

Table 1. Mean \pm 1 SE densities (no. colonies with continuous live tissue/100 m²) of elkhorn coral (*Acropora palmata*) and staghorn coral (*A. cervicornis*) sampled at 108 shallow patch reef and fore reef sites in the Florida Keys National Marine Sanctuary during July-September 2001. Data are based upon surveys of four 100 m² plots on fore reef sites and four 40 m² plots on patch reefs. Sites asterisked are within FKNMS no-take zones and sites in bold are in the upper Keys regional sector.

Site location	Area (m ²)	<i>Acropora palmata</i>		<i>Acropora cervicornis</i>	
		No. colonies	No./100 m ²	No. colonies	No./100 m ²
<i>Mid-channel patch reefs</i>					
South of Sunshine Key	160	---	0 \pm 0	2	1.25 \pm 1.23
East Washerwoman	160	---	0 \pm 0	---	0 \pm 0
South of Key Vaca	160	---	0 \pm 0	---	0 \pm 0
East of Marker 49	160	---	0 \pm 0	1	0.63 \pm 0.56
Turtle Shoal	160	---	0 \pm 0	---	0 \pm 0
East Turtle Shoal	160	---	0 \pm 0	---	0 \pm 0
Cheeca Rocks SPA #2*	160	---	0 \pm 0	---	0 \pm 0
Cheeca Rocks SPA #1*	160	---	0 \pm 0	---	0 \pm 0
Molasses Channel #2	160	---	0 \pm 0	18	11.25 \pm 9.39
Molasses Channel #1	160	---	0 \pm 0	11	6.88 \pm 3.60
<i>Offshore patch reefs</i>					
NW of Davis Reef	160	---	0 \pm 0	---	0 \pm 0
Diadema control #2	160	---	0 \pm 0	---	0 \pm 0
Diadema control #1	160	---	0 \pm 0	---	0 \pm 0
Diadema experimental #2	160	---	0 \pm 0	---	0 \pm 0
Diadema experimental #1	160	---	0 \pm 0	---	0 \pm 0
West of Molasses #1	160	---	0 \pm 0	1	0.63 \pm 0.56
West of Molasses #2	160	---	0 \pm 0	16	10.00 \pm 4.59
White Banks/Dry Rocks #2	160	---	0 \pm 0	---	0 \pm 0
White Banks/Dry Rocks #1	160	---	0 \pm 0	---	0 \pm 0
East of Mosquito Bank	160	---	0 \pm 0	---	0 \pm 0
South of Carysfort SPA	160	---	0 \pm 0	---	0 \pm 0
Carysfort SPA #1*	160	---	0 \pm 0	---	0 \pm 0
Carysfort SPA #2*	160	---	0 \pm 0	---	0 \pm 0
<i>High-relief spur and groove</i>					
Western Dry Rocks #1	400	4	1.00 \pm 1.00	---	0 \pm 0
Western Dry Rocks #2	400	1	0.25 \pm 0.25	---	0 \pm 0
Sand Key SPA #2*	400	89	22.3 \pm 11.0	---	0 \pm 0
Sand Key SPA #1*	400	---	0 \pm 0	---	0 \pm 0
Eastern Dry Rocks SPA #1*	400	2	0.50 \pm 0.50	---	0 \pm 0
Eastern Dry Rocks SPA #2*	400	---	0 \pm 0	11	2.75 \pm 2.75
Marker 32 Reef	400	---	0 \pm 0	---	0 \pm 0
Western Sambo ER #1*	400	28	7.00 \pm 7.00	12	3.00 \pm 1.29
Western Sambo ER #2*	400	---	0 \pm 0	6	1.50 \pm 0.96
Middle Sambo Reef #1	400	---	0 \pm 0	2	0.50 \pm 0.50
Middle Sambo Reef #2	400	---	0 \pm 0	---	0 \pm 0
Eastern Sambo RO #1*	400	1	0.25 \pm 0.25	---	0 \pm 0
Eastern Sambo RO #2*	400	---	0 \pm 0	---	0 \pm 0
No Name Reef	400	---	0 \pm 0	1	0.25 \pm 0.25
Pelican Shoal	400	---	0 \pm 0	---	0 \pm 0
East of Pelican Shoal	400	---	0 \pm 0	---	0 \pm 0
American Shoal	400	---	0 \pm 0	5	1.25 \pm 0.48
Sombrero Key SPA #1*	400	---	0 \pm 0	---	0 \pm 0
Sombrero Key SPA #2*	400	12	3.00 \pm 1.78	1	0.25 \pm 0.25
East Delta Shoal	400	---	0 \pm 0	5	1.25 \pm 1.25
Pickles Reef P1	400	1	0.25 \pm 0.25	---	0 \pm 0
Pickles Reef P3	400	---	0 \pm 0	---	0 \pm 0
Northeast Pickles Reef	400	---	0 \pm 0	---	0 \pm 0
Molasses Reef SPA #1*	400	2	0.50 \pm 0.29	---	0 \pm 0
Molasses Reef SPA #2*	400	---	0 \pm 0	---	0 \pm 0
Sand Island	400	47	11.75 \pm 8.25	---	0 \pm 0
Elbow Reef SPA #2*	400	---	0 \pm 0	---	0 \pm 0
Elbow Reef SPA #1*	400	97	24.3 \pm 16.9	---	0 \pm 0
South of S. Carysfort #1	400	---	0 \pm 0	---	0 \pm 0
South of S. Carysfort #2	400	---	0 \pm 0	---	0 \pm 0

Site location	Area (m ²)	<i>Acropora palmata</i>		<i>Acropora cervicornis</i>	
		No. colonies	No./100 m ²	No. colonies	No./100 m ²
South Carysfort SPA #2*	400	---	0 ± 0	---	0 ± 0
South Carysfort SPA #1*	400	12	3.00 ± 1.08	---	0 ± 0
Carysfort SPA #2*	400	---	0 ± 0	4	1.00 ± 1.00
Carysfort SPA #1*	400	2	0.50 ± 0.50	---	0 ± 0
<i>Low-relief hard-bottom</i>					
Marker 26	400	---	0 ± 0	6	1.50 ± 1.50
West Maryland Shoal #1	400	---	0 ± 0	3	0.75 ± 0.75
West Maryland Shoal #2	400	---	0 ± 0	7	1.75 ± 0.48
East Maryland Shoal #1	400	---	0 ± 0	17	4.25 ± 1.25
East Maryland Shoal #2	400	---	0 ± 0	4	1.00 ± 0.71
East of Looe Key	400	---	0 ± 0	---	0 ± 0
West of Big Pine Shoal	400	---	0 ± 0	---	0 ± 0
Western Delta Shoal	400	---	0 ± 0	---	0 ± 0
Central Delta Shoal	400	---	0 ± 0	2	0.50 ± 0.50
Crocker Reef #2	400	---	0 ± 0	---	0 ± 0
Crocker Reef #1	400	---	0 ± 0	---	0 ± 0
Davis Reef DL1 SPA*	400	1	0.25 ± 0.25	---	0 ± 0
Davis Reef DL3 SPA*	400	---	0 ± 0	---	0 ± 0
Little Conch Reef #2	400	---	0 ± 0	10	2.50 ± 0.87
Little Conch Reef #1	400	---	0 ± 0	1	0.25 ± 0.25
SW of Conch Reef SPA	400	---	0 ± 0	---	0 ± 0
Conch Reef SPA #1*	400	---	0 ± 0	---	0 ± 0
Conch Reef SPA #2*	400	---	0 ± 0	---	0 ± 0
NW of Conch Reef SPA #1	400	---	0 ± 0	---	0 ± 0
NW of Conch Reef SPA #2	400	17	4.25 ± 4.25	---	0 ± 0
Little Pickles Reef	400	---	0 ± 0	---	0 ± 0
SW of Molasses Reef	400	---	0 ± 0	---	0 ± 0
NE of French Reef #1	400	---	0 ± 0	---	0 ± 0
NE of French Reef #2	400	---	0 ± 0	---	0 ± 0
NE of French Reef #3	400	---	0 ± 0	---	0 ± 0
Dixie Shoal #1	400	---	0 ± 0	---	0 ± 0
Dixie Shoal #2	400	---	0 ± 0	---	0 ± 0
North of Carysfort Reef #1	400	---	0 ± 0	---	0 ± 0
North of Carysfort Reef #2	400	---	0 ± 0	---	0 ± 0

Table 2. Presence (P) of *Acropora palmata* and *A. cervicornis* from survey locations at 195 sites in the Florida Keys National Marine Sanctuary during May-October 2005. Data are based upon surveys of four 15-m x 1-m belt transects at each site. Sites are arranged from southwest to northeast within each habitat type and sites asterisked are within FKNMS no-take zones. SPA = Sanctuary Preservation Area, RO = Research Only Area, ER = Ecological Reserve

Habitat type/site location	Regional sector	Latitude N	Longitude W	<i>A. cervicornis</i>	<i>A. palmata</i>
<i>Mid-channel patch reefs</i>					
North of Vestal Shoal (4.8-5.4 m)	Lower Keys	24° 28.964'	81° 57.379'	P	
North of Vestal Shoal (4.5-4.8 m)	Lower Keys	24° 28.570'	81° 57.134'	P	
North of Sand Key Channel	Lower Keys	24° 27.596'	81° 54.855'	P	
North of Sand Key Channel	Lower Keys	24° 28.457'	81° 53.933'	P	
North of Sand Key Channel	Lower Keys	24° 28.927'	81° 53.723'		
SE of Middle Grounds	Lower Keys	24° 28.780'	81° 52.622'		
North of Rock Key	Lower Keys	24° 29.103'	81° 51.348'		
Western Sambo ER**	Lower Keys	24° 30.007'	81° 43.544'	P	
Western Sambo ER**	Lower Keys	24° 30.350'	81° 42.379'		
North of Middle Sambo	Lower Keys	24° 31.070'	81° 40.899'		
North of E. Sambo RO	Lower Keys	24° 31.287'	81° 39.744'	P	
North of E. Sambo RO	Lower Keys	24° 31.372'	81° 39.514'	P	
North of E. Sambo RO	Lower Keys	24° 31.679'	81° 38.672'		
North of Pelican Shoal	Lower Keys	24° 32.333'	81° 37.588'	P	
North of Pelican Shoal	Lower Keys	24° 31.513'	81° 37.488'	P	
North of Pelican Shoal	Lower Keys	24° 32.222'	81° 36.870'	P	
North of Pelican Shoal	Lower Keys	24° 32.481'	81° 35.674'		
West Washerwoman	Lower Keys	24° 33.364'	81° 34.990'		
Inshore of American Shoal	Lower Keys	24° 32.899'	81° 31.967'	P	
Inshore of American Shoal	Lower Keys	24° 33.863'	81° 28.279'		
Inshore of Looe Key RO	Lower Keys	24° 35.064'	81° 23.656'		
Due east of Marker 45	Middle Keys	24° 39.852'	81° 04.590'	P	
West end of Marathon	Middle Keys	24° 41.132'	81° 02.709'		
West end of Marathon	Middle Keys	24° 41.181'	81° 02.581'		
South of Marathon	Middle Keys	24° 41.307'	81° 02.197'		
South of Marathon	Middle Keys	24° 41.628'	81° 01.001'	P	
West Turtle Shoal	Middle Keys	24° 42.090'	80° 57.873'		
Marker 45	Middle Keys	24° 43.080'	80° 56.050'		
Southeast of Marker 45	Middle Keys	24° 43.432'	80° 55.924'		
East Washerwoman	Middle Keys	24° 43.655'	80° 55.638'		
Cheeca Rocks SPA**	Middle Keys	24° 54.262'	80° 36.895'		
Cheeca Rocks SPA**	Middle Keys	24° 54.249'	80° 36.780'		
Tavernier Rocks	Upper Keys	25° 56.336'	80° 33.792'		
Tavernier Rocks	Upper Keys	24° 56.841'	80° 33.213'		
Tavernier Rocks	Upper Keys	24° 57.083'	80° 33.063'		
Basin Hill Shoals	Upper Keys	25° 12.499'	80° 16.565'		
Basin Hill Shoals	Upper Keys	25° 12.577'	80° 16.440'		
Basin Hill Shoals	Upper Keys	25° 12.820'	80° 15.533'		
Basin Hill Shoals	Upper Keys	25° 13.280'	80° 15.458'		
Basin Hill Shoals	Upper Keys	25° 14.391'	80° 15.371'		
North of Turtle Reef	Upper Keys	25° 18.684'	80° 13.031'		
Southeast of Caesar Creek	Biscayne	25° 21.895'	80° 11.332'		
SW of Pacific Reef	Biscayne	25° 20.923'	80° 10.857'		
Northeast of Caesar Creek	Biscayne	25° 24.503'	80° 09.963'		
Inshore of Pacific Reef	Biscayne	25° 21.047'	80° 09.920'	P	
South of Margot Fish Shoal	Biscayne	25° 25.510'	80° 09.643'		
Margot Fish Shoal	Biscayne	25° 26.727'	80° 09.255'		
Inshore of Ajax Reef	Biscayne	25° 24.181'	80° 09.133'		
SE of Margot Fish Shoal	Biscayne	25° 25.385'	80° 09.082'		
Inshore of Long Reef	Biscayne	25° 26.091'	80° 08.148'		
Northeast Bowles Bank	Biscayne	25° 31.398'	80° 08.121'	P	
<i>Offshore patch reefs</i>					
North of Sand Key	Lower Keys	24° 28.001'	81° 52.890'		
North of Sand Key	Lower Keys	24° 27.964'	81° 52.673'		
West of Ship Channel	Lower Keys	24° 28.589'	81° 48.836'		
Western Sambo ER**	Lower Keys	24° 29.978'	81° 42.198'	P	
Western Sambo ER**	Lower Keys	24° 29.702'	81° 42.166'		
Inshore of Eastern Sambo	Lower Keys	24° 30.091'	81° 40.255'	P	
West of Looe Key RO	Lower Keys	24° 33.910'	81° 23.963'		

Habitat type/site location	Regional sector	Latitude N	Longitude W	<i>A. cervicornis</i>	<i>A. palmata</i>
<i>Offshore patch reefs</i>					
Looe Key RO**	Lower Keys	24° 34.013'	81° 23.551'		
Looe Key RO**	Lower Keys	24° 34.079'	81° 23.120'		
East of Looe Key RO	Lower Keys	24° 34.130'	81° 22.883'		
Inshore of Conch Reef	Upper Keys	24° 56.767'	80° 30.139'		
Inshore of Pickles Reef	Upper Keys	24° 59.748'	80° 25.759'	P	
Inside of Molasses Reef	Upper Keys	25° 01.593'	80° 23.342'	P	
Inshore of Molasses Reef	Upper Keys	25° 01.951'	80° 23.227'	P	
East of WB/Dry Rocks	Upper Keys	25° 02.664'	80° 22.833'		
Inshore of Molasses Reef	Upper Keys	25° 01.922'	80° 22.657'		
Southwest of Elbow Reef	Upper Keys	25° 09.365'	80° 17.289'		
Near Watson's Reef	Upper Keys	25° 10.945'	80° 15.637'		
Carysfort Reef SPA**	Upper Keys	25° 12.276'	80° 13.658'		
Carysfort Reef SPA**	Upper Keys	25° 13.337'	80° 12.955'		
North of Carysfort Reef	Upper Keys	25° 15.137'	80° 12.759'		
North of Turtle Reef	Upper Keys	25° 18.124'	80° 11.748'		
North of Turtle Reef	Upper Keys	25° 18.048'	80° 11.587'		
SW of Pacific Reef	Biscayne	25° 20.703'	80° 09.797'		
SW of Triumph Reef	Biscayne	25° 27.510'	80° 08.241'		
SW of Triumph Reef	Biscayne	25° 27.690'	80° 07.987'		
Inshore of Star Reef	Biscayne	25° 30.430'	80° 07.206'		
<i>Inner line reef tract spur & groove</i>					
Little Grecian Rocks	Upper Keys	25° 07.145'	80° 18.043'		
Key Largo Dry Rocks SPA**	Upper Keys	25° 07.496'	80° 17.888'		P
Key Largo Dry Rocks SPA**	Upper Keys	25° 07.424'	80° 17.754'		P
North Dry Rocks	Upper Keys	25° 07.841'	80° 17.651'		
North North Dry Rocks	Upper Keys	25° 08.253'	80° 17.366'		P
<i>High-relief spur & groove</i>					
Western Sambo ER**	Lower Keys	24° 28.768'	81° 42.885'		
Western Sambo ER**	Lower Keys	24° 28.831'	81° 42.724'		
Middle Sambo	Lower Keys	24° 29.310'	81° 40.504'		
Pelican Shoal	Lower Keys	24° 30.044'	81° 37.717'		
American Shoal	Lower Keys	24° 31.344'	81° 31.344'		
American Shoal	Lower Keys	24° 31.355'	81° 31.242'		
Looe Key SPA**	Lower Keys	24° 32.718'	81° 24.620'		P
Looe Key SPA**	Lower Keys	24° 32.758'	81° 24.345'		P
Sombrero Key SPA**	Middle Keys	24° 37.522'	81° 06.746'		
Sombrero Reef SPA**	Middle Keys	24° 37.535'	81° 06.682'		
Molasses Reef SPA**	Upper Keys	25° 00.552'	80° 22.489'		P
Molasses Reef SPA**	Upper Keys	25° 00.593'	80° 22.488'		
Sand Island	Upper Keys	25° 01.092'	80° 22.089'		P
Sand Island	Upper Keys	25° 01.119'	80° 22.053'		P
South of S. Carysfort	Upper Keys	25° 11.769'	80° 13.651'		
South Carysfort Reef SPA**	Upper Keys	25° 12.429'	80° 13.247'		
Carysfort Reef SPA**	Upper Keys	25° 13.372'	80° 12.564'		P
Ajax Reef	Biscayne	25° 24.595'	80° 07.718'	P	
Fowey Rocks	Biscayne	25° 35.596'	80° 05.777'		
<i>Low-relief hard-bottom (< 6 m)</i>					
East of Eastern Sambo RO	Lower Keys	24° 29.765'	81° 38.729'		
Maryland Shoal	Lower Keys	24° 31.463'	81° 34.453'	P	
Northeast of Alligator Light	Middle Keys	24° 52.795'	80° 35.553'		
Conch Reef SPA**	Middle Keys	24° 57.119'	80° 27.572'		
Conch Reef SPA**	Middle Keys	24° 57.371'	80° 27.442'		
Pickles Reef P4	Upper Keys	24° 59.497'	80° 24.526'		
Molasses Reef SPA**	Upper Keys	25° 00.941'	80° 22.384'		
French Reef SPA**	Upper Keys	25° 02.102'	80° 21.054'		
Northeast of Marker 8	Upper Keys	25° 05.048'	80° 19.300'		
SW of Watson's Reef	Upper Keys	25° 10.555'	80° 15.970'	P	
SW of Watson's Reef	Upper Keys	25° 10.987'	80° 15.851'		
Carysfort Reef SPA	Upper Keys	25° 13.821'	80° 12.638'		
SW of Pacific Reef	Biscayne	25° 19.927'	80° 10.889'	P	
Inshore of Pacific Reef	Biscayne	25° 21.691'	80° 09.244'		
Long Reef	Biscayne	25° 25.431'	80° 07.538'		
<i>Low-relief spur & groove (< 6 m)</i>					
Coffins Patch	Middle Keys	24° 41.756'	80° 56.176'		

Habitat type/site location	Regional sector	Latitude N	Longitude W	<i>A. cervicornis</i>	<i>A. palmata</i>
<i>Low-relief spur & groove (< 6 m)</i>					
Triumph Reef	Biscayne	25° 28.598'	80° 06.684'		
Fowey Rocks	Biscayne	25° 35.319'	80° 05.755'		P
<i>Low-relief hard-bottom (6-13 m)</i>					
Vestal Shoal	Lower Keys	24° 27.047'	81° 59.001'		
West of Maryland Shoal	Lower Keys	24° 32.866'	81° 26.843'		
West of Looe Key	Lower Keys	24° 32.397'	81° 26.574'		
East of American Shoal	Lower Keys	24° 32.382'	81° 26.530'		
Big Pine Shoal	Lower Keys	24° 34.075'	81° 195.10'		
East of Sombrero Reef	Middle Keys	24° 38.791'	81° 03.761'	P	
SW of Tennessee Light	Middle Keys	24° 43.342'	80° 50.336'		
Tennessee Reef RO**	Middle Keys	24° 45.963'	80° 45.219'		
Tennessee Reef RO**	Middle Keys	24° 46.051'	80° 45.003'		
Northeast of Alligator Light	Middle Keys	24° 53.277'	80° 33.807'		
North of Davis Reef	Upper Keys	24° 56.511'	80° 29.697'		
North of Molasses Reef	Upper Keys	25° 01.376'	80° 21.916'		
North of French Reef SPA	Upper Keys	25° 02.332'	80° 20.712'		
North of Dixie Shoal	Upper Keys	25° 05.433'	80° 19.109'		
South Carysfort Reef SPA**	Upper Keys	25° 12.624'	80° 12.996'		
Carysfort Reef SPA**	Upper Keys	25° 13.289'	80° 12.562'		
North of Carysfort Reef	Upper Keys	25° 14.119'	80° 12.165'		
North of Carysfort Reef	Upper Keys	25° 16.571'	80° 11.912'		
NE of Turtle Reef	Upper Keys	25° 17.605'	80° 10.518'		
Near SE BNP Boundary	Upper Keys	25° 18.238'	80° 09.990'		
Near SE BNP Boundary	Upper Keys	25° 18.542'	80° 09.549'		
Near SE BNP Boundary	Biscayne	25° 19.234'	80° 09.291'		
<i>Patchy hard-bottom (6-13 m)</i>					
Satan Shoal	Lower Keys	24° 26.786'	81° 57.774'		
North of Sand Key Channel	Lower Keys	24° 27.282'	81° 55.143'		
East of Rock Key	Lower Keys	24° 28.126'	81° 49.330'		
West of Pelican Shoal	Lower Keys	24° 29.794'	81° 39.073'		
Big Pine Shoal	Lower Keys	24° 34.695'	81° 18.483'		
South of Money Key	Middle Keys	24° 36.242'	81° 11.433'		
East of Sombrero Light	Middle Keys	24° 38.114'	81° 05.738'		
Northeast of Alligator Light	Middle Keys	24° 53.087'	80° 34.543'		
Near Grecian Rocks	Upper Keys	25° 05.914'	80° 17.957'		
Inshore of Long Reef	Biscayne	25° 26.945'	80° 07.260'		
Inshore of Star Reef	Biscayne	25° 30.679'	80° 06.977'	P	
<i>Low-relief spur & groove (6-13 m)</i>					
Sand Key SPA**	Lower Keys	24° 27.085'	81° 52.657'		
Sand Key SPA**	Lower Keys	24° 27.129'	81° 52.445'		
Key West Ship Channel	Lower Keys	24° 27.868'	81° 49.310'		
Marker 32	Lower Keys	24° 28.444'	81° 44.344'		
Western Sambo ER**	Lower Keys	24° 28.670'	81° 43.323'	P	
NW of Western Sambo	Lower Keys	24° 28.743'	81° 43.130'		
East of Looe Key	Lower Keys	24° 33.097'	81° 22.815'		
SW of Tennessee Light	Middle Keys	24° 43.571'	80° 49.505'		
East of Alligator Light	Middle Keys	24° 51.587'	80° 35.799'		
Crocker Reef	Middle Keys	24° 54.459'	80° 31.575'		
Davis Reef SPA**	Middle Keys	24° 55.261'	80° 30.325'		
Davis Reef SPA**	Middle Keys	24° 55.433'	80° 30.114'		
South of Elbow Reef	Upper Keys	25° 07.426'	80° 16.443'		
Carysfort Reef SPA**	Upper Keys	25° 13.363'	80° 12.403'		
North of Carysfort Reef	Upper Keys	25° 16.107'	80° 11.053'		
Fowey Rocks	Biscayne	25° 35.902'	80° 05.654'		
<i>Fore reef slope (15-19 m)</i>					
Key West Ship Channel	Lower Keys	24° 28.035'	81° 49.942'		
West of Ship Channel	Lower Keys	24° 27.953'	81° 48.656'		
Key West Ship Channel	Lower Keys	24° 28.017'	81° 46.824'		
West of Marker 32	Lower Keys	24° 28.238'	81° 44.881'		
East of American Shoal	Lower Keys	24° 30.829'	81° 32.589'		
East of Looe Key	Lower Keys	24° 33.035'	81° 22.539'		
Offshore of Sombrero Reef	Middle Keys	24° 37.373'	81° 06.492'		
Northeast of Alligator Light	Middle Keys	24° 52.211'	80° 34.552'		
Northeast of Alligator Light	Middle Keys	24° 52.503'	80° 34.138'		

Habitat type/site location	Regional sector	Latitude N	Longitude W	<i>A. cervicornis</i>	<i>A. palmata</i>
<i>Fore reef slope (15-19 m)</i>					
Offshore of Little Conch	Middle Keys	24° 56.211'	80° 28.431'		
Offshore of Pickles Reef	Upper Keys	24° 58.796'	80° 25.055'		
Offshore of Pickles Reef	Upper Keys	24° 58.985'	80° 24.881'		
Offshore of Molasses SPA	Upper Keys	25° 00.248'	80° 22.792'		
Northeast of Elbow Reef SPA	Upper Keys	25° 09.184'	80° 14.775'		
Near SE BNP Boundary	Biscayne	25° 19.240'	80° 09.178'		
Northeast of Triumph Reef	Biscayne	25° 29.670'	80° 06.219'		
<i>Deeper fore reef slope (22-27 m)</i>					
Key West Ship Channel	Lower Keys	24° 27.977'	81° 47.192'		
Offshore of Pelican Shoal	Lower Keys	24° 30.253'	81° 34.918'		
West of American Shoal	Lower Keys	24° 30.664'	81° 32.509'		
SW of Alligator Light	Middle Keys	24° 49.819'	80° 38.377'		
Offshore of Little Conch	Middle Keys	24° 56.158'	80° 28.355'		
Offshore of Little Conch	Middle Keys	24° 56.193'	80° 28.218'		
Offshore of Dry Rocks	Upper Keys	25° 06.344'	80° 17.159'		
Offshore of Dry Rocks	Upper Keys	25° 07.030'	80° 16.523'	P	
Offshore of Elbow Reef	Upper Keys	25° 08.384'	80° 15.345'		

Table 3. Original 2006 sampling design and actual sites surveyed for staghorn (*Acropora cervicornis*) and elkhorn corals (*A. palmata*) in the upper Keys region of the Florida Keys National Marine Sanctuary by habitat type and protection level. SPA = Sanctuary Preservation Area, Reference Area = open to fishing

Habitat type (depth range, m)	Protection level	No. sites planned	No. sites completed
Mid channel patch reef	Reference area	15	14
Offshore patch reef	Reference area	14	19
	Key Largo Dry Rocks SPA Carysfort/S. Carysfort Reef SPA	2	4
Reef rubble	Reference area	5	4
	Elbow Reef SPA	2	3
	Molasses Reef SPA	2	2
Hard-bottom/sand/rubble matrix	Reference		1
	Molasses Reef SPA		2
Patchy hard-bottom in sand (< 6 m)	Reference		1
	Carysfort/S. Carysfort Reef SPA		1
Low-relief hard-bottom (< 6 m)	Reference area	10	9
	Carysfort/S. Carysfort Reef SPA	2	
	Elbow Reef SPA	2	
	Molasses Reef SPA	2	
Inner line reef tract	Reference area	4	4
	Key Largo Dry Rocks SPA	2	2
	Grecian Rocks SPA	2	2
High relief spur & groove (< 6 m)	Reference area	9	9
	Carysfort/S. Carysfort Reef SPA	2	2
	Elbow Reef SPA	2	2
	French Reef SPA	2	2
	Molasses Reef SPA	2	2
Patchy hard-bottom in sand (6-15 m)	Reference area	4	4
	Carysfort/S. Carysfort Reef SPA	1	
	Elbow Reef SPA	1	
Low-relief hard-bottom (6-15 m)	Reference area	9	6
	Carysfort/S. Carysfort Reef SPA	2	1
	Elbow Reef SPA	1	2
Low-relief spur & groove (6-15 m)	Reference area	7	7
	Carysfort/S. Carysfort Reef SPA	2	2
Total		108	107

Table 4. Chronological list of survey locations for staghorn coral (*Acropora cervicornis*) and elkhorn coral (*A. palmata*) in the upper Keys region of the Florida Keys National Marine Sanctuary during August 2006. Depth range indicates minimum and maximum depth of 15-m x 1-m transects surveyed.

Site #	Date	Site location	Latitude (N)	Longitude (W)	Habitat type
63	8/1/2006	SW of Pickles Reef	24° 58.468'	80° 25.737'	Low-relief hard-bottom (< 6 m)
21	8/1/2006	Inshore of Pickles Reef	24° 59.677'	80° 26.775'	Offshore patch reef
22	8/1/2006	Inshore of Pickles Reef	24° 59.916'	80° 25.401'	Offshore patch reef
35	8/1/2006	Pickles Reef	24° 59.029'	80° 25.041'	High-relief spur and groove
36	8/1/2006	Pickles Reef	24° 59.113'	80° 25.029'	High-relief spur and groove
37	8/1/2006	Pickles Reef	24° 59.302'	80° 24.864'	High-relief spur and groove
38	8/1/2006	Pickles Reef	24° 59.387'	80° 24.711'	Low-relief hard-bottom (< 6 m)
105	8/2/2006	Molasses Reef SPA	25° 00.553'	80° 22.488'	High-relief spur and groove
106	8/2/2006	Molasses Reef SPA	25° 00.675'	80° 22.404'	High-relief spur and groove
107	8/2/2006	Molasses Reef SPA	25° 00.616'	80° 22.702'	Hard-bottom-sand-rubble matrix
103	8/2/2006	Molasses Reef SPA	25° 00.737'	80° 22.513'	Reef rubble
104	8/2/2006	Molasses Reef SPA	25° 00.808'	80° 22.513'	Reef rubble
108	8/2/2006	Molasses Reef SPA	25° 00.831'	80° 22.329'	Hard-bottom-sand-rubble matrix
39	8/2/2006	Sand Island	25° 01.099'	80° 22.104'	High-relief spur and groove
40	8/3/2006	Outside French Reef SPA	25° 01.898'	80° 21.165'	High-relief spur and groove
101	8/3/2006	French Reef SPA	25° 02.023'	80° 21.072'	High-relief spur and groove
102	8/3/2006	French Reef SPA	25° 02.135'	80° 20.862'	High-relief spur and groove
64	8/3/2006	North of French Reef SPA	25° 02.429'	80° 20.587'	Low-relief spur and groove (6-15 m)
16	8/3/2006	North of French Reef SPA	25° 02.571'	80° 20.960'	Reef rubble
23	8/3/2006	White Banks	25° 02.258'	80° 22.404'	Offshore patch reef
24	8/3/2006	White Banks/Dry Rocks	25° 02.614'	80° 22.168'	Offshore patch reef
98	8/4/2006	Key Largo Dry Rocks SPA	25° 07.399'	80° 17.856'	Inner line spur and groove
97	8/4/2006	Key Largo Dry Rocks SPA	25° 07.380'	80° 17.897'	Inner line spur and groove
95	8/4/2006	Near Dry Rocks SPA	25° 07.275'	80° 17.951'	Offshore patch reef
252	8/4/2006	Near Dry Rocks SPA	25° 07.429'	80° 18.125'	Offshore patch reef
100	8/4/2006	Grecian Rocks SPA	25° 06.559'	80° 18.353'	Inner line spur and groove
99	8/4/2006	Grecian Rocks SPA	25° 06.627'	80° 18.239'	Inner line spur and groove
74	8/4/2006	South of Grecian Rocks SPA	25° 06.339'	80° 18.457'	Inner line spur and groove
89	8/5/2006	Elbow Reef SPA	25° 08.333'	80° 15.686'	High-relief spur and groove
90	8/5/2006	Elbow Reef SPA	25° 08.474'	80° 15.577'	High-relief spur and groove
91	8/5/2006	Elbow Reef SPA	25° 08.793'	80° 15.522'	Reef rubble
92	8/5/2006	Elbow Reef SPA	25° 08.795'	80° 15.623'	Reef rubble
93	8/5/2006	Elbow Reef SPA	25° 08.232'	80° 15.629'	Low-relief hard-bottom (6-15 m)
94	8/5/2006	Elbow Reef SPA	25° 08.362'	80° 15.549'	Low-relief hard-bottom (6-15 m)
87	8/5/2006	Elbow Reef SPA	25° 08.492'	80° 15.740'	Reef rubble
215	8/6/2006	Inshore of 3 Sisters Patch Reef	25° 01.454'	80° 24.142'	Offshore patch reef
26	8/6/2006	Mosquito Bank	25° 03.168'	80° 21.739'	Offshore patch reef
27	8/6/2006	Inshore of Grecian Rocks SPA	25° 06.671'	80° 19.698'	Offshore patch reef
2	8/6/2006	Inshore of Dry Rocks	25° 07.787'	80° 19.241'	Mid-channel patch reef
3	8/6/2006	Inshore of Dry Rocks	25° 08.339'	80° 18.915'	Mid-channel patch reef
1	8/6/2006	Mosquito Bank	25° 04.515'	80° 22.930'	Mid-channel patch reef
6	8/7/2006	Basin Hill Shoals	25° 12.829'	80° 17.273'	Mid-channel patch reef
7	8/7/2006	Basin Hill Shoals	25° 12.818'	80° 15.223'	Mid-channel patch reef
8	8/7/2006	Basin Hill Shoals	25° 12.959'	80° 15.566'	Mid-channel patch reef
9	8/7/2006	Basin Hill Shoals	25° 13.932'	80° 14.928'	Mid-channel patch reef
10	8/7/2006	Basin Hill Shoals	25° 15.859'	80° 14.737'	Mid-channel patch reef
11	8/7/2006	Basin Hill Shoals	25° 16.002'	80° 14.796'	Mid-channel patch reef
12	8/8/2006	Marker 23	25° 17.205'	80° 14.583'	Mid-channel patch reef
13	8/8/2006	Turtle Rocks	25° 18.008'	80° 13.149'	Mid-channel patch reef
34	8/8/2006	Turtle Reef	25° 18.509'	80° 12.036'	Offshore patch reef
58	8/10/2006	South of Elbow Reef SPA	25° 08.415'	80° 16.168'	Patchy hard-bottom (6-15 m)
66	8/10/2006	South of Elbow Reef SPA	25° 08.099'	80° 15.718'	Low-relief spur and groove (6-15 m)
67	8/10/2006	Northeast of Elbow Reef SPA	25° 08.851'	80° 15.159'	Low-relief spur and groove (6-15 m)
68	8/10/2006	Northeast of Elbow Reef SPA	25° 09.056'	80° 15.021'	Low-relief spur and groove (6-15 m)
59	8/10/2006	North of Elbow Reef SPA	25° 09.267'	80° 15.003'	Low-relief hard-bottom (6-15 m)
Site #	Date	Site location	Latitude (N)	Longitude (W)	Habitat type
30	8/10/2006	Inshore of Watson's Reef	25° 11.229'	80° 15.407'	Offshore patch reef
46	8/10/2006	Inshore of Watson's Reef	25° 11.303'	80° 15.666'	Low-relief hard-bottom (< 6 m)
5	8/10/2006	Inshore of Watson's Reef	25° 11.776'	80° 15.265'	Mid-channel patch reef

70	8/11/2006	North of Watson's Reef	25° 10.612'	80° 14.332'	Low-relief hard-bottom (6-15 m)
69	8/11/2006	North of Watson's Reef	25° 10.941'	80° 14.083'	Low-relief spur and groove (6-15 m)
71	8/11/2006	South of Carysfort Reef SPA	25° 11.580'	80° 13.453'	Patchy hard-bottom (6-15 m)
42	8/11/2006	Near Maitland Grounding Site	25° 11.843'	80° 13.607'	High-relief spur and groove
72	8/11/2006	South of Carysfort Reef SPA	25° 11.749'	80° 13.317'	Low-relief spur and groove (6-15 m)
43	8/11/2006	Near Maitland Grounding Site	25° 11.987'	80° 13.537'	High-relief spur and groove
20	8/11/2006	South of Carysfort Reef SPA	25° 11.966'	80° 13.787'	Low-relief hard-bottom (< 6 m)
45	8/11/2006	Inshore of Watson's Reef	25° 10.178'	80° 16.705'	Offshore patch reef
86	8/12/2006	SE corner of Carysfort SPA	25° 12.087'	80° 13.088'	Low-relief spur and groove (6-15 m)
84	8/12/2006	SE corner of Carysfort SPA	25° 12.188'	80° 12.978'	Low-relief spur and groove (6-15 m)
78	8/12/2006	South Carysfort Reef	25° 12.450'	80° 13.341'	High-relief spur and groove
80	8/12/2006	SW corner of Carysfort SPA	25° 12.292'	80° 13.587'	Offshore patch reef
79	8/12/2006	South Carysfort Reef	25° 12.523'	80° 13.195'	High-relief spur and groove
85	8/12/2006	Central Carysfort Reef SPA	25° 12.910'	80° 12.759'	Low-relief hard-bottom (6-15 m)
83	8/12/2006	Western Carysfort Reef SPA	25° 13.140'	80° 13.144'	Offshore patch reef
82	8/12/2006	Western Carysfort Reef SPA	25° 12.081'	80° 13.324'	Offshore patch reef
75	8/13/2006	North Dry Rocks	25° 07.833'	80° 17.650'	Inner line spur and groove
240	8/13/2006	North-North Dry Rocks	25° 08.210'	80° 17.373'	Inner line spur and groove
241	8/13/2006	Horseshoe Reef	25° 08.386'	80° 17.650'	Inner line spur and groove
19	8/13/2006	North of Horseshoe Reef	25° 08.747'	80° 17.743'	Low-relief hard-bottom (< 6 m)
17	8/14/2006	Inshore of Dixie Shoal	25° 03.388'	80° 20.085'	Reef rubble
41	8/14/2006	Sand Island	25° 01.135'	80° 22.016'	High-relief spur and groove
18	8/14/2006	Inshore of Dixie Shoal	25° 03.599'	80° 20.068'	Reef rubble
44	8/14/2006	Inshore of Dixie Shoal	25° 04.154'	80° 20.135'	Low-relief hard-bottom (< 6 m)
55	8/14/2006	South of Grecian Rocks	25° 05.604'	80° 18.094'	Low-relief hard-bottom (6-15 m)
56	8/15/2006	Offshore of Grecian Rocks	25° 05.905'	80° 17.762'	Low-relief hard-bottom (6-15 m)
65	8/15/2006	Offshore of Dry Rocks SPA	25° 07.179'	80° 16.844'	Low-relief spur and groove (6-15 m)
57	8/15/2006	Offshore of Dry Rocks SPA	25° 07.427'	80° 16.664'	Low-relief hard-bottom (6-15 m)
28	8/15/2006	NW of Elbow Reef SPA	25° 09.262'	80° 16.084'	Offshore patch reef
29	8/15/2006	NW of Elbow Reef SPA	25° 10.090'	80° 16.196'	Offshore patch reef
47	8/15/2006	Inshore of Carysfort Reef SPA	25° 12.157'	80° 14.751'	Offshore patch reef
48	8/15/2006	Inshore of Carysfort Reef SPA	25° 12.579'	80° 13.850'	Offshore patch reef
14	8/16/2006	Inshore of Turtle Reef	25° 18.286'	80° 13.481'	Mid-channel patch reef
15	8/16/2006	Inshore of Turtle Reef	25° 18.578'	80° 12.699'	Mid-channel patch reef
62	8/16/2006	South of BNP Boundary	25° 17.800'	80° 10.408'	Patchy hard-bottom (6-15 m)
61	8/16/2006	South of BNP Boundary	25° 17.373'	80° 10.660'	Patchy hard-bottom (6-15 m)
33	8/16/2006	Offshore of Turtle Reef	25° 17.918'	80° 11.816'	Offshore patch reef
76	8/16/2006	Turtle Reef	25° 17.686'	80° 13.156'	Offshore patch reef
77	8/17/2006	North of Turtle Reef	25° 18.250'	80° 12.849'	Offshore patch reef
53	8/17/2006	South of Turtle Rocks Mooring	25° 16.814'	80° 12.511'	Low-relief hard-bottom (< 6 m)
52	8/17/2006	NW of Carysfort Reef SPA	25° 16.287'	80° 12.643'	Low-relief hard-bottom (< 6 m)
60	8/17/2006	NW of Carysfort Reef SPA	25° 16.075'	80° 12.628'	Hard-bottom-sand-rubble matrix
51	8/17/2006	Inshore of Carysfort Reef SPA	25° 14.511'	80° 13.446'	Patchy hard-bottom (< 6 m)
223	8/18/2006	South of Carysfort Reef SPA	25° 12.054'	80° 13.599'	High-relief spur and groove
50	8/18/2006	Inshore of Carysfort Reef SPA	25° 13.269'	80° 13.492'	Low-relief hard-bottom (< 6 m)
81	8/18/2006	NW corner of Carysfort SPA	25° 13.843'	80° 12.635'	Patchy hard-bottom (< 6 m)
210	8/18/2006	North of Carysfort Reef SPA	25° 14.855'	80° 12.050'	Reef rubble
232	8/18/2006	North of Carysfort Reef SPA	25° 14.091'	80° 12.410'	Low-relief hard-bottom (6-15 m)
260	8/18/2006	NW corner of Carysfort SPA	25° 14.109'	80° 12.791'	Offshore patch reef

Table 5. Staghorn (*Acropora cervicornis*) and elkhorn coral (*A. palmata*) survey locations in the upper Keys region of the Florida Keys National Marine Sanctuary during August 1-18, 2006. Sites are arranged from southwest to northeast within each habitat type and sites within Sanctuary Preservation Areas (SPAs) are asterisked. Depth range indicates the minimum and maximum depths of 15-m x 1-m transect surveyed.

Habitat type/site location	Latitude N	Longitude W	Min. depth (m)	Max. depth (m)
<i>Mid-channel patch reefs</i>				
1 - Mosquito Bank	25° 04.515'	80° 22.930'	3.3	5.4
2 - Inshore of Dry Rocks	25° 07.787'	80° 19.241'	1.5	1.8
3 - Inshore of Dry Rocks	25° 08.339'	80° 18.915'	1.5	2.1
5 - Inshore of Watson's Reef	25° 11.776'	80° 15.265'	1.5	2.1
7 - Basin Hill Shoals	25° 12.818'	80° 15.223'	1.5	1.8
6 - Basin Hill Shoals	25° 12.829'	80° 17.273'	1.2	1.5
8 - Basin Hill Shoals	25° 12.959'	80° 15.566'	1.8	2.1
9 - Basin Hill Shoals	25° 13.932'	80° 14.928'	1.5	2.4
11 - Basin Hill Shoals	25° 15.859'	80° 14.737'	2.1	3.6
10 - Basin Hill Shoals	25° 16.002'	80° 14.796'	3.6	4.5
12 - Marker 23	25° 17.205'	80° 14.583'	4.2	5.4
13 - Turtle Rocks	25° 18.008'	80° 13.149'	4.8	6.6
14 - Inshore of Turtle Reef	25° 18.286'	80° 13.481'	1.2	3.6
15 - Inshore of Turtle Reef	25° 18.578'	80° 12.699'	0.6	1.5
<i>Offshore patch reefs</i>				
21 - Inshore of Pickles	24° 59.677'	80° 26.775'	4.8	5.7
22 - Inshore of Pickles	24° 59.916'	80° 25.401'	4.2	5.1
215 - Inshore of 3 Sisters	25° 01.454'	80° 24.142'	3.6	4.2
23 - White Banks	25° 02.258'	80° 22.404'	4.5	6.3
24 - White Banks/Dry Rocks	25° 02.614'	80° 22.168'	1.5	4.5
26 - Mosquito Bank	25° 03.168'	80° 21.739'	2.1	2.7
27 - Inshore of Grecian Rocks SPA	25° 06.671'	80° 19.698'	3.3	5.1
95 - Near Key Largo Dry Rocks SPA	25° 07.275'	80° 17.951'	5.4	7.8
252 - Near Key Largo Dry Rocks SPA	25° 07.429'	80° 18.125'	4.8	5.4
28 - NW of Elbow Reef SPA	25° 09.262'	80° 16.084'	3.9	5.4
29 - NW of Elbow Reef SPA	25° 10.090'	80° 16.196'	1.5	3.3
45 - Inshore of Watson's Reef	25° 10.178'	80° 16.705'	3.0	3.6
30 - Inshore of Watson's Reef	25° 11.229'	80° 15.407'	1.2	5.1
82 - Western Carysfort Reef SPA**	25° 12.081'	80° 13.324'	7.5	8.7
47 - Inshore of Carysfort Reef SPA	25° 12.157'	80° 14.751'	2.4	3.6
80 - SW corner of Carysfort SPA**	25° 12.292'	80° 13.587'	4.8	6.3
48 - Inshore of Carysfort Reef SPA	25° 12.579'	80° 13.850'	3.6	4.2
83 - Western Carysfort Reef SPA**	25° 13.140'	80° 13.144'	3.9	5.7
260 - NW corner of Carysfort SPA**	25° 14.109'	80° 12.791'	5.4	7.2
76 - Turtle Reef	25° 17.686'	80° 13.156'	2.4	4.8
33 - Offshore of Turtle Reef	25° 17.918'	80° 11.816'	8.7	9.9
77 - Adjacent to marker	25° 18.250'	80° 12.849'	3.0	3.9
34 - Turtle Reef	25° 18.509'	80° 12.036'	4.2	5.1
<i>Reef rubble</i>				
103 - Molasses SPA**	25° 00.737'	80° 22.513'	1.5	1.8
104 - Molasses SPA**	25° 00.808'	80° 22.513'	3.0	3.3
16 - North of French Reef SPA	25° 02.571'	80° 20.960'	4.8	5.1
17 - Inshore of Dixie Shoal	25° 03.388'	80° 20.085'	6.6	7.2
18 - Inshore of Dixie Shoal	25° 03.599'	80° 20.068'	5.1	5.7
87 - Elbow Reef SPA**	25° 08.492'	80° 15.740'	2.1	3.0
91 - Elbow Reef SPA**	25° 08.793'	80° 15.522'	3.6	5.1
92 - Elbow Reef SPA**	25° 08.795'	80° 15.623'	2.7	3.3
210 - North of Carysfort Reef SPA	25° 14.855'	80° 12.050'	2.7	3.6
<i>Hard-bottom-sand-rubble matrix</i>				
107 - Molasses SPA**	25° 00.616'	80° 22.702'	3.0	4.5
108 - Molasses SPA**	25° 00.831'	80° 22.329'	3.0	3.9
60 - NW of Carysfort Reef SPA	25° 16.075'	80° 12.628'	7.5	8.1
<i>Patchy hard-bottom (< 6 m)</i>				
81 - NW corner of Carysfort SPA**	25° 13.843'	80° 12.635	5.7	6.0
51 - Inshore of Carysfort Reef SPA	25° 14.511'	80° 13.446	2.7	3.3

Habitat type/site location	Latitude N	Longitude W	Min. depth (m)	Max. depth (m)
<i>Low-relief hard-bottom (< 6 m)</i>				
63 - SW of Pickles	24° 58.468'	80° 25.737'	4.8	6.0
38 - Pickles Reef	24° 59.387'	80° 24.711'	4.2	5.1
44 - Inshore of Dixe Shoal	25° 04.154'	80° 20.135'	3.9	4.5
19 - North of Horseshoe Reef	25° 08.747'	80° 17.743'	3.0	3.9
46 - Inshore of Watson's Reef	25° 11.303'	80° 15.666'	2.4	2.7
20 - South of Carysfort Reef SPA	25° 11.966'	80° 13.787'	3.0	3.9
50 - Inshore of Carysfort Reef SPA	25° 13.269'	80° 13.492'	3.9	4.2
52 - NW of Carysfort Reef SPA	25° 16.287'	80° 12.643'	4.2	4.8
53 - South of Buoy at Turtle Rocks	25° 16.814'	80° 12.511'	2.7	3.6
<i>Inner line reef tract spur & groove</i>				
74 - South of Grecian Rocks SPA	25° 06.339	80° 18.457'	3.0	3.6
100 - Grecian Rocks SPA**	25° 06.559	80° 18.353'	0.6	1.5
99 - Grecian Rocks SPA**	25° 06.627	80° 18.239'	1.2	2.4
97 - Key Largo Dry Rocks SPA**	25° 07.380	80° 17.897'	1.2	3.6
98 - Key Largo Dry Rocks SPA**	25° 07.399	80° 17.856'	1.2	2.7
75 - North Dry Rocks	25° 07.833	80° 17.650'	2.4	4.8
240 - North-North Dry Rocks	25° 08.210	80° 17.373'	2.4	4.2
241 - Horseshoe Reef	25° 08.386	80° 17.650'	2.7	5.4
<i>High-relief spur & groove</i>				
35 - Pickles Reef	24° 59.029	80° 25.041'	2.4	4.2
36 - Pickles Reef	24° 59.113	80° 25.029'	4.2	6.3
37 - Pickles Reef	24° 59.302	80° 24.864'	2.4	4.2
105 - Molasses Reef SPA**	25° 00.553	80° 22.488'	2.1	3.6
106 - Molasses Reef SPA**	25° 00.675	80° 22.404'	3.6	5.7
39 - Sand Island	25° 01.099	80° 22.104'	2.1	3.3
41 - Sand Island	25° 01.135	80° 22.016'	3.6	5.4
40 - Outside French Reef SPA	25° 01.898	80° 21.165'	3.6	5.4
101 - French Reef SPA**	25° 02.023	80° 21.072'	4.2	6.0
102 - French Reef SPA**	25° 02.135	80° 20.862'	3.0	4.2
89 - Elbow Reef SPA**	25° 08.333	80° 15.686'	4.5	7.2
90 - Elbow Reef SPA**	25° 08.474	80° 15.577'	3.6	6.0
42 - Near Maitland Grounding Site	25° 11.843	80° 13.607'	3.0	5.1
43 - Near Maitland Grounding Site	25° 11.987	80° 13.537'	2.7	4.2
223 - South of Carysfort Reef SPA	25° 12.054	80° 13.599'	2.7	3.9
78 - South Carysfort Reef**	25° 12.450	80° 13.341'	2.4	4.5
79 - South Carysfort Reef**	25° 12.523	80° 13.195'	0.9	3.0
<i>Patchy hard-bottom (6-15 m)</i>				
58 - South of Elbow Reef SPA	25° 08.415	80° 16.168'	6.6	7.2
71 - South of Carysfort Reef SPA	25° 11.580	80° 13.453'	11.7	13.5
61 - South of BNP Boundary	25° 17.373	80° 10.660'	9.3	9.9
62 - South of BNP Boundary	25° 17.800	80° 10.408'	9.0	9.6
<i>Low-relief hard-bottom (6-15 m)</i>				
55 - South of Grecian Rocks	25° 05.604	80° 18.094'	9.0	9.6
56 - Offshore of Grecian Rocks	25° 05.905	80° 17.762'	7.8	9.0
57 - Offshore of Key Largo Dry Rocks	25° 07.427	80° 16.664'	8.7	9.3
93 - Elbow Reef SPA**	25° 08.232	80° 15.629'	8.1	9.6
94 - Elbow Reef SPA**	25° 08.362	80° 15.549'	7.5	8.7
59 - North of Elbow Reef SPA	25° 09.267	80° 15.003'	7.8	8.4
70 - North of Watson's Reef	25° 10.612	80° 14.332'	10.8	11.7
85 - Central Carysfort Reef SPA**	25° 12.910	80° 12.759'	11.4	12.3
232 - North of Carysfort Reef SPA	25° 14.091	80° 12.410'	9.6	12.3
<i>Low-relief spur & groove (6-15 m)</i>				
64 - North of French Reef SPA	25° 02.429	80° 20.587'	6.3	8.7
65 - Offshore of Key Largo Dry Rocks	25° 07.179	80° 16.844'	10.5	12.0
66 - South of Elbow Reef SPA	25° 08.099	80° 15.718'	9.3	10.5
67 - Northeast of Elbow Reef SPA	25° 08.851	80° 15.159'	11.1	12.6
68 - Northeast of Elbow Reef SPA	25° 09.056	80° 15.021'	10.5	11.7
69 - North of Watson's Reef	25° 10.941	80° 14.083'	9.9	11.1
72 - South of Carysfort Reef SPA	25° 11.749	80° 13.317'	11.4	12.6
86 - SE corner of Carysfort SPA**	25° 12.087	80° 13.088'	13.2	15.0
84 - SE corner of Carysfort SPA**	25° 12.188	80° 12.978'	11.4	12.6

Table 6. Site descriptions for *Acropora* coral survey locations in the upper Keys region of the Florida Keys National Marine Sanctuary during August 1-16, 2006. Sites are arranged from southwest to northeast within each habitat type.

Habitat type/site number and location	Site description
<i>Mid-channel patch reefs</i>	
1 - Mosquito Bank	Reference mid-channel patch reef on Mosquito Bank, 2-5 feet, large colonies of <i>Montastraea faveolata</i> , as well as large gorgonians such as <i>Pseudoplexaura porosa</i> and <i>Plexaura homomalla</i> , no live <i>Acropora</i> observed within the general survey area
2 - Inshore of Dry Rocks	Reference mid-channel patch reef inshore of Key Largo Dry Rocks SPA, 11-18 feet, site about 12 m in diameter, large coral heads, abundant <i>Cliona delitrix</i> , no live <i>Acropora</i> observed within general survey area
3 - Inshore of Dry Rocks	Reference mid-channel patch reef inshore of Key Largo Dry Rocks SPA, 5-6 feet, gorgonians and small head corals abundant, some sparse <i>Thalassia</i> seagrass, no live <i>Acropora</i> observed within general survey area
6 - Basin Hill Shoals	Reference mid-channel patch reef at Basin Hill Shoals, 5-7 feet, head corals interspersed with sand, <i>Siderastrea siderea</i> abundant, large colonies sea plumes and <i>Plexaura homomalla</i> present, no live <i>Acropora</i> observed in general survey area
8 - Basin Hill Shoals	Reference mid-channel patch reef at Basin Hill Shoals, 4-5 feet, similar to site 7, interspersed with <i>Thalassia</i> seagrass, smaller head corals and large gorgonians present, one small patch of live <i>Acropora cervicornis</i> observed outside of transects
5 - Inshore of Watson's Reef	Reference mid-channel patch reef inshore of Watson's Reef, 6-7 feet, low profile, few corals, mostly gorgonians and <i>Millepora alvicornis</i> , no live <i>Acropora</i> observed in general survey area
7 - Basin Hill Shoals	Reference mid-channel patch reef at Basin Hill Shoals, 5-7 feet, fewer corals than site 6, interspersed with <i>Thalassia</i> seagrass, no live <i>Acropora</i> observed in general area, first site where urchins were counted and measured
9 - Basin Hill Shoals	Reference mid-channel patch reef at Basin Hill Shoals, 5-6 feet, similar to sites 7 and 8 in structure, silty, gorgonians dominant, no live <i>Acropora</i> observed in general survey area
11 - Basin Hill Shoals	Reference mid-channel patch reef at Basin Hill Shoals, 5-8 feet, large patch, some head corals, abundant branching <i>Porites</i> colonies interspersed with <i>Thalassia</i> seagrass, no live <i>Acropora</i> observed in general survey area
10 - Basin Hill Shoals	Reference mid-channel patch reef at Basin Hill Shoals, 7-12 feet, larger site with more corals, gorgonians dominant, several patches of <i>Acropora cervicornis</i> observed up to 50 cm x 20 cm in dimension
12 - Marker 23	Reference mid-channel patch reef at Marker 23 northwest of Carysfort Reef, 12-15 feet, mediocre visibility, site about 12 m in length, bounded by dense seagrass, medium size colonies of <i>Montastraea faveolata</i> , no live <i>Acropora</i> observed in survey area
14 - Inshore of Turtle Reef	Reference mid-channel patch reef inshore of Turtle Reef, 14-18 feet, large sea plumes and some large coral heads such as <i>S. siderea</i> , <i>S. bournoni</i> and <i>M. faveolata</i> , patch ~20 m in diameter, <i>Laurencia</i> algae abundant, no live <i>Acropora</i> observed
13 - Turtle Rocks	Reference mid-channel patch reef at Turtle Rocks, inshore of Turtle Reef, 4-12 feet, large <i>Montastraea faveolata</i> colonies, very poor visibility, one small patch of live <i>Acropora cervicornis</i> sampled on periphery of patch reef
15 - Inshore of Turtle Reef	Reference mid-channel patch reef inshore of Turtle Reef, 16-22 feet, large site, high-relief structure, isolated mounds of reef interspersed with sand and rubble, small <i>A. cervicornis</i> colonies found outside of transect boundaries

Habitat type/site number and location	Site description
<i>Offshore patch reefs</i>	
21 - Inshore of Pickles	Offshore patch reef inshore of Pickles Reef, 16-19 feet, some coral heads, site about 15 m in diameter, partial paling by <i>Palythoa</i> and <i>Siderastrea sidereal</i>
22 - Inshore of Pickles	Offshore patch reef inshore of Pickles Reef, 14-17 feet, low profile, very few corals, mostly brown algae and sponges, abundant urchins, patch reef bordered by dense <i>Thalassia</i> seagrass
215 - Inshore of 3 Sisters	Reference offshore patch reef inshore of 3 Sisters, 12-14 feet, some medium-size coral heads, moderate relief, patch about 15 m in diameter, some live <i>Acropora cervicornis</i> observed
23 - White Banks	Offshore patch reef surveyed on White Banks, 15-21 feet, large patch reef site, large colonies of <i>Montastraea faveolata</i> , no live <i>Acropora</i> observed within general survey area
24 - White Banks/Dry Rocks	Offshore patch reef surveyed at White Banks/Dry Rocks, 5-15 feet, mooring buoy WB4, very high profile, <i>Acropora palmata</i> framework on top of patch, but no live <i>Acropora</i> observed within general survey area
26 - Mosquito Bank	Reference offshore patch reef on Mosquito Bank, 7-12 feet, moderate relief, similar in structure to site 215, several small patches of live <i>Acropora cervicornis</i> found within transects
27 - Inshore of Grecian Rocks SPA	Reference offshore patch reef inshore of Grecian Rocks SPA, large coral heads and high relief, dominated by sea plumes, no live <i>Acropora</i> observed within general survey area
252 - Near Key Largo Dry Rocks SPA	Reference offshore patch reef sampled near Dry Rocks, 16-18 feet, low profile site, dominated by gorgonians, alternate for site 96, no live <i>Acropora</i> observed within general survey area
95 - Near Key Largo Dry Rocks SPA	Offshore patch reef near Dry Rocks, 18-26 feet, 27 feet in sand, some large <i>Montastraea faveolata</i> heads on periphery of patch, gorgonians dominant on top of patch, no live <i>Acropora</i> observed within general survey area
45 - Inshore of Watson's Reef	Reference offshore patch reef inshore of Watson's Reef, 10-12 feet, supposed to be low-relief hard-bottom, but moderate relief, isolated coral heads, small patch of <i>Acropora cervicornis</i> observed on transects
29 - NW of Elbow Reef SPA	Reference offshore patch reef northwest of Elbow Reef SPA, 5-11 feet, large mound of mostly relict <i>A. palmata</i> , high structure on top, steeply sloping to 21-27 feet in sand, live <i>A. palmata</i> observed on inshore side, gorgonians abundant on seaward end
28 - NW of Elbow Reef SPA	Reference offshore patch reef northwest of Elbow Reef SPA, 13-18 feet, high relief, dominated by gorgonians, some relict <i>A. palmata</i> spur-like features, incredible visibility, several large colonies of <i>A. palmata</i> observed near northern end of site
30 - Inshore of Watson's Reef	Reference offshore patch reef inshore of Watson's Reef, 4-17 feet, high relief structure, abundant <i>Montastraea</i> coral heads, bounded by dense <i>Thalassia</i> seagrass, no live <i>Acropora</i> observed in general survey area, some <i>A. cervicornis</i> rubble
47 - Inshore of Carysfort Reef SPA	Reference offshore patch reef inshore of Carysfort Reef SPA, 8-12 feet, supposed to be shallow hard-bottom, but moderate relief, abundant <i>Porites furcata</i> , bordered by seagrass, small patches of live <i>A. cervicornis</i> observed outside of transects
48 - Inshore of Carysfort Reef SPA	Reference offshore patch reef inshore of Carysfort Reef SPA, 12-14 feet, supposed to be low-relief hard-bottom, but similar to site 47, small patch bordered by seagrass, broken up, abundant rubble, small patches of <i>A. cervicornis</i> observed
80 - SW corner of Carysfort SPA**	Offshore patch reef near SW corner of Carysfort Reef SPA, 16-21 feet, supposed to be low-relief hard-bottom, but moderate relief with <i>Acropora palmata</i> framework, small patch of <i>A. cervicornis</i> measured outside of transects

Habitat type/site number and location	Site description
82 - Western Carysfort Reef SPA**	Offshore patch reef near western boundary of Carysfort Reef SPA, 25-29 feet, supposed to be deeper low-relief hard-bottom, but small patch reef mound bordered by seagrass, some head corals, live <i>Acropora cervicornis</i> observed within transects
76 - Turtle Reef	Reference offshore patch reef at Turtle Reef, 8-13 feet, supposed to be inner line reef tract, similar in structure to White Banks/Dry Rocks, <i>A. palmata</i> framework, gorgonians abundant, many small patches of <i>A. cervicornis</i> measured
83 - Western Carysfort Reef SPA**	Offshore patch reef near western boundary of Carysfort Reef SPA, 12-19 feet, supposed to be deeper low-relief hard-bottom, but large patch reef mound dominated by gorgonians, moderate relief, small patches of <i>Acropora cervicornis</i> measured
77 - Adjacent to marker	Offshore patch, 8-15 feet, surrounded by a sandy rubble field, high-relief site with deep crevices, abundant sea fans, <i>Palythoa</i> , and <i>Millepora</i> , some relict staghorn coral rubble, some live <i>A. cervicornis</i> off transects, old <i>A. palmata</i> framework oceanside
260 - NW corner of Carysfort SPA**	Offshore patch reef offshore in Carysfort SPA, 15-25 feet, abundant gorgonians, some live coral, <i>Palythoa</i> and encrusting gorgonians common, abundant spiny lobsters, high-relief with crevices, no live <i>Acropora</i> , possible <i>A. palmata</i> framework near top
34 - Turtle Reef	Reference offshore patch reef at Turtle Reef, northwest of Carysfort Reef, 14-17 feet, very poor visibility and strong surge, some coral heads, well scoured, no live <i>Acropora</i> observed in general survey area
33 - Offshore of Turtle Reef	Reference offshore patch reef seaward of Turtle Reef, 30-33 feet, elongated site ~40 m in length, dominated by gorgonians, some head corals, little macroalgae, some areas of moderate relief, no live <i>Acropora</i> observed in general survey area
<i>Reef rubble</i>	
103 - Molasses SPA**	Back reef rubble within Molasses Reef SPA, 5-6 feet, seaward of dense <i>Thalassia</i> and <i>Syringodium</i> grass bed, no <i>Acropora</i> observed within general survey area
104 - Molasses SPA**	Back reef rubble within Molasses Reef SPA, 10-11 feet, more sparse than site 103, some <i>Syringodium</i> seagrass interspersed with rubble, no live <i>Acropora</i> observed within general survey area
16 - North of French Reef SPA	Rubble north of French Reef SPA, 16-17 feet, bounded by dense <i>Thalassia</i> seagrass bed, abundant <i>Dasycladus</i> alga, no live <i>Acropora</i> observed within general survey area
17 - Inshore of Dixie Shoal	Reference reef rubble site inshore of Dixie Shoal, 22-24 feet, patches of hard-bottom and sand interspersed with rubble, some small coral heads, sea plumes abundant, some sparse <i>Thalassia</i> seagrass, no <i>Acropora</i> observed
18 - Inshore of Dixie Shoal	Reference reef rubble inshore of Dixie Shoal, 17-19 feet, small pockets of rubble in between dense <i>Thalassia</i> - <i>Syringodium</i> seagrass patches, <i>Dasycladus</i> and <i>Cladophoropsis</i> algae abundant, some <i>Acropora cervicornis</i> rubble present, no live <i>Acropora</i> observed
87 - Elbow Reef SPA**	Reef rubble at Elbow Reef SPA, 7-10 feet, mostly fine algal turf on boulders, little macroalgae, no live <i>Acropora</i> observed within general survey area
92 - Elbow Reef SPA**	Reef rubble at Elbow Reef SPA, 9-11 feet, similar to site 91, <i>Dictyota</i> and <i>Sargassum</i> algae dominant, slightly shallower, no live <i>Acropora</i> observed within general survey area
91 - Elbow Reef SPA**	Reef rubble at Elbow Reef SPA, 12-17 feet, <i>Lobophora</i> and <i>Stypopodium</i> algae dominant, few gorgonians, <i>Acropora cervicornis</i> rubble present, small corals such as <i>Siderastrea radians</i> and <i>Diploria clivosa</i> , no live <i>Acropora</i> in general survey area

Habitat type/site number and location	Site description
210 - North of Carysfort Reef SPA	Rubble field 10 feet in depth, abundant <i>Laurencia</i> and <i>Sargassum</i> algae, occasional patches of <i>Thalassia</i> and <i>Syringodium</i> , queen conch common, old <i>A. cervicornis</i> and <i>A. palmata</i> rubble abundant, no corals, gorgonians or sponges
<i>Hard-bottom-sand-rubble matrix</i>	
107 - Molasses SPA**	Rubble-sand-hard-bottom matrix within Molasses Reef SPA, 10-15 feet, supposed to be low -relief hard-bottom, near western end of SPA, patches of large dead coral heads and staghorn rubble, no live <i>Acropora</i> observed within general survey area
108 - Molasses SPA**	Rubble-sand-hard-bottom matrix within Molasses Reef SPA, 10-13 feet, site supposed to be low -relief hard-bottom, similar to site 107, no live <i>Acropora</i> observed within general survey area
60 - NW of Carysfort Reef SPA	Rubble-sand-hard-bottom matrix, 27 feet deep, site near bottom of steep slope that runs from 15 feet to 30 feet, sparse corals and gorgonians, no evidence of recent or old <i>Acropora</i>
<i>Patchy hard-bottom (< 6 m)</i>	
51 - Inshore of Carysfort Reef SPA	Patchy hard-bottom and seagrass matrix, 10 feet deep, bounded by seagrass beds and numerous small patch reefs and clumps of coral heads, small bits of <i>A. cervicornis</i> rubble, no live <i>Acropora</i>
81 - NW corner of Carysfort SPA**	Patchy hard-bottom in sand, 20 feet deep, low -profile site, with less than 2 feet of maximum vertical relief, small bits of <i>A. cervicornis</i> rubble, but not live <i>Acropora</i>
<i>Low-relief hard-bottom (< 6 m)</i>	
63 - SW of Pickles	Low -relief hard-bottom at Pickles Reef, 16-20 feet, dominated by brown algae and sea plumes
38 - Pickles Reef	Low -relief hard-bottom at Pickles Reef, 14-17 feet, transects near northeastern area of reef, low profile, <i>Acropora palmata</i> framework, very eroded, sea plumes and algae dominant
44 - Inshore of Dixe Shoal	Reference low -relief hard-bottom, 13-15 feet, patches of sand in between larger patches of hard-bottom, near dense seagrass bed, abundant <i>Dasycladus</i> , <i>Sargassum</i> , gorgonians and <i>Millepora alcicornis</i> , no <i>Acropora</i> observed in general area
19 - North of Horseshoe Reef	Reference shallow, low -relief hard-bottom sampled north of Horseshoe Reef, supposed to be reef rubble, but mostly consolidated bottom with some rubble, several large coral heads of <i>S. siderea</i> and <i>Diploria</i> spp., no <i>Acropora</i> observed within area
46 - Inshore of Watson's Reef	Reference low -relief hard-bottom inshore of Watson's Reef, 8-9 feet, mixture of hard-bottom and <i>Thalassia</i> seagrass, gorgonians and <i>Millepora alcicornis</i> abundant, small <i>Diploria clivosa</i> present, no live <i>Acropora</i> observed in general survey area
20 - South of Carysfort Reef SPA	Reference low -relief hard-bottom south of Carysfort Reef SPA, 10-13 feet, supposed to be reef rubble, but consolidated bottom inshore of Maitland grounding site, well scoured, gorgonians and <i>Millepora alcicornis</i> abundant, no <i>Acropora</i> in survey area
50 - Inshore of Carysfort Reef SPA	Low -relief hard-bottom, 13 feet deep, bounded by seagrass, one of numerous small areas of hard-bottom behind Carysfort, sparse corals and gorgonians, no evidence of recent or old <i>Acropora</i> , few urchins
52 - NW of Carysfort Reef SPA	Low -relief hard-bottom, 15 feet deep, abundant old staghorn coral and <i>Porites</i> finger coral rubble, sparse live coral, large chunks of rock, some rubble, mostly consolidated substratum, some large <i>Siderastrea</i> and <i>Montastraea</i> colonies

Habitat type/site number and location	Site description
<i>Inner line reef tract spur & groove</i> 74 - South of Grecian Rocks SPA	Reference inner line spur and groove surveyed just south of Grecian Rocks SPA, 10-12 feet, <i>Acropora palmata</i> framework, abundant <i>Diadema</i> urchins, no live <i>Acropora</i> observed within general survey area
100 - Grecian Rocks SPA**	Inner line reef tract surveyed at Grecian Rocks SPA, 2-5 feet, site approached from back side of reef, sea fans and <i>Porites astreoides</i> abundant, some live <i>Acropora palmata</i> in general survey area, but none within transects
99 - Grecian Rocks SPA**	Inner line reef tract surveyed at Grecian Rocks SPA, 4-8 feet, site approached from seaward end of fore reef, northern end of SPA, transects placed along seaward end of old palmata zone, a few live colonies of <i>Acropora palmata</i> observed
97 - Key Largo Dry Rocks SPA**	Inner line reef tract at Key Largo Dry Rocks SPA, 4-12 feet, mooring buoy 13, approached from back side of reef, no live <i>Acropora</i> observed within general survey area
98 - Key Largo Dry Rocks SPA**	Inner line reef tract at Key Largo Dry Rocks, 4-9 feet, near Christ statue at mooring buoy 4, site dominated by turf and crustose coralline algae, one live colony of <i>Acropora palmata</i> observed outside of transect boundaries
75 - North Dry Rocks	Reference inner line reef tract at North Dry Rocks, 8-16 feet, mooring buoy 3, high relief, abundant <i>Porites astreoides</i> , <i>Millepora complanata</i> , sea fans, small patches of <i>Acropora cervicornis</i> and <i>A. palmata</i> sampled
241 - Horseshoe Reef	Reference inner line reef tract at Horseshoe Reef, 9-17 feet, palmata framework, some head corals, gorgonians abundant, top of reef at 9-10 feet, base at 24 feet, thicket of <i>A. palmata</i> sampled near mooring buoy on northern side of site
240 - North-North Dry Rocks	Reference inner line reef tract at North-North Dry Rocks, 8-14 feet, transects in relict palmata zone, abundant <i>Palythoa</i> , gorgonians, <i>Porites astreoides</i> , and <i>Millepora complanata</i> , small thicket of <i>Acropora palmata</i> within transects
<i>High-relief spur & groove</i> 35 - Pickles Reef	High-relief spur and groove at Pickles Reef, 14-21 feet, western end of reef, <i>Palythoa</i> and gorgonians abundant
36 - Pickles Reef	Shoreward side of spur and groove at Pickles Reef, 8-14 feet, sea plumes dominant, <i>Acropora palmata</i> framework, but no live colonies observed
37 - Pickles Reef	Shoreward side of spur and groove at Pickles Reef, 7-12 feet, abundant sea fans and <i>Millepora complanata</i> , large <i>Diadema</i> observed, 1 colony of <i>A. cervicornis</i> found outside transects, 10 cm x 4 cm x 2 cm high
105 - Molasses Reef SPA**	High-relief spur and groove at Molasses Reef, 12-19 feet, some large colonies of <i>Acropora palmata</i> outside of transect boundaries, a few colonies found within transects
106 - Molasses Reef SPA**	High-relief spur and groove at Molasses Reef SPA, 7-11 feet, mooring buoy 30, northeastern end of spur and groove area, dominated by sea fans, <i>Millepora complanata</i> , and crustose coralline algae, no <i>Acropora</i> observed in general survey area
39 - Sand Island	High-relief spur and groove at Sand Island, reference site, 12-18 feet, abundant stands of <i>Acropora palmata</i> , site near southernmost mooring buoy
41 - Sand Island	Reference high-relief spur and groove at Sand Island, 12-18 feet, transects placed near northern boundary of spur and groove zone, spurs broken up, dominated by crustose corallines, turf, <i>Millepora</i> , and <i>Palythoa</i> , no <i>Acropora</i> observed

Habitat type/site number and location	Site description
40 - Outside French Reef SPA	High-relief spur and groove outside of French Reef SPA, 15-20 feet, medium profile, isolated chunks of <i>Acropora palmata</i> framework, sea plumes and sea fans abundant, no live <i>Acropora</i> observed within general survey area
101 - French Reef SPA**	High-relief spur and groove within French Reef SPA, 10-14 feet, <i>Acropora palmata</i> framework, no live <i>Acropora</i> observed within general survey area
102 - French Reef SPA**	High-relief spur and groove within French Reef SPA, 15-24 feet, mooring buoy F8, large <i>Montastraea faveolata</i> colonies, some small patches of live <i>Acropora palmata</i>
89 - Elbow Reef SPA**	High-relief spur and groove at Elbow Reef SPA, 12-20 feet, southern end of SPA, dominated by crustose coralline algae, gorgonians, and <i>Porites astreoides</i> , live <i>Acropora palmata</i> observed within general survey area, but none found within transect boundaries
90 - Elbow Reef SPA**	High-relief spur and groove at Elbow Reef SPA, 10-17 feet, E3 mooring buoy, live <i>Acropora palmata</i> observed within general survey area
42 - Near Maitland Grounding Site	Reference high-relief spur and groove southwest of Maitland grounding site, 9-13 feet, good visibility, relict <i>Acropora palmata</i> framework, small patch of <i>A. palmata</i> observed within transects
223 - South of Carysfort Reef SPA	High-relief spur and groove north of Maitland grounding site, near Civil War wreck, abundant sea fans, <i>Millepora</i> , <i>Palythoa</i> , and sea plumes, depth from 8 feet on top of spurs to 15 feet in sand, no live <i>Acropora</i> , but some <i>A. palmata</i> framework
43 - Near Maitland Grounding Site	Reference high-relief spur and groove near Maitland grounding site, 8-15 feet, dominated by sea fans, some relict <i>Acropora palmata</i> stands, small patches of <i>A. cervicornis</i> and <i>A. palmata</i> observed and probably sexually derived recruits
78 - South Carysfort Reef**	High-relief spur and groove at South Carysfort Reef, 3-10 feet, transects in <i>Acropora palmata</i> zone, some patches of live <i>Acropora palmata</i>
79 - South Carysfort Reef**	High-relief spur and groove at South Carysfort Reef, 4-6 feet, north of site 78, transects in dense <i>palmata</i> zone shoreward of high-relief spur and groove, abundant live colonies of <i>A. palmata</i>
<i>Patchy hard-bottom (6-15 m)</i>	
58 - South of Elbow Reef SPA	Patchy rubble and hard-bottom in sand south of Elbow Reef SPA, 22-24 feet, good visibility, some sparse <i>Thalassia</i> seagrass, abundant macroalgae, no live <i>Acropora</i> observed in general survey area
71 - South of Carysfort Reef SPA	Reference patchy hard-bottom south of Carysfort Reef SPA, 39-45 feet, similar to site 69, algal turf and sand dominant, gorgonians abundant, site slopes down to 50 feet in sand, no <i>Acropora</i> observed within general survey area
61 - South of BNP Boundary	Reference patchy hard-bottom site near southern BNP boundary, 31-33 feet, supposed to be low-relief hard-bottom, similar to site 62, gorgonians and <i>Sargassum</i> abundant, many large <i>Xestospongia muta</i> sponges
62 - South of BNP Boundary	Reference patchy hard-bottom near southern BNP boundary, 30-32 feet, supposed to be low-relief hard-bottom, but patchy mix of hard-bottom, rubble and sand, staghorn rubble present, gorgonians and <i>Sargassum</i> abundant, large <i>X. muta</i> sponges
<i>Low-relief hard-bottom (6-15 m)</i>	
55 - South of Grecian Rocks	Reference low-relief hard-bottom south of Grecian Rocks, 26-30 feet, patches of sand common, moderate relief, abundant <i>Dictyota</i> , gorgonians and <i>Xestospongia muta</i> , some patches of rubble, no <i>Acropora</i> observed within general area

Habitat type/site number and location	Site description
56 - Offshore of Grecian Rocks	Reference low -relief hard-bottom offshore of Grecian Rocks, 29-31 feet, relatively low profile, abundant <i>Dictyota</i> , algal turf, sea plumes, <i>Millepora</i> and <i>Xestospongia muta</i> , no <i>Acropora</i> observed within general area
57 - Offshore of Key Largo Dry Rocks	Reference low -relief hard-bottom offshore of Key Largo Dry Rocks, 27-32 feet, mounding shape, relatively low profile on top of mound, but moderate relief and numerous crevices deeper, may be relict <i>A. palmata</i> structure, isolated stand of pillar coral
93 - Elbow Reef SPA**	Low -relief hard-bottom at Elbow Reef SPA, 25-29 feet, gorgonians and small corals abundant, seaward of spur and groove zone near boundary of SPA, no live <i>Acropora</i> observed within general survey area
94 - Elbow Reef SPA**	Low -relief hard-bottom at Elbow Reef SPA, 26-28 feet, near seaward edge of SPA, <i>Acropora palmata</i> framework, no live <i>Acropora</i> observed within general survey area
59 - North of Elbow Reef SPA	Reference low -relief hard-bottom north of Elbow Reef SPA, 36-39 feet, small patches of sand, some small corals, gorgonians and <i>Xestospongia muta</i> abundant, no live <i>Acropora</i> observed in general survey area
70 - North of Watson's Reef	Reference low -relief hard-bottom north of Watson's Reef, 38-41 feet, moderate relief, good visibility, abundant gorgonians and <i>Xestospongia muta</i> , no <i>Acropora</i> observed within general survey area
85 - Central Carysfort Reef SPA**	Low -relief hard-bottom in the central area of Carysfort Reef SPA, 32-41 feet, supposed to be low -relief spur and groove, generally low profile, isolated coral heads, no <i>Acropora</i> observed
232 - North of Carysfort Reef SPA	Reference low -relief hard-bottom north of Carysfort Reef SPA, low -profile substratum with large gorgonians and sponges, 28 feet deep, light layer of fine sediment, algal turf, and cyanobacteria on substratum, some patches of sand
<i>Low-relief spur & groove (6-15 m)</i>	
64 - North of French Reef SPA	Reference low -relief spur and groove north of French Reef SPA, 21-29 feet, dominated by brown algae and gorgonians, no live <i>Acropora</i> observed within general survey area
65 - Offshore of Key Largo Dry Rocks	Reference low -relief spur and groove offshore of Key Largo Dry Rocks, 35-40 feet, abundant <i>Dictyota</i> , gorgonians and <i>Xestospongia muta</i> , wide spurs, moderate relief, no live <i>Acropora</i> observed within general survey area
66 - South of Elbow Reef SPA	Reference low -relief spur and groove south of Elbow Reef SPA, 31-35 feet, offshore of high-relief spur and groove zone, sea plumes and large <i>Xestospongia muta</i> present, no live <i>Acropora</i> observed in general survey area
67 - Northeast of Elbow Reef SPA	Reference low -relief spur and groove near northeastern boundary of Elbow Reef SPA, 37-42 feet, good visibility, no live <i>Acropora</i> observed in general survey area
68 - Northeast of Elbow Reef SPA	Reference low -relief spur and groove near northeastern boundary of Elbow Reef SPA, 35-39 feet, north of site 67, similar habitat, no live <i>Acropora</i> observed in general survey area
69 - North of Watson's Reef	Reference low -relief spur and groove north of Watson's Reef, 33-37 feet, fine turf and sand, abundant gorgonians, <i>Xestospongia muta</i> , <i>Sphaciospongia vesparium</i> , generally low profile, no <i>Acropora</i> observed within general survey area
72 - South of Carysfort Reef SPA	Reference low -relief spur and groove south of Carysfort Reef SPA, 38-42 feet, similar to sites 70 and 71, some sand grooves present, abundant <i>Dictyota</i> , algal turf, gorgonians and <i>Xestospongia muta</i> , no <i>Acropora</i> in general survey area

Habitat type/site number and location	Site description
86 - SE corner of Carysfort SPA**	Low-relief spur and groove within Carysfort Reef SPA, 47-50 feet, supposed to be patchy hard-bottom, moderate relief, some large coral heads, dominated by <i>Dictyota</i> , sea plumes, and encrusting gorgonians, no <i>Acropora</i> observed within general area
84 - SE corner of Carysfort SPA**	Low-relief spur and groove within Carysfort Reef SPA, 38-42 feet, near SE corner of SPA, relatively low profile, dominated by <i>Halimeda</i> , <i>Dictyota</i> , sea plumes, and <i>Xestospongia muta</i> , no <i>Acropora</i> observed within general survey area

Table 7. SCUBA diving effort for *Acropora* corals, urchins and reef fishes in the upper Keys region of the Florida Keys National Marine Sanctuary during August 1-18, 2006.

Diver	Affiliation	No. of dives	Depth range (m)	Bottom time
<i>Coral and urchin surveys</i>				
Mark Chiappone	CMS/UNCW	96	1.5-15.0 m	45 hr 52 min
Leanne Rutten	CMS/UNCW	107	1.5-15.0 m	52 hr 56 min
Subtotal		203	1.5-15.0 m	98 hr 48 min
<i>Reef fish surveys</i>				
Neil Baertlein	NOAA Fisheries	20	2.4-9.0 m	12 hr 09 min
Heather Balchowksy	NOAA Fisheries	10	3.3-8.4 m	04 hr 03 min
Patrick Cope	NOAA Fisheries	7	4.2-8.7 m	02 hr 37 min
Guy Davenport	NOAA Fisheries	5	3.0-7.5 m	03 hr 05 min
Nick Farmer	RSMAS-UM	8	2.7-13.5 m	02 hr 51 min
Jerome Fiechter	RSMAS-UM	13	1.8-10.5 m	07 hr 16 min
Rick Gomez	RSMAS-UM	13	1.5-12.0 m	07 hr 05 min
Mike Judge	NOAA/NMFS	35	3.0-12.0 m	16 hr 26 min
Mike Larkin	RSMAS-UM	16	2.1-12.0 m	05 hr 29 min
Ashley McCray	RSMAS-UM	12	3.0-10.2 m	06 hr 31 min
Jennifer Schull	NOAA/NMFS	8	2.1-12.0 m	02 hr 38 min
Steve Smith	RSMAS-UM	4	4.2-7.2 m	02 hr 29 min
Subtotal		151	1.5-13.5 m	72 hr 39 min
Total all divers		354	1.5-15.0 m	171 hr 27 min

Table 8. Presence (P) of staghorn coral (*Acropora cervicornis*) and elkhorn coral (*A. palmata*) in the upper Keys region of the Florida Keys National Marine Sanctuary during August 2006. Sites are arranged within habitat types from southwest to northeast. Sites asterisked are within Sanctuary Preservation Areas (SPAs).

Habitat type/site location	<i>Acropora cervicornis</i>		<i>Acropora palmata</i>	
	Present on transects	Present at site	Present on transects	Present at site
<i>Mid-channel patch reefs</i>				
1- Mosquito Bank				
2- Inshore of Dry Rocks				
3- Inshore of Dry Rocks				
5- Inshore of Watson's Reef				
7- Basin Hill Shoals				
6- Basin Hill Shoals				
8- Basin Hill Shoals	P	P		
9- Basin Hill Shoals				
11- Basin Hill Shoals				P
10- Basin Hill Shoals				
12- Marker 23				
13- Turtle Rocks	P	P		
14- Inshore of Turtle Reef				
15- Inshore of Turtle Reef				P
<i>Offshore patch reefs</i>				
21- Inshore of Pickles				
22- Inshore of Pickles				
215- Inshore of 3 Sisters	P	P		
23- White Banks				
24- White Banks/Dry Rocks				
26- Mosquito Bank	P	P		
27- Inshore of Grecian Rocks SPA				
95 - Near Dry Rocks SPA				
252- Near Dry Rocks SPA				
28 - NW of Elbow Reef SPA			P	P
29 - NW of Elbow Reef SPA			P	P
45- Inshore of Watson's Reef	P	P		
30 - Inshore of Watson's Reef				
82 - Western Carysfort Reef SPA**	P	P		
47 - Inshore of Carysfort Reef SPA	P	P		
80 - SW corner of Carysfort SPA**	P	P		
48 - Inshore of Carysfort Reef SPA	P	P		
83 - Western Carysfort Reef SPA**	P	P		
260 - NW Carysfort Reef SPA**				
76 - Turtle Reef	P	P		
33 - Offshore of Turtle Reef				
77 - Adjacent to marker	P	P		
34 - Turtle Reef				
<i>Reef rubble</i>				
103 - Molasses SPA**				
104 - Molasses SPA**				
16 - North of French Reef SPA				
17 - Inshore of Dixie Shoal				
18 - Inshore of Dixie Shoal				
87 - Elbow Reef SPA**				
91 - Elbow Reef SPA**				
92 - Elbow Reef SPA**				
210 - North of Carysfort Reef SPA				
<i>Hard-bottom-sand-rubble matrix</i>				
107 - Molasses SPA**				
108 - Molasses SPA**				
60 - NW of Carysfort Reef SPA				

Habitat type/site location	<i>Acropora cervicornis</i>		<i>Acropora palmata</i>	
	Present on transects	Present at site	Present on transects	Present at site
<i>Patchy hard-bottom (< 6 m)</i>				
81 - NW corner of Carysfort SPA**				
51 - Inshore of Carysfort Reef SPA				
<i>Low-relief hard-bottom (< 6 m)</i>				
63 - SW of Pickles				
38 - Pickles Reef				
44 - Inshore of Dixe Shoal				
19 - North of Horseshoe Reef				
46 - Inshore of Watson's Reef				
20 - South of Carysfort Reef SPA				
50 - Inshore of Carysfort Reef SPA				
52 - NW of Carysfort Reef SPA				
53 - South of Buoy at Turtle Rocks	P	P	P	P
<i>Inner line reef tract spur & groove</i>				
74 - South of Grecian Rocks SPA				
100 - Grecian Rocks SPA**			P	P
99 - Grecian Rocks SPA**			P	P
97 - Key Largo Dry Rocks SPA**				P
98 - Key Largo Dry Rocks SPA**				P
75 - North Dry Rocks	P	P	P	P
241 - Horseshoe Reef			P	P
240 - North-North Dry Rocks			P	P
<i>High-relief spur & groove</i>				
35 - Pickles Reef				
36 - Pickles Reef				
37 - Pickles Reef		P		
105 - Molasses Reef SPA**	P	P	P	P
106 - Molasses Reef SPA**				
39 - Sand Island			P	P
41 - Sand Island				
40 - Outside French Reef SPA				
101 - French Reef SPA**				
102 - French Reef SPA**			P	P
89 - Elbow Reef SPA**				P
90 - Elbow Reef SPA**				P
42 - Near Maitland Grounding Site			P	P
43 - Near Maitland Grounding Site	P	P	P	P
223 - South of S. Carysfort Reef				
78 - South Carysfort Reef**			P	P
79 - South Carysfort Reef**			P	P
<i>Patchy hard-bottom (6-15 m)</i>				
58 - South of Elbow Reef SPA				
71 - South of Carysfort Reef SPA				
61 - South of BNP Boundary				
62 - South of BNP Boundary				
<i>Low-relief hard-bottom (6-15 m)</i>				
55 - South of Grecian Rocks				
56 - Offshore of Grecian Rocks				
57 - Offshore of Dry Rocks				
93 - Elbow Reef SPA**				
94 - Elbow Reef SPA**				
59 - North of Elbow Reef SPA				
70 - North of Watson's Reef				
85 - Central Carysfort Reef SPA**				
232 - North of Carysfort Reef SPA				
<i>Low-relief spur & groove (6-15 m)</i>				
64 - North of French Reef SPA				
65 - Offshore of Dry Rocks				
66 - South of Elbow Reef SPA				
67 - Northeast of Elbow Reef SPA				
68 - Northeast of Elbow Reef SPA				
69 - North of Watson's Reef				

Habitat type/site location	<i>Acropora cervicornis</i>		<i>Acropora palmata</i>	
	Present on transects	Present at site	Present on transects	Present at site
72 - South of Carysfort Reef SPA				
86 - SE corner of Carysfort SPA**				
84 - SE corner of Carysfort SPA**				

Table 9. Mean (1 SD) density (no. colonies/m²) and live tissue surface area (cm²) of staghorn coral (*Acropora cervicornis*) in the upper Keys region of the Florida Keys National Marine Sanctuary measured surveyed during August 2006. Sites are arranged within habitat types from southwest to northeast. Data based upon surveys of four 15-m x 1-m belt transects per site. Sites asterisked are within Sanctuary Preservation Areas (SPAs).

Habitat type/site location	Colony density			Colony size		
	Colonies	No./m ²	SD	Total area (cm ²)	Area (cm ²) per colony	SD
<i>Mid-channel patch reefs</i>						
1- Mosquito Bank	0	0.000	0.000	0.0	0.0	0.0
2- Inshore of Dry Rocks	0	0.000	0.000	0.0	0.0	0.0
3- Inshore of Dry Rocks	0	0.000	0.000	0.0	0.0	0.0
5- Inshore of Watson's Reef	0	0.000	0.000	0.0	0.0	0.0
7- Basin Hill Shoals	0	0.000	0.000	0.0	0.0	0.0
6- Basin Hill Shoals	0	0.000	0.000	0.0	0.0	0.0
8- Basin Hill Shoals	3	0.050	0.100	97.0	32.3	9.8
9- Basin Hill Shoals	0	0.000	0.000	0.0	0.0	0.0
11- Basin Hill Shoals	0	0.000	0.000	0.0	0.0	0.0
10- Basin Hill Shoals	0	0.000	0.000	0.0	0.0	0.0
12- Marker 23	0	0.000	0.000	0.0	0.0	0.0
13- Turtle Rocks	2	0.033	0.066	127.5	127.5	0.0
14- Inshore of Turtle Reef	0	0.000	0.000	0.0	0.0	0.0
15- Inshore of Turtle Reef	0	0.000	0.000	0.0	0.0	0.0
Stratum total	5	0.006	0.015	224	79.9	67.3
<i>Offshore patch reefs</i>						
21- Inshore of Pickles	0	0.000	0.000	0.0	0.0	0.0
22- Inshore of Pickles	0	0.000	0.000	0.0	0.0	0.0
215- Inshore of 3 Sisters	5	0.083	0.167	22.2	7.4	3.1
23- White Banks	0	0.000	0.000	0.0	0.0	0.0
24- White Banks/Dry Rocks	0	0.000	0.000	0.0	0.0	0.0
26- Mosquito Bank	11	0.183	0.240	816.0	81.6	88.1
27- Inshore of Grecian Rocks SPA	0	0.000	0.000	0.0	0.0	0.0
95 - Near Dry Rocks SPA	0	0.000	0.000	0.0	0.0	0.0
252- Near Dry Rocks SPA	0	0.000	0.000	0.0	0.0	0.0
28 - NW of Elbow Reef SPA	0	0.000	0.000	0.0	0.0	0.0
29 - NW of Elbow Reef SPA	0	0.000	0.000	0.0	0.0	0.0
45- Inshore of Watson's Reef	5	0.083	0.167	188.9	37.8	23.1
30 - Inshore of Watson's Reef	0	0.000	0.000	0.0	0.0	0.0
82 - Western Carysfort Reef SPA**	2	0.033	0.066	34.8	17.4	8.9
47 - Inshore of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
80 - SW corner of Carysfort SPA**	1	0.017	0.033	50.1	50.1	0.0
48 - Inshore of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
83 - Western Carysfort Reef SPA**	20	0.333	0.667	187.4	18.7	8.3
260 - NW Carysfort Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
76 - Turtle Reef	3	0.050	0.100	93.3	31.1	24.3
33 - Offshore of Turtle Reef	0	0.000	0.000	0.0	0.0	0.0
77 - Adjacent to marker	0	0.000	0.000	0.0	0.0	0.0
34 - Turtle Reef	0	0.000	0.000	0.0	0.0	0.0
Stratum total	47	0.034	0.079	1392.7	34.9	25.0
<i>Reef rubble</i>						
103 - Molasses SPA**	0	0.000	0.000	0.0	0.0	0.0
104 - Molasses SPA**	0	0.000	0.000	0.0	0.0	0.0
16 - North of French Reef SPA	0	0.000	0.000	0.0	0.0	0.0
17 - Inshore of Dixie Shoal	0	0.000	0.000	0.0	0.0	0.0
18 - Inshore of Dixie Shoal	0	0.000	0.000	0.0	0.0	0.0
87 - Elbow Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
91 - Elbow Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
92 - Elbow Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
210 - North of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
Stratum total	0	0.000	0.000	0.0	0.0	0.0
<i>Hard-bottom-sand-rubble matrix</i>						
107 - Molasses SPA**	0	0.000	0.000	0.0	0.0	0.0
108 - Molasses SPA**	0	0.000	0.000	0.0	0.0	0.0

Habitat type/site location	Colony density			Colony size		
	No.	No./m ²	SD	Total area (cm ²)	Area (cm ²) per colony	SD
60 - NW of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
Stratum total	0	0.000	0.000	0.0	0.0	0.0
<i>Patchy hard-bottom (< 6 m)</i>						
81 - NW corner of Carysfort SPA**	0	0.000	0.000	0.0	0.0	0.0
51 - Inshore of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
Stratum total	0	0.000	0.000	0.0	0.0	0.0
<i>Low-relief hard-bottom (< 6 m)</i>						
63 - SW of Pickles	0	0.000	0.000	0.0	0.0	0.0
38 - Pickles Reef	0	0.000	0.000	0.0	0.0	0.0
44 - Inshore of Dixe Shoal	0	0.000	0.000	0.0	0.0	0.0
19 - North of Horseshoe Reef	0	0.000	0.000	0.0	0.0	0.0
46 - Inshore of Watson's Reef	0	0.000	0.000	0.0	0.0	0.0
20 - South of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
50 - Inshore of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
52 - NW of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
53 - South of Buoy at Turtle Rocks	10	0.167	0.333	503.0	55.9	34.3
Stratum total	10	0.019	0.056	503.0	55.9	34.3
<i>Inner line reef tract spur & groove</i>						
74 - South of Grecian Rocks SPA	0	0.000	0.000	0.0	0.0	0.0
100 - Grecian Rocks SPA**	0	0.000	0.000	0.0	0.0	0.0
99 - Grecian Rocks SPA**	0	0.000	0.000	0.0	0.0	0.0
97 - Key Largo Dry Rocks SPA**	0	0.000	0.000	0.0	0.0	0.0
98 - Key Largo Dry Rocks SPA**	0	0.000	0.000	0.0	0.0	0.0
75 - North Dry Rocks	4	0.067	0.133	319.1	79.8	49.8
241 - Horseshoe Reef	0	0.000	0.000	0.0	0.0	0.0
240 - North-North Dry Rocks	0	0.000	0.000	0.0	0.0	0.0
Stratum total	4	0.008	0.024	319.1	79.8	49.8
<i>High-relief spur & groove</i>						
35 - Pickles Reef	0	0.000	0.000	0.0	0.0	0.0
36 - Pickles Reef	0	0.000	0.000	0.0	0.0	0.0
37 - Pickles Reef	0	0.000	0.000	0.0	0.0	0.0
105 - Molasses Reef SPA**	4	0.067	0.133	178.7	44.7	20.6
106 - Molasses Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
39 - Sand Island	0	0.000	0.000	0.0	0.0	0.0
41 - Sand Island	0	0.000	0.000	0.0	0.0	0.0
40 - Outside French Reef SPA	0	0.000	0.000	0.0	0.0	0.0
101 - French Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
102 - French Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
89 - Elbow Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
90 - Elbow Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
42 - Near Maitland Grounding Site	0	0.000	0.000	0.0	0.0	0.0
43 - Near Maitland Grounding Site	1	0.017	0.033	22.5	22.5	0.0
223 - South of S. Carysfort Reef	0	0.000	0.000	0.0	0.0	0.0
78 - South Carysfort Reef**	0	0.000	0.000	0.0	0.0	0.0
79 - South Carysfort Reef**	0	0.000	0.000	0.0	0.0	0.0
Stratum total	5	0.005	0.016	201.2	33.6	15.7
<i>Patchy hard-bottom (6-15 m)</i>						
58 - South of Elbow Reef SPA	0	0.000	0.000	0.0	0.0	0.0
71 - South of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
61 - South of BNP Boundary	0	0.000	0.000	0.0	0.0	0.0
62 - South of BNP Boundary	0	0.000	0.000	0.0	0.0	0.0
Stratum total	0	0.000	0.000	0.0	0.0	0.0
<i>Low-relief hard-bottom (6-15 m)</i>						
55 - South of Grecian Rocks	0	0.000	0.000	0.0	0.0	0.0
56 - Offshore of Grecian Rocks	0	0.000	0.000	0.0	0.0	0.0
57 - Offshore of Dry Rocks	0	0.000	0.000	0.0	0.0	0.0
93 - Elbow Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
94 - Elbow Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
59 - North of Elbow Reef SPA	0	0.000	0.000	0.0	0.0	0.0
70 - North of Watson's Reef	0	0.000	0.000	0.0	0.0	0.0

Habitat type/site location	Colony density			Colony size		
	No.	No./m ²	SD	Total area (cm ²)	Area (cm ²) per colony	SD
85 - Central Carysfort Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
232 - North of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
Stratum total	0	0.000	0.000	0.0	0.0	0.0
<i>Low-relief spur & groove (6-15 m)</i>						
64 - North of French Reef SPA	0	0.000	0.000	0.0	0.0	0.0
65 - Offshore of Dry Rocks	0	0.000	0.000	0.0	0.0	0.0
66 - South of Elbow Reef SPA	0	0.000	0.000	0.0	0.0	0.0
67 - Northeast of Elbow Reef SPA	0	0.000	0.000	0.0	0.0	0.0
68 - Northeast of Elbow Reef SPA	0	0.000	0.000	0.0	0.0	0.0
69 - North of Watson's Reef	0	0.000	0.000	0.0	0.0	0.0
72 - South of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
86 - SE corner of Carysfort SPA**	0	0.000	0.000	0.0	0.0	0.0
84 - SE corner of Carysfort SPA**	0	0.000	0.000	0.0	0.0	0.0
Stratum total	0	0.000	0.000	0.0	0.0	0.0

Table 10. Numbers and relative frequencies (%) of staghorn coral (*Acropora cervicornis*) colonies exhibiting disease and predation in the upper Keys region of the FKNMS.

Habitat type/site location	White band	White pox	Tissue necrosis	Snail predation	Damselfish bites	Total colonies
<i>Mid-channel patch reefs</i>						
1- Mosquito Bank	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
2- Inshore of Dry Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
3- Inshore of Dry Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
5- Inshore of Watson's Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
7- Basin Hill Shoals	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
6- Basin Hill Shoals	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
8- Basin Hill Shoals	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3
9- Basin Hill Shoals	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
11- Basin Hill Shoals	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
10- Basin Hill Shoals	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
12- Marker 23	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
13- Turtle Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2
14- Inshore of Turtle Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
15- Inshore of Turtle Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	5
<i>Offshore patch reefs</i>						
21- Inshore of Pickles	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
22- Inshore of Pickles	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
215- Inshore of 3 Sisters	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	5
23- White Banks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
24- White Banks/Dry Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
26- Mosquito Bank	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (9.1%)	11
27- Inshore of Grecian Rocks SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
95 - Near Dry Rocks SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
252- Near Dry Rocks SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
28 - NW of Elbow Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
29 - NW of Elbow Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
45- Inshore of Watson's Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	5
30 - Inshore of Watson's Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
82 - Western Carysfort Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2
47 - Inshore of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
80 - SW corner of Carysfort SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1
48 - Inshore of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
83 - Western Carysfort Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	20
260 - NW Carysfort Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
76 - Turtle Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3
33 - Offshore of Turtle Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
77 - Adjacent to marker	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
34 - Turtle Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (2.1%)	47
<i>Reef rubble</i>						
103 - Molasses SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
104 - Molasses SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
16 - North of French Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
17 - Inshore of Dixie Shoal	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
18 - Inshore of Dixie Shoal	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
87 - Elbow Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
91 - Elbow Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
92 - Elbow Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
210 - North of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
<i>Hard-bottom-sand-rubble matrix</i>						
107 - Molasses SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
108 - Molasses SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
60 - NW of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0

Habitat type/site location	White band	White pox	Tissue necrosis	Snail predation	Damselfish bites	Total colonies
<i>Patchy hard-bottom (< 6 m)</i>						
81 - NW corner of Carysfort SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
51 - Inshore of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
<i>Low-relief hard-bottom (< 6 m)</i>						
63 - SW of Pickles	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
38 - Pickles Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
44 - Inshore of Dixe Shoal	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
19 - North of Horseshoe Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
46 - Inshore of Watson's Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
20 - South of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
50 - Inshore of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
52 - NW of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
53 - South of Buoy at Turtle Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	10
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	10
<i>Inner line reef tract spur & groove</i>						
74 - South of Grecian Rocks SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
100 - Grecian Rocks SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
99 - Grecian Rocks SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
97 - Key Largo Dry Rocks SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
98 - Key Largo Dry Rocks SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
75 - North Dry Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	4
241 - Horseshoe Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
240 - North-North Dry Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	4
<i>High-relief spur & groove</i>						
35 - Pickles Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
36 - Pickles Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
37 - Pickles Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
105 - Molasses Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	4
106 - Molasses Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
39 - Sand Island	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
41 - Sand Island	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
40 - Outside French Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
101 - French Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
102 - French Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
89 - Elbow Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
90 - Elbow Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
42 - Near Maitland Grounding Site	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
43 - Near Maitland Grounding Site	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1
223 - South of S. Carysfort Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
78 - South Carysfort Reef**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
79 - South Carysfort Reef**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	5
<i>Patchy hard-bottom (6-15 m)</i>						
58 - South of Elbow Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
71 - South of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
61 - South of BNP Boundary	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
62 - South of BNP Boundary	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
<i>Low-relief hard-bottom (6-15 m)</i>						
55 - South of Grecian Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
56 - Offshore of Grecian Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
57 - Offshore of Dry Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
93 - Elbow Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
94 - Elbow Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
59 - North of Elbow Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
70 - North of Watson's Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
85 - Central Carysfort Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
232 - North of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0

Habitat type/site location	White band	White pox	Tissue necrosis	Snail predation	Damselfish bites	Total colonies
<i>Low-relief spur & groove (6-15 m)</i>						
64 - North of French Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
65 - Offshore of Dry Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
66 - South of Elbow Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
67 - Northeast of Elbow Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
68 - Northeast of Elbow Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
69 - North of Watson's Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
72 - South of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
86 - SE corner of Carysfort SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
84 - SE corner of Carysfort SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
All habitats combined	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (1.4%)	71

Table 11. Mean (1 SD) density (no. colonies/m²) and live tissue surface area (cm²) of elkhorn coral (*Acropora palmata*) in the upper Keys region of the Florida Keys National Marine Sanctuary surveyed during August 2006. Sites are arranged within habitat types from southwest to northeast. Data based upon surveys of four 15-m x 1-m belt transects per site. Sites asterisked are within Sanctuary Preservation Areas (SPAs).

Habitat type/site location	Colony density			Colony size		
	Colonies	No./m ²	SD	Total area (cm ²)	Area (cm ²) per colony	SD
<i>Mid-channel patch reefs</i>						
1- Mosquito Bank	0	0.000	0.000	0.0	0.0	0.0
2- Inshore of Dry Rocks	0	0.000	0.000	0.0	0.0	0.0
3- Inshore of Dry Rocks	0	0.000	0.000	0.0	0.0	0.0
5- Inshore of Watson's Reef	0	0.000	0.000	0.0	0.0	0.0
7- Basin Hill Shoals	0	0.000	0.000	0.0	0.0	0.0
6- Basin Hill Shoals	0	0.000	0.000	0.0	0.0	0.0
8- Basin Hill Shoals	0	0.000	0.000	0.0	0.0	0.0
9- Basin Hill Shoals	0	0.000	0.000	0.0	0.0	0.0
11- Basin Hill Shoals	0	0.000	0.000	0.0	0.0	0.0
10- Basin Hill Shoals	0	0.000	0.000	0.0	0.0	0.0
12- Marker 23	0	0.000	0.000	0.0	0.0	0.0
13- Turtle Rocks	0	0.000	0.000	0.0	0.0	0.0
14- Inshore of Turtle Reef	0	0.000	0.000	0.0	0.0	0.0
15- Inshore of Turtle Reef	0	0.000	0.000	0.0	0.0	0.0
Stratum total	0	0.000	0.000	0	0.0	0.0
<i>Offshore patch reefs</i>						
21- Inshore of Pickles	0	0.000	0.000	0.0	0.0	0.0
22- Inshore of Pickles	0	0.000	0.000	0.0	0.0	0.0
215- Inshore of 3 Sisters	0	0.000	0.000	0.0	0.0	0.0
23- White Banks	0	0.000	0.000	0.0	0.0	0.0
24- White Banks/Dry Rocks	0	0.000	0.000	0.0	0.0	0.0
26- Mosquito Bank	0	0.000	0.000	0.0	0.0	0.0
27- Inshore of Grecian Rocks SPA	0	0.000	0.000	0.0	0.0	0.0
95 - Near Dry Rocks SPA	0	0.000	0.000	0.0	0.0	0.0
252- Near Dry Rocks SPA	0	0.000	0.000	0.0	0.0	0.0
28 - NW of Elbow Reef SPA	0	0.000	0.000	0.0	0.0	0.0
29 - NW of Elbow Reef SPA	51	0.850	1.396	12146.9	238.2	485.2
45- Inshore of Watson's Reef	0	0.000	0.000	0.0	0.0	0.0
30 - Inshore of Watson's Reef	0	0.000	0.000	0.0	0.0	0.0
82 - Western Carysfort Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
47 - Inshore of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
80 - SW corner of Carysfort SPA**	0	0.000	0.000	0.0	0.0	0.0
48 - Inshore of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
83 - Western Carysfort Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
260 - NW Carysfort Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
76 - Turtle Reef	0	0.000	0.000	0.0	0.0	0.0
33 - Offshore of Turtle Reef	0	0.000	0.000	0.0	0.0	0.0
77 - Adjacent to marker	0	0.000	0.000	0.0	0.0	0.0
34 - Turtle Reef	0	0.000	0.000	0.0	0.0	0.0
Stratum total	51	0.037	0.177	12146.9	238.2	485.2
<i>Reef rubble</i>						
103 - Molasses SPA**	0	0.000	0.000	0.0	0.0	0.0
104 - Molasses SPA**	0	0.000	0.000	0.0	0.0	0.0
16 - North of French Reef SPA	0	0.000	0.000	0.0	0.0	0.0
17 - Inshore of Dixie Shoal	0	0.000	0.000	0.0	0.0	0.0
18 - Inshore of Dixie Shoal	0	0.000	0.000	0.0	0.0	0.0
87 - Elbow Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
91 - Elbow Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
92 - Elbow Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
210 - North of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
Stratum total	0	0.000	0.000	0.0	0.0	0.0
<i>Hard-bottom-sand-rubble matrix</i>						
107 - Molasses SPA**	0	0.000	0.000	0.0	0.0	0.0
108 - Molasses SPA**	0	0.000	0.000	0.0	0.0	0.0

Habitat type/site location	Colony density			Colony size		
	No.	No./m ²	SD	Total area (cm ²)	Area (cm ²) per colony	SD
60 - NW of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
Stratum total	0	0.000	0.000	0.0	0.0	0.0
<i>Patchy hard-bottom (< 6 m)</i>						
81 - NW corner of Carysfort SPA**	0	0.000	0.000	0.0	0.0	0.0
51 - Inshore of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
Stratum total	0	0.000	0.000	0.0	0.0	0.0
<i>Low-relief hard-bottom (< 6 m)</i>						
63 - SW of Pickles	0	0.000	0.000	0.0	0.0	0.0
38 - Pickles Reef	0	0.000	0.000	0.0	0.0	0.0
44 - Inshore of Dixe Shoal	0	0.000	0.000	0.0	0.0	0.0
19 - North of Horseshoe Reef	0	0.000	0.000	0.0	0.0	0.0
46 - Inshore of Watson's Reef	0	0.000	0.000	0.0	0.0	0.0
20 - South of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
50 - Inshore of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
52 - NW of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
53 - South of Buoy at Turtle Rocks	15	0.250	0.416	7738.9	515.9	945.4
Stratum total	15	0.028	0.083	7738.9	515.9	945.4
<i>Inner line reef tract spur & groove</i>						
74 - South of Grecian Rocks SPA	0	0.000	0.000	0.0	0.0	0.0
100 - Grecian Rocks SPA**	20	0.333	0.623	2213.2	110.7	102.9
99 - Grecian Rocks SPA**	1	0.017	0.033	2328.7	2328.7	0.0
97 - Key Largo Dry Rocks SPA**	0	0.000	0.000	0.0	0.0	0.0
98 - Key Largo Dry Rocks SPA**	0	0.000	0.000	0.0	0.0	0.0
75 - North Dry Rocks	5	0.083	0.167	7765.5	1553.1	1789.2
241 - Horseshoe Reef	18	0.300	0.600	2738.3	152.1	154.0
240 - North-North Dry Rocks	56	0.933	1.652	43967.7	785.1	2574.3
Stratum total	100	0.208	0.323	59013.4	985.9	952.2
<i>High-relief spur & groove</i>						
35 - Pickles Reef	0	0.000	0.000	0.0	0.0	0.0
36 - Pickles Reef	0	0.000	0.000	0.0	0.0	0.0
37 - Pickles Reef	0	0.000	0.000	0.0	0.0	0.0
105 - Molasses Reef SPA**	3	0.050	0.100	138.8	46.3	9.3
106 - Molasses Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
39 - Sand Island	66	1.100	1.343	25468.8	391.8	767.9
41 - Sand Island	0	0.000	0.000	0.0	0.0	0.0
40 - Outside French Reef SPA	0	0.000	0.000	0.0	0.0	0.0
101 - French Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
102 - French Reef SPA**	3	0.050	0.064	177.4	59.1	27.2
89 - Elbow Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
90 - Elbow Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
42 - Near Maitland Grounding Site	2	0.033	0.066	101.7	50.9	43.0
43 - Near Maitland Grounding Site	1	0.017	0.033	189.3	189.3	0.0
223 - South of S. Carysfort Reef	0	0.000	0.000	0.0	0.0	0.0
78 - South Carysfort Reef**	29	0.483	0.923	12150.7	419.0	717.1
79 - South Carysfort Reef**	118	1.967	2.593	92691.7	785.5	3312.6
Stratum total	222	0.218	0.531	130918.4	277.4	274.3
<i>Patchy hard-bottom (6-15 m)</i>						
58 - South of Elbow Reef SPA	0	0.000	0.000	0.0	0.0	0.0
71 - South of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
61 - South of BNP Boundary	0	0.000	0.000	0.0	0.0	0.0
62 - South of BNP Boundary	0	0.000	0.000	0.0	0.0	0.0
Stratum total	0	0.000	0.000	0.0	0.0	0.0
<i>Low-relief hard-bottom (6-15 m)</i>						
55 - South of Grecian Rocks	0	0.000	0.000	0.0	0.0	0.0
56 - Offshore of Grecian Rocks	0	0.000	0.000	0.0	0.0	0.0
57 - Offshore of Dry Rocks	0	0.000	0.000	0.0	0.0	0.0
93 - Elbow Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
94 - Elbow Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
59 - North of Elbow Reef SPA	0	0.000	0.000	0.0	0.0	0.0
70 - North of Watson's Reef	0	0.000	0.000	0.0	0.0	0.0

Habitat type/site location	Colony density			Colony size		
	No.	No./m ²	SD	Total area (cm ²)	Area (cm ²) per colony	SD
85 - Central Carysfort Reef SPA**	0	0.000	0.000	0.0	0.0	0.0
232 - North of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
Stratum total	0	0.000	0.000	0.0	0.0	0.0
<i>Low-relief spur & groove (6-15 m)</i>						
64 - North of French Reef SPA	0	0.000	0.000	0.0	0.0	0.0
65 - Offshore of Dry Rocks	0	0.000	0.000	0.0	0.0	0.0
66 - South of Elbow Reef SPA	0	0.000	0.000	0.0	0.0	0.0
67 - Northeast of Elbow Reef SPA	0	0.000	0.000	0.0	0.0	0.0
68 - Northeast of Elbow Reef SPA	0	0.000	0.000	0.0	0.0	0.0
69 - North of Watson's Reef	0	0.000	0.000	0.0	0.0	0.0
72 - South of Carysfort Reef SPA	0	0.000	0.000	0.0	0.0	0.0
86 - SE corner of Carysfort SPA**	0	0.000	0.000	0.0	0.0	0.0
84 - SE corner of Carysfort SPA**	0	0.000	0.000	0.0	0.0	0.0
Stratum total	0	0.000	0.000	0.0	0.0	0.0

Table 12. Numbers and relative frequencies (%) of elkhorn coral (*Acropora palmata*) colonies exhibiting disease and predation in the upper Keys region of the FKNMS.

Habitat type/site location	White band	White pox	Tissue necrosis	Snail predation	Damselfish bites	Total colonies
<i>Mid-channel patch reefs</i>						
1- Mosquito Bank	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
2- Inshore of Dry Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
3- Inshore of Dry Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
5- Inshore of Watson's Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
7- Basin Hill Shoals	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
6- Basin Hill Shoals	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
8- Basin Hill Shoals	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
9- Basin Hill Shoals	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
11- Basin Hill Shoals	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
10- Basin Hill Shoals	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
12- Marker 23	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
13- Turtle Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
14- Inshore of Turtle Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
15- Inshore of Turtle Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
<i>Offshore patch reefs</i>						
21- Inshore of Pickles	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
22- Inshore of Pickles	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
215- Inshore of 3 Sisters	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
23- White Banks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
24- White Banks/Dry Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
26- Mosquito Bank	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
27- Inshore of Grecian Rocks SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
95 - Near Dry Rocks SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
252- Near Dry Rocks SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
28 - NW of Elbow Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
29 - NW of Elbow Reef SPA	0 (0%)	0 (0%)	0 (0%)	2 (3.9%)	0 (0%)	51
45- Inshore of Watson's Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
30 - Inshore of Watson's Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
82 - Western Carysfort Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
47 - Inshore of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
80 - SW corner of Carysfort SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
48 - Inshore of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
83 - Western Carysfort Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
260 - NW Carysfort Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
76 - Turtle Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
33 - Offshore of Turtle Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
77 - Adjacent to marker	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
34 - Turtle Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	2 (3.9%)	0 (0%)	51
<i>Reef rubble</i>						
103 - Molasses SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
104 - Molasses SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
16 - North of French Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
17 - Inshore of Dixie Shoal	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
18 - Inshore of Dixie Shoal	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
87 - Elbow Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
91 - Elbow Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
92 - Elbow Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
210 - North of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
<i>Hard-bottom-sand-rubble matrix</i>						
107 - Molasses SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
108 - Molasses SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
60 - NW of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0

Habitat type/site location	White band	White pox	Tissue necrosis	Snail predation	Damselfish bites	Total colonies
<i>Patchy hard-bottom (< 6 m)</i>						
81 - NW corner of Carysfort SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
51 - Inshore of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
<i>Low-relief hard-bottom (< 6 m)</i>						
63 - SW of Pickles	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
38 - Pickles Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
44 - Inshore of Dixe Shoal	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
19 - North of Horseshoe Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
46 - Inshore of Watson's Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
20 - South of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
50 - Inshore of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
52 - NW of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
53 - South of Buoy at Turtle Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	15
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	15
<i>Inner line reef tract spur & groove</i>						
74 - South of Grecian Rocks SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
100 - Grecian Rocks SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	20
99 - Grecian Rocks SPA**	0 (0%)	0 (0%)	0 (0%)	1 (100%)	0 (0%)	1
97 - Key Largo Dry Rocks SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
98 - Key Largo Dry Rocks SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
75 - North Dry Rocks	0 (0%)	0 (0%)	0 (0%)	1 (20%)	0 (0%)	5
241 - Horseshoe Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	18
240 - North-North Dry Rocks	0 (0%)	0 (0%)	0 (0%)	2 (3.6%)	5 (8.9%)	56
Stratum total	0 (0%)	0 (0%)	0 (0%)	4 (4.0%)	5 (5.0%)	100
<i>High-relief spur & groove</i>						
35 - Pickles Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
36 - Pickles Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
37 - Pickles Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
105 - Molasses Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3
106 - Molasses Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
39 - Sand Island	0 (0%)	0 (0%)	0 (0%)	0 (0%)	5 (7.6%)	66
41 - Sand Island	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
40 - Outside French Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
101 - French Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
102 - French Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3
89 - Elbow Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
90 - Elbow Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
42 - Near Maitland Grounding Site	0 (0%)	0 (0%)	0 (0%)	1 (50.0%)	0 (0%)	2
43 - Near Maitland Grounding Site	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1
223 - South of S. Carysfort Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
78 - South Carysfort Reef**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	29
79 - South Carysfort Reef**	0 (0%)	0 (0%)	0 (0%)	6 (5.1%)	1 (0.8%)	118
Stratum total	0 (0%)	0 (0%)	0 (0%)	7 (3.2%)	6 (2.7%)	222
<i>Patchy hard-bottom (6-15 m)</i>						
58 - South of Elbow Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
71 - South of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
61 - South of BNP Boundary	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
62 - South of BNP Boundary	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
<i>Low-relief hard-bottom (6-15 m)</i>						
55 - South of Grecian Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
56 - Offshore of Grecian Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
57 - Offshore of Dry Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
93 - Elbow Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
94 - Elbow Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
59 - North of Elbow Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
70 - North of Watson's Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
85 - Central Carysfort Reef SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
232 - North of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0

Habitat type/site location	White band	White pox	Tissue necrosis	Snail predation	Damselfish bites	Total colonies
<i>Low-relief spur & groove (6-15 m)</i>						
64 - North of French Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
65 - Offshore of Dry Rocks	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
66 - South of Elbow Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
67 - Northeast of Elbow Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
68 - Northeast of Elbow Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
69 - North of Watson's Reef	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
72 - South of Carysfort Reef SPA	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
86 - SE corner of Carysfort SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
84 - SE corner of Carysfort SPA**	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
Stratum total	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0
All habitats combined	0 (0%)	0 (0%)	0 (0%)	13 (3.4%)	11 (2.8%)	388

Table 13. Mean (1 SD) densities of urchins (no. per m²) from surveys of four 15 m² plots at each site in the upper Keys region of the Florida Keys National Marine Sanctuary during August 2006. Sites asterisked are within Sanctuary Preservation Areas (SPAs).

Habitat type/site location	<i>D. antillarum</i>		<i>E. lucunter</i>		<i>E. viridis</i>		<i>E. tribuloides</i>	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<i>Mid-channel patch reefs</i>								
1- Mosquito Bank								
2- Inshore of Dry Rocks								
3- Inshore of Dry Rocks								
5- Inshore of Watson's Reef	0.0333	0.0385	0.0500	0.0638	0.0000	0.0000	0.0000	0.0000
7- Basin Hill Shoals	0.0167	0.0333	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6- Basin Hill Shoals								
8- Basin Hill Shoals	0.0170	0.0333	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9- Basin Hill Shoals	0.0333	0.0385	0.0333	0.0385	0.4500	0.3000	0.0000	0.0000
11- Basin Hill Shoals	0.0000	0.0000	0.0000	0.0000	0.1000	0.0667	0.0333	0.0667
10- Basin Hill Shoals	0.0000	0.0000	0.0170	0.0333	1.3500	0.8316	0.0000	0.0000
12- Marker 23	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13- Turtle Rocks	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14- Inshore of Turtle Reef	0.0000	0.0000	0.0167	0.0333	0.0000	0.0000	0.0000	0.0000
15- Inshore of Turtle Reef	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Stratum total	0.0100	0.0141	0.0117	0.0177	0.1900	0.4313	0.0033	0.0105
<i>Offshore patch reefs</i>								
21- Inshore of Pickles								
22- Inshore of Pickles								
215- Inshore of 3 Sisters								
23- White Banks								
24- White Banks/Dry Rocks								
26- Mosquito Bank								
27- Inshore of Grecian Rocks SPA								
95 - Near Dry Rocks SPA								
252- Near Dry Rocks SPA								
28 - NW of Elbow Reef SPA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0500	0.0638
29 - NW of Elbow Reef SPA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0170	0.0333
45- Inshore of Watson's Reef	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0500	0.0638
30 - Inshore of Watson's Reef	0.0000	0.0000	0.0000	0.0000	0.0500	0.0638	0.0333	0.0385
82 - Western Carysfort Reef SPA**	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
47 - Inshore of Carysfort Reef SPA	0.0000	0.0000	0.0500	0.0638	0.0170	0.0333	0.0333	0.0667
80 - SW corner of Carysfort SPA**	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
48 - Inshore of Carysfort Reef SPA	0.0333	0.0385	0.0000	0.0000	0.0000	0.0000	0.0667	0.0544
83 - Western Carysfort Reef SPA**	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0333	0.0385
260 - NW Carysfort Reef SPA**	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
76 - Turtle Reef	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0170	0.0333
33 - Offshore of Turtle Reef	0.0170	0.0333	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
77 - Adjacent to marker	0.0170	0.0333	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34 - Turtle Reef	0.0170	0.0330	0.0000	0.0000	0.0000	0.0000	0.0170	0.0333
Stratum total	0.0060	0.0106	0.0036	0.0134	0.0048	0.0138	0.0227	0.0223
<i>Reef rubble</i>								
103 - Molasses SPA**								
104 - Molasses SPA**								
16 - North of French Reef SPA								
17 - Inshore of Dixie Shoal	0.0500	0.1000	0.0500	0.1000	0.0500	0.1000	0.0500	0.1000
18 - Inshore of Dixie Shoal	0.0500	0.0333	0.0500	0.0333	0.0500	0.0333	0.0500	0.0333
87 - Elbow Reef SPA**								
91 - Elbow Reef SPA**								
92 - Elbow Reef SPA**								
210 - North of Carysfort Reef SPA	0.0333	0.0385	0.0333	0.0385	0.0333	0.0385	0.0333	0.0385
Stratum total	0.0444	0.0096	0.0444	0.0096	0.0444	0.0096	0.0444	0.0096
<i>Hard-bottom-sand-rubble matrix</i>								
107 - Molasses SPA**								
108 - Molasses SPA**								
60 - NW of Carysfort Reef SPA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0170	0.0333
Stratum total	0.0000		0.0000		0.0000		0.0170	

Habitat type/site location	<i>D. antillarum</i>		<i>E. lucunter</i>		<i>E. viridis</i>		<i>E. tribuloides</i>	
<i>Patchy hard-bottom (< 6 m)</i>								
81 - NW corner of Carysfort SPA**	0.0170	0.0333	0.0000	0.0000	0.0000	0.0000	3	0.0500
51 - Inshore of Carysfort Reef SPA	0.0170	0.0333	0.0000	0.0000	0.0000	0.0000	8	0.1333
Stratum total	0.0170	0.0000	0.0000	0.0000	0.0000	0.0000	11	0.0917
<i>Low-relief hard-bottom (< 6 m)</i>								
63 - SW of Pickles								
38 - Pickles Reef								
44 - Inshore of Dixe Shoal	0.0170	0.0330	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19 - North of Horseshoe Reef	0.0170	0.0333	0.0000	0.0000	0.0000	0.0000	0.1667	0.1277
46 - Inshore of Watson's Reef	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1833	0.1478
20 - South of Carysfort Reef SPA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0333	0.0667
50 - Inshore of Carysfort Reef SPA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0333	0.0667
52 - NW of Carysfort Reef SPA	0.1000	0.2000	0.0000	0.0000	0.0000	0.0000	0.1167	0.1139
53 - South of Buoy at Turtle Rocks	0.0170	0.0333	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Stratum total	0.0216	0.0356	0.0000	0.0000	0.0000	0.0000	0.0762	0.0781
<i>Inner line reef tract spur & groove</i>								
74 - South of Grecian Rocks SPA								
100 - Grecian Rocks SPA**								
99 - Grecian Rocks SPA**								
97 - Key Largo Dry Rocks SPA**								
98 - Key Largo Dry Rocks SPA**								
75 - North Dry Rocks	0.0170	0.0333	0.0000	0.0000	0.0000	0.0000	0.0667	0.0943
241 - Horseshoe Reef	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
240 - North-North Dry Rocks	0.0000	0.0000	0.0170	0.0333	0.0000	0.0000	0.0170	0.0333
Stratum total	0.0057	0.0098	0.0057	0.0098	0.0000	0.0000	0.0279	0.0347
<i>High-relief spur & groove</i>								
35 - Pickles Reef								
36 - Pickles Reef								
37 - Pickles Reef								
105 - Molasses Reef SPA**								
106 - Molasses Reef SPA**								
39 - Sand Island								
41 - Sand Island	0.1000	0.1277	0.0000	0.0000	0.0000	0.0000	0.2500	0.3000
40 - Outside French Reef SPA								
101 - French Reef SPA**								
102 - French Reef SPA**								
89 - Elbow Reef SPA**								
90 - Elbow Reef SPA**								
42 - Near Maitland Grounding Site	0.0170	0.0330	0.0000	0.0000	0.0000	0.0000	0.0333	0.0667
43 - Near Maitland Grounding Site	0.0667	0.0943	0.0000	0.0000	0.0000	0.0000	0.1333	0.0770
223 - South of S. Carysfort Reef	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0333	0.0385
78 - South Carysfort Reef**	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
79 - South Carysfort Reef**	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0333	0.0667
Stratum total	0.0306	0.0427	0.0000	0.0000	0.0000	0.0000	0.0805	0.0945
<i>Patchy hard-bottom (6-15 m)</i>								
58 - South of Elbow Reef SPA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
71 - South of Carysfort Reef SPA	0.0170	0.0333	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
61 - South of BNP Boundary	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
62 - South of BNP Boundary	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Stratum total	0.0043	0.0085	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<i>Low-relief hard-bottom (6-15 m)</i>								
55 - South of Grecian Rocks	0.0333	0.0385	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
56 - Offshore of Grecian Rocks	0.0170	0.0333	0.0000	0.0000	0.0170	0.0333	0.0000	0.0000
57 - Offshore of Dry Rocks	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0170	0.0333
93 - Elbow Reef SPA**								
94 - Elbow Reef SPA**								
59 - North of Elbow Reef SPA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
70 - North of Watson's Reef	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
85 - Central Carysfort Reef SPA**	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
232 - North of Carysfort Reef SPA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Stratum total	0.0072	0.0131	0.0000	0.0000	0.0024	0.0064	0.0024	0.0064

Habitat type/site location	<i>D. antillarum</i>		<i>E. lucunter</i>		<i>E. viridis</i>		<i>E. tribuloides</i>	
<i>Low-relief spur & groove (6-15 m)</i>								
64 - North of French Reef SPA								
65 - Offshore of Dry Rocks	0.0170	0.0333	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
66 - South of Elbow Reef SPA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
67 - Northeast of Elbow Reef SPA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
68 - Northeast of Elbow Reef SPA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
69 - North of Watson's Reef	0.0170	0.0333	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
72 - South of Carysfort Reef SPA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
86 - SE corner of Carysfort SPA**	0.0000	0.0000	0.0000	0.0000	0.0170	0.0330	0.0333	0.0667
84 - SE corner of Carysfort SPA**	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Stratum total	0.0043	0.0079	0.0000	0.0000	0.0021	0.0060	0.0042	0.0118

Table 14. Number of individuals (N), mean, variability (SD, standard deviation) and range in sea urchin test diameter by species and habitat type in the upper Keys region of the Florida Keys National Marine Sanctuary surveyed during August 2006.

Habitat type (no. sites)	Transect depth (m)	N	Mean test size (cm)	SD	Min. test size (cm)	Max. test size (cm)
<i>Diadema antillarum</i>						
Mid-channel patch reef (10)	1.2-6.6 m	6	3.6	2.5	0.5	6.0
Offshore patch reef (14)	1.2-9.9 m	5	4.3	2.5	1.6	7.5
Reef rubble (3)	2.7-7.2 m	8	2.0	0.7	1.0	3.0
Hard-bottom-sand-rubble matrix (1)	7.5-8.1 m					
Patchy hard-bottom, < 6 m (2)	2.7-6.0 m	2	4.0	4.2	1.0	7.0
Low-relief hard-bottom, < 6 m (7)	2.4-4.8 m	9	4.3	2.0	1.5	7.0
Inner line reef tract spur & groove (3)	2.4-5.4 m	1	7.2		7.2	
High-relief spur and groove (6)	0.9-5.4 m	11	2.8	1.6	1.4	5.6
Patchy hard-bottom, 6-15 m (4)	6.6-13.5 m	1	7.1		7.1	
Low-relief hard-bottom, 6-15 m (7)	7.8-12.3 m	3	1.6	0.9	1.0	2.6
Low-relief spur & groove, 6-15 m (8)	9.3-15.0 m	2	0.7	0.4	0.4	0.9
All habitats combined (65 sites)	0.9-15.0 m	48	3.3	2.2	0.4	7.5
<i>Echinometra lucunter</i>						
Mid-channel patch reef (10)	1.2-6.6 m	4	2.2	0.7	1.6	3.0
Offshore patch reef (14)	1.2-9.9 m	3	1.0	0.1	0.9	1.0
Reef rubble (3)	2.7-7.2 m					
Hard-bottom-sand-rubble matrix (1)	7.5-8.1 m					
Patchy hard-bottom, < 6 m (2)	2.7-6.0 m					
Low-relief hard-bottom, < 6 m (7)	2.4-4.8 m					
Inner line reef tract spur & groove (3)	2.4-5.4 m	1	0.9		0.9	
High-relief spur and groove (6)	0.9-5.4 m					
Patchy hard-bottom, 6-15 m (4)	6.6-13.5 m					
Low-relief hard-bottom, 6-15 m (7)	7.8-12.3 m					
Low-relief spur & groove, 6-15 m (8)	9.3-15.0 m					
All habitats combined (65 sites)	0.9-15.0 m	8	1.6	0.8	0.9	3.0
<i>Echinometra viridis</i>						
Mid-channel patch reef (10)	1.2-6.6 m	114	2.8	0.7	0.7	4.5
Offshore patch reef (14)	1.2-9.9 m	4	1.3	0.9	0.5	2.5
Reef rubble (3)	2.7-7.2 m					
Hard-bottom-sand-rubble matrix (1)	7.5-8.1 m					
Patchy hard-bottom, < 6 m (2)	2.7-6.0 m					
Low-relief hard-bottom, < 6 m (7)	2.4-4.8 m					
Inner line reef tract spur & groove (3)	2.4-5.4 m					
High-relief spur and groove (6)	0.9-5.4 m					
Patchy hard-bottom, 6-15 m (4)	6.6-13.5 m					
Low-relief hard-bottom, 6-15 m (7)	7.8-12.3 m	1	0.7		0.7	
Low-relief spur & groove, 6-15 m (8)	9.3-15.0 m	1	1.0		1.0	
All habitats combined (65 sites)	0.9-15.0 m	120	2.7	0.8	0.5	4.5
<i>Euclidaris tribuloides</i>						
Mid-channel patch reef (10)	1.2-6.6 m	5	3.2	0.8	2.0	4.0
Offshore patch reef (14)	1.2-9.9 m	19	2.1	0.5	1.4	3.0
Reef rubble (3)	2.7-7.2 m	1	2.2		2.2	
Hard-bottom-sand-rubble matrix (1)	7.5-8.1 m	1	1.5		1.5	
Patchy hard-bottom, < 6 m (2)	2.7-6.0 m	11	2.7	0.6	2.0	4.0
Low-relief hard-bottom, < 6 m (7)	2.4-4.8 m	32	2.2	0.6	1.0	3.5
Inner line reef tract spur & groove (3)	2.4-5.4 m	5	2.0	0.9	1.4	3.5
High-relief spur and groove (6)	0.9-5.4 m	29	1.8	0.5	0.9	3.0
Patchy hard-bottom, 6-15 m (4)	6.6-13.5 m					
Low-relief hard-bottom, 6-15 m (7)	7.8-12.3 m	1	1.8		1.8	
Low-relief spur & groove, 6-15 m (8)	9.3-15.0 m	2	1.9	0.6	1.4	2.3
All habitats combined (65 sites)	0.9-15.0 m	106	2.2	0.7	0.9	4.0