x L	**	**	***	*	*	NS
- T x S(L)	NS	NS	NS	NS	NS	NS
Snapper Sth Depth:						
- Depth	***	***	*	**	***	***

**Table 3.** Depth patterns in the abundance of encrusting organisms on the south face of Snapper Island. Figures are means from groups of five 20-metre line intersect transects with standard deviations in italics beneath.

Depth strata	Hard coral	Acroporids	Poritids	Faviids	Turf algae	Soft coral
Shallow (2-3 m)	7.2 <i>6.2</i>	0.2 <i>0.4</i>	5.8 <i>6.4</i>	0.7 <i>0.4</i>	42.3 <i>13.1</i>	1.4 <i>3.1</i>
Deep (4-6 m)	50.7 <i>11.3</i>	18.3 <i>12.0</i>	26.1 <i>13.2</i>	2.0 <i>0.7</i>	5.5 <i>4.7</i>	15.2 <i>11.5</i>