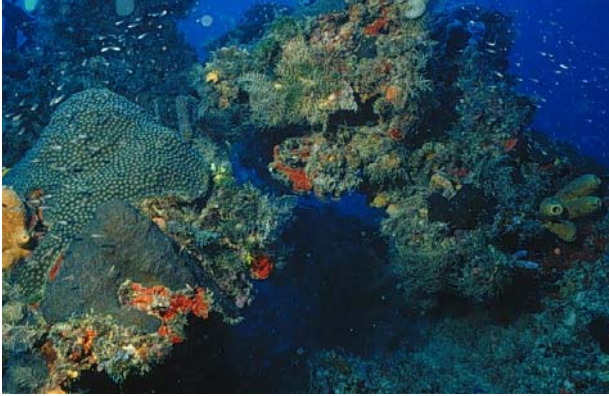
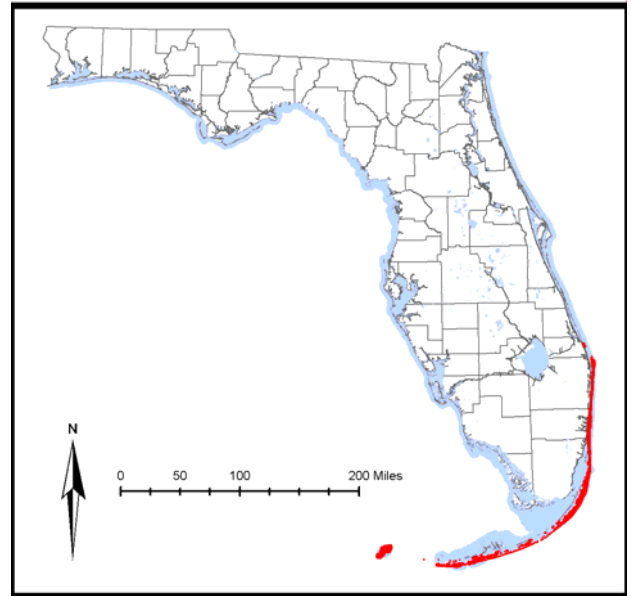


Coral Reef



Status

Current condition: Poor and declining. According to the best available GIS information at this time (see Appendix D. GIS Data Tables), approximately 1,400,000 acres (566,560 ha) of Coral Reef are present in Florida.



Some habitat distributions or locations may be misrepresented on this map due to size, resolution and insufficient data sources.

Habitat Description

FNAI type: Coral Reef

A Coral Reef is an epibenthic community; a concentrated topographic complex of massive corals and other sessile organisms (algae, bryozoans) that build calcium carbonate (limestone) skeletons. The structural complexity provides habitat for a highly diverse flora and fauna that live all or portions of their lives on Coral Reefs.

Two major Coral Reef types are recognized: patch reefs and offshore bank reefs. Bank Reefs are further defined by zones (e.g., reef flat, spur and groove). The types of Coral Reefs found off the coast of Florida include the shallow-wave resistant reefs in the region from Dry Tortugas to Martin County; deeper (30-130 ft; 10-40 m) reefs in the same region; the *Oculina* Banks seaward of Palm Beach to Vero Beach. Deep water (165-265 ft; 50-80 m) structures such as Pulley Ridge and the Florida Middle Grounds occur along the west Florida shelf break in federal waters.

Associated Species of Greatest Conservation Need

Mammals

- *Trichechus manatus latirostris* Florida Manatee
- *Tursiops truncatus* Atlantic Bottlenose Dolphin

Birds

- *Fregata magnificens* Magnificent Frigatebird
- *Sterna dougallii* Roseate Tern
- *Sterna anaethetus* Bridled Tern

Reptiles

- *Chelonia mydas* Green Turtle
- *Eretmochelys imbricata* Hawksbill
- *Caretta caretta* Loggerhead

Fish

- *Ginglymostoma cirratum* Nurse Shark
- *Rhincodon typus* Whale Shark
- *Carcharhinus falciformis* Silky Shark
- *Carcharhinus leucas* Bull Shark
- *Carcharhinus limbatus* Blacktip Shark
- *Carcharhinus perezii* Reef Shark
- *Carcharhinus plumbeus* Sandbar Shark
- *Galeocerdo cuvier* Tiger Shark
- *Negaprion brevirostris* Lemon Shark
- *Rhizoprionodon terraenovae* Atlantic Sharpnose Shark
- *Sphyrna lewini* Scalloped Hammerhead
- *Sphyrna mokarran* Great Hammerhead
- *Pristis pectinata* Smalltooth Sawfish
- *Aetobatus narinari* Spotted Eagle Ray
- *Manta birostris* Giant Manta
- *Megalops atlanticus* Tarpon
- *Echidna catenata* Chain Moray
- *Enchelycore nigricans* Viper Moray
- *Gymnothorax funebris* Green Moray
- *Gymnothorax miliaris* Goldentail Moray
- *Gymnothorax moringa* Spotted Moray
- *Gymnothorax vicinus* Purplemouth Moray
- *Opsanus beta* Gulf Toadfish
- *Opsanus pardus* Leopard Toadfish
- *Antennarius striatus* Striated Frogfish
- *Ogcocephalus corniger* Longnose Batfish
- *Mugil curema* White Mullet
- *Hemiramphus brasiliensis* Ballyhoo
- *Bryx dunckeri* Pugnose Pipefish
- *Cosmocampus albirostris* Whitenose Pipefish
- *Cosmocampus elucens* Shortfin Pipefish
- *Halicampus crinitus* Banded Pipefish
- *Hippocampus reidi* Longsnout Seahorse
- *Aulostomus maculatus* Atlantic Trumpetfish

- *Fistularia tabacaria* Bluespotted Cornetfish
- *Centropomus undecimalis* Common Snook
- *Cephalopholis fulva* Coney
- *Dermatolepis inermis* Marbled Grouper
- *Epinephelus adscensionis* Rock Hind
- *Epinephelus drummondhayi* Speckled Hind
- *Epinephelus flavolimbatus* Yellowedge Grouper
- *Epinephelus guttatus* Red Hind
- *Epinephelus itajara* Goliath Grouper
- *Epinephelus morio* Red Grouper
- *Epinephelus nigritus* Warsaw Grouper
- *Epinephelus niveatus* Snowy Grouper
- *Epinephelus striatus* Nassau Grouper
- *Hypoplectrus aberrans* Yellowbelly Hamlet
- *Hypoplectrus gemma* Blue Hamlet
- *Hypoplectrus guttavarius* Shy Hamlet
- *Hypoplectrus indigo* Indigo Hamlet
- *Hypoplectrus nigricans* Black Hamlet
- *Hypoplectrus puella* Barred Hamlet
- *Hypoplectrus unicolor* Butter Hamlet
- *Liopropoma rubre* Peppermint Basslet
- *Mycteroperca bonaci* Black Grouper
- *Mycteroperca interstitialis* Yellowmouth Grouper
- *Mycteroperca microlepis* Gag
- *Mycteroperca phenax* Scamp
- *Mycteroperca venenosa* Yellowfin Grouper
- *Paranthias furcifer* Atlantic Creole-fish
- *Pseudogramma gregoryi* Reef Bass
- *Rypticus subbifrenatus* Spotted Soapfish
- *Schultzea beta* School Bass
- *Serranus annularis* Orangeback Bass
- *Serranus tabacarius* Tobaccofish
- *Serranus tigrinus* Harlequin Bass
- *Opistognathus macrognathus* Banded Jawfish
- *Apogon aurolineatus* Bridle Cardinalfish
- *Apogon binotatus* Barred Cardinalfish
- *Apogon lachneri* Whitestar Cardinalfish
- *Apogon maculatus* Flamefish
- *Apogon planifrons* Pale Cardinalfish
- *Apogon pseudomaculatus* Twospot Cardinalfish
- *Apogon quadrisquamatus* Sawcheek Cardinalfish
- *Apogon townsendi* Belted Cardinalfish
- *Astrapogon alutus* Bronze Cardinalfish
- *Astrapogon puncticulatus* Blackfin Cardinalfish
- *Phaeoptyx conklini* Freckled Cardinalfish
- *Phaeoptyx pigmentaria* Dusky Cardinalfish
- *Phaeoptyx xenus* Sponge Cardinalfish
- *Rachycentron canadum* Cobia
- *Alectis ciliaris* African Pompano
- *Caranx latus* Horse-eye Jack
- *Seriola dumerili* Greater Amberjack
- *Seriola rivoliana* Almaco Jack
- *Seriola zonata* Banded Rudderfish

• <i>Lutjanus analis</i>	Mutton Snapper
• <i>Lutjanus apodus</i>	Schoolmaster
• <i>Lutjanus cyanopterus</i>	Cubera Snapper
• <i>Lutjanus griseus</i>	Gray Snapper
• <i>Lutjanus jocu</i>	Dog Snapper
• <i>Lutjanus mahogoni</i>	Mahogany Snapper
• <i>Lutjanus synagris</i>	Lane Snapper
• <i>Ocyurus chrysurus</i>	Yellowtail Snapper
• <i>Rhomboplites aurorubens</i>	Vermilion Snapper
• <i>Anisotremus surinamensis</i>	Black Margate
• <i>Anisotremus virginicus</i>	Porkfish
• <i>Haemulon album</i>	Margate
• <i>Haemulon aurolineatum</i>	Tomtate
• <i>Haemulon flavolineatum</i>	French Grunt
• <i>Haemulon plumierii</i>	White Grunt
• <i>Haemulon sciurus</i>	Bluestriped Grunt
• <i>Calamus bajonado</i>	Jolthead Porgy
• <i>Calamus calamus</i>	Saucereye Porgy
• <i>Pagrus pagrus</i>	Red Porgy
• <i>Equetus lanceolatus</i>	Jackknife-fish
• <i>Equetus punctatus</i>	Spotted Drum
• <i>Odontoscion dentex</i>	Reef Croaker
• <i>Pareques acuminatus</i>	High-hat
• <i>Pempheris schomburgkii</i>	Glassy Sweeper
• <i>Chaetodon capistratus</i>	Foureye Butterflyfish
• <i>Chaetodon ocellatus</i>	Spotfin Butterflyfish
• <i>Chaetodon sedentarius</i>	Reef Butterflyfish
• <i>Chaetodon striatus</i>	Banded Butterflyfish
• <i>Prognathodes aculeatus</i>	Longsnout Butterflyfish
• <i>Holacanthus bermudensis</i>	Blue Angelfish
• <i>Holacanthus ciliaris</i>	Queen Angelfish
• <i>Holacanthus tricolor</i>	Rock Beauty
• <i>Pomacanthus arcuatus</i>	Gray Angelfish
• <i>Pomacanthus paru</i>	French Angelfish
• <i>Amblycirrhitis pinos</i>	Redspotted Hawkfish
• <i>Abudefduf saxatilis</i>	Sergeant Major
• <i>Chromis cyanea</i>	Blue Chromis
• <i>Chromis enchrysurus</i>	Yellowtail Reeffish
• <i>Chromis insolata</i>	Sunshinefish
• <i>Chromis multilineata</i>	Brown Chromis
• <i>Chromis scotti</i>	Purple Reeffish
• <i>Microspathodon chrysurus</i>	Yellowtail Damselfish
• <i>Stegastes dienaecus</i>	Longfin Damselfish
• <i>Stegastes leucostictus</i>	Beaugregory
• <i>Stegastes partitus</i>	Bicolor Damselfish
• <i>Stegastes planifrons</i>	Threespot Damselfish
• <i>Stegastes variabilis</i>	Cocoa Damselfish
• <i>Bodianus pulchellus</i>	Spotfin Hogfish
• <i>Bodianus rufus</i>	Spanish Hogfish
• <i>Clepticus parrae</i>	Creole Wrasse
• <i>Halichoeres bathyphilus</i>	Greenband Wrasse
• <i>Halichoeres bivittatus</i>	Slippery Dick
• <i>Halichoeres caudalis</i>	Painted Wrasse

• <i>Halichoeres cyanocephalus</i>	Yellowcheek Wrasse
• <i>Halichoeres garnoti</i>	Yellowhead Wrasse
• <i>Halichoeres maculipinna</i>	Clown Wrasse
• <i>Halichoeres pictus</i>	Rainbow Wrasse
• <i>Halichoeres poeyi</i>	Blackear Wrasse
• <i>Halichoeres radiatus</i>	Puddingwife
• <i>Lachnolaimus maximus</i>	Hogfish
• <i>Thalassoma bifasciatum</i>	Bluehead
• <i>Scarus coelestinus</i>	Midnight Parrotfish
• <i>Scarus coeruleus</i>	Blue Parrotfish
• <i>Scarus guacamaia</i>	Rainbow Parrotfish
• <i>Scarus iseri</i>	Striped Parrotfish
• <i>Scarus taeniopterus</i>	Princess Parrotfish
• <i>Scarus vetula</i>	Queen Parrotfish
• <i>Sparisoma atomarium</i>	Greenblotch Parrotfish
• <i>Sparisoma aurofrenatum</i>	Redband Parrotfish
• <i>Sparisoma chrysopterus</i>	Redtail Parrotfish
• <i>Sparisoma rubripinne</i>	Yellowtail Parrotfish
• <i>Sparisoma viride</i>	Stoplight Parrotfish
• <i>Labrisomus bucciferus</i>	Puffcheek Blenny
• <i>Labrisomus gobio</i>	Palehead Blenny
• <i>Labrisomus guppyi</i>	Mimic Blenny
• <i>Labrisomus haitiensis</i>	Longfin Blenny
• <i>Labrisomus kalisherae</i>	Downy Blenny
• <i>Labrisomus nigricinctus</i>	Spotcheek Blenny
• <i>Malacoctenus aurolineatus</i>	Goldline Blenny
• <i>Malacoctenus macropus</i>	Rosy Blenny
• <i>Malacoctenus triangulatus</i>	Saddled Blenny
• <i>Paraclinus grandicomis</i>	Horned Blenny
• <i>Paraclinus nigripinnis</i>	Blackfin Blenny
• <i>Starksia ocellata</i>	Checkered Blenny
• <i>Starksia starcki</i>	Key Blenny
• <i>Acanthemblemaria aspera</i>	Roughhead Blenny
• <i>Emblemaria atlantica</i>	Banner Blenny
• <i>Emblemaria pandionis</i>	Sailfin Blenny
• <i>Emblemariopsis bahamensis</i>	Blackhead Blenny
• <i>Emblemariopsis diaphana</i>	Glass Blenny
• <i>Hemimblemaria simula</i>	Wrasse Blenny
• <i>Stathmonotus hemphilli</i>	Blackbelly Blenny
• <i>Hypleurochilus bermudensis</i>	Barred Blenny
• <i>Ophioblennius macclurei</i>	Redlip Blenny
• <i>Coryphopterus dicrus</i>	Colon Goby
• <i>Coryphopterus eidolon</i>	Pallid Goby
• <i>Coryphopterus glaucofraenum</i>	Bridled Goby
• <i>Coryphopterus hyalinus</i>	Glass Goby
• <i>Coryphopterus lipernes</i>	Peppermint Goby
• <i>Coryphopterus personatus</i>	Masked Goby
• <i>Coryphopterus thrix</i>	Bartial Goby
• <i>Elacatinus oceanops</i>	Neon Goby
• <i>Lythrypnus nesiotes</i>	Island Goby
• <i>Lythrypnus phorellus</i>	Convict Goby
• <i>Lythrypnus spilus</i>	Bluegold Goby
• <i>Priolepis hipoliti</i>	Rusty Goby

- *Acanthurus bahianus*
 - *Acanthurus chirurgus*
 - *Acanthurus coeruleus*
 - *Balistes capriscus*
 - *Balistes vetula*
 - *Aluterus scriptus*
 - *Cantherhines pullus*
 - *Monacanthus tuckeri*
 - *Lactophrys bicaudalis*
 - *Lactophrys trigonus*
 - *Lactophrys triqueter*
 - *Canthigaster rostrata*
 - *Chilomycterus schoepfii*
 - *Diodon holocanthus*
- Ocean Surgeon
 - Doctorfish
 - Blue Tang
 - Gray Triggerfish
 - Queen Triggerfish
 - Scrawled Filefish
 - Orangespotted Filefish
 - Slender Filefish
 - Spotted Trunkfish
 - Trunkfish
 - Smooth Trunkfish
 - Sharpnose Puffer
 - Striped Burrfish
 - Balloonfish

Invertebrates

- *Ircinia campana*
 - *Spherospongia vesparia*
 - *Bartholomea annulata*
 - *Condylactis gigantea*
 - *Antipathes dichotoma*
 - *Antipathes pennacea*
 - *Discosoma sanctithomae*
 - *Rhodactis spp.*
 - *Ricordea florida*
 - *Gorgonia ventalina*
 - *Acropora cervicornis*
 - *Acropora palmata*
 - *Agaricia agaricites*
 - *Agaricia fragilis*
 - *Agaricia lamarcki*
 - *Leptoseris cucullata*
 - *Stephanocenia michelinii*
 - *Eusmilia fastigiata*
 - *Cladocora arbuscula*
 - *Colpophyllia natans*
 - *Diploria clivosa*
 - *Diploria labyrinthiformis*
 - *Diploria strigosa*
 - *Favia fragum*
 - *Manicina areolata*
 - *Montastraea annularis*
 - *Montastraea cavernosa*
 - *Solenastrea bournoni*
 - *Solenastrea hyades*
 - *Dendrogyra cylindrus*
 - *Dichocoenia stokesi*
 - *Meandrina meandrites*
 - *Isophyllastraera rigida*
 - *Isophyllia sinuosa*
 - *Mussa angulosa*
 - *Mycetophyllia aliciae*
- Vase Sponge
 - Loggerhead Sponge
 - Ringed Anenome
 - Pink-tip Anenome
 - Black Coral
 - Black Coral
 - Warty False Coral
 - False Coral
 - Florida False Coral
 - Purple Sea Fan
 - Staghorn Coral
 - Elkhorn Coral
 - Lettuce Coral
 - Fragile Saucer Coral
 - Sheet Coral
 - Sunray Lettuce Coral
 - Blushing Star Coral
 - Smooth Flower Coral
 - Tube Coral
 - Boulder Brain Coral
 - Knobby Brain Coral
 - Grooved Brain Coral
 - Symmetrical Brain Coral
 - Golf Ball Coral
 - Rose Coral
 - Column Star Coral
 - Great Star Coral
 - Smooth Star Coral
 - Knobby Star Coral
 - Pillar Coral
 - Pineapple Coral
 - Maze Coral
 - Rough Star Coral
 - Sinuuous Cactus Coral
 - Large Flower Coral
 - Knobby Cactus Coral

- *Mycetophyllia danaana* Low-ridge Cactus Coral
- *Mycetophyllia ferox* Rough Cactus Coral
- *Mycetophyllia lamarckiana* Ridged Cactus Coral
- *Scolymia cubensis* Artichoke Coral
- *Scolymia lacera* Atlantic Mushroom Coral
- *Oculina diffusa* Diffuse Ivory Bush Coral
- *Oculina robusta* Robust Ivory Tree Coral
- *Madracis decactis* Ten-rayed Star Coral
- *Madracis formosa* Eight-rayed Star Coral
- *Madracis mirabilis* Yellow Pencil Coral
- *Madracis pharensis* Encrusting Star Coral
- *Porites astreoides* Mustard Hill Coral
- *Porites branneri* Blue Crust Coral
- *Porites porites* Finger Coral
- *Astrangia poculata* Northern Star Coral
- *Astrangia solitaria* Solitary Cup Coral
- *Phyllangia americana* Hidden Cup Coral
- *Siderastrea radialis* Lesser Starlet Coral
- *Siderastrea siderea* Massive Starlet Coral
- *Palythoa caribaeorum* Golden Sea Mat
- *Zoanthus pulchellus* Green Sea Mat
- *Millepora alcicornis* Fire Coral
- *Millepora complanata* Fire Coral
- *Physalia physalis* Portuguese Man-o-war
- *Distichopora violacea* Violet Lace Coral
- *Stylaster filigranus* Frilly Lace Coral
- *Spondylus americanus* Atlantic Thorny Oyster
- *Octopus vulgaris* Octopus
- *Cypraea cervus* Atlantic Deer Cowrie
- *Cyphoma gibbosum* Flamingo Tongue
- *Charonia tritonis variegata* Atlantic Trumpet Triton
- *Strombus gigas* Queen Conch
- *Elysia crispata* Lettuce Slug
- *Comactinia filigranus* Red Arm Sea Feather
- *Nemaster spp.* Feather Stars
- *Diadema antillarum* Long-spined Urchin
- *Holothuria florida* Florida Sea Cucumber
- *Ophiophragmus filigraneus* Brittle Star
- *Asteropora annulata* Basket Star
- *Astrophyton muricatum* Basket Star
- *Hermodice carunculata* Fire (Bristle) Worm
- *Spirobranchus gigantea gigantea* Christmas Tree Worm
- *Clibanarius tricolor* Blue-legged or tricolor Hermit Crab
- *Lysmata wurdemanni* Peppermint Shrimp
- *Mithrax spinosissimus* Caribbean King Crab, Channel Clinging Crab
- *Stenorynchus seticornis* Yellowline Arrow Crab
- *Phimochirus operculatus* Polkadotted Hermit Crab
- *Periclimenes wurdemanni* Spotted Cleaner Shrimp
- *Panulirus argus* Spiny Lobster
- *Stenopus hispidus* Banded-coral Shrimp
- *Chiton tuberculatus* Olive Tiger Beetle
- *Didemnum vanderhorst* Tunicates
- *Eudistoma sp. indeterminata* Strawberry Tunicates

Conservation Threats

The threat to Coral Reef habitats caused by Key Predator/Herbivore Loss reflects the loss of *Diadema antillarum* sea urchins that has resulted in an overabundance of algae and threatens the health of the entire community. Other threats include over-fishing of the snapper/grouper complex, and intensive fishing of the spiny lobster and stone crab. Nutrient loading impacts species composition and community structure, and potentially interacts with parasites and pathogens to degrade the community further. Damage from groundings of boats and ships, and anchors of all size vessels have direct and cumulative impact on Coral Reefs.

Threats to the Coral Reef habitat that were also identified for multiple other habitats are addressed in the Chapter Multiple Habitat Threats and Conservation Actions. These threats include:

- Channel modification/shipping Lanes
- Chemicals and toxins
- Climate variability
- Coastal development
- Dam management/incompatible release of water (quality, quantity, timing)
- Disruption of longshore transport of sediments
- Fishing gear impacts
- Harmful algal blooms
- Incompatible fishing pressure
- Incompatible industrial operations
- Incompatible recreational activities
- Incompatible resource extraction: mining/drilling
- Industrial spills
- Invasive plants
- Key predator/herbivore loss
- Management of nature (beach nourishment and impoundments)
- Nutrient loads (urban)
- Roads, bridges and causeways
- Shoreline hardening
- Vessel impacts

The following stresses and sources of stress threaten this habitat:

Stresses		Habitat Stress Rank
A	Altered structure	Very High
B	Altered species composition	Very High
C	Missing key communities or functional guilds/trophic shift	Very High
D	Keystone species missing or lacking in abundance	Very High
E	Habitat destruction	Very High
F	Altered weather regime/sea level rise	High
G	Altered water quality, physical, chemistry	High
H	Altered primary productivity	High
I	Altered water quality–contaminants	Medium
J	Altered water quality–nutrients	Medium
K	Habitat disturbance	Medium
L	Sedimentation	Medium

The sources of stress, or threats, were used to generate conservation actions.

Sources of Stress		Habitat Source Rank	Related Stresses (see above)
1	Climate variability	Very High	A, B, C, D, E, F, G, H, I, J, K
2	Inadequate stormwater management	Very High	A, B, C, D, E, G, H, I, J, K
3	Coastal development	Very High	A, E, G
4	Nutrient loads (all sources)	Very High	A, B, C, D, G, H, J, K
5	Parasites/pathogens	Very High	A, B, C, D, E, H, K
6	Incompatible fishing pressure	Very High	A, B, C, D, E, H, K
7	Fishing gear impacts	High	A, B, C, D, E, K
8	Invasive plants	High	A, B, C, D, E, K
9	Key predator/herbivore losses	High	A, B, D, K
10	Dam operations/incompatible release of water (quality, quantity, timing)	High	B, E, G, H
11	Channel modification/shipping lanes	High	A, E, G
12	Roads, bridges and causeways	High	A, B, C, E, G, H, I, K
13	Vessel impacts	High	A, B, C, D, E, I, K
14	Boating impacts	High	A, B, C, D, E, G, I, K
15	Management of nature (beach nourishment, impoundments)	High	A, B, C, E, G, I, K
16	Incompatible aquarium trade	High	B, C, D, K
17	Chemicals and toxins	High	B, C, D, I, K
18	Incompatible resource extraction: mining/drilling	High	G
19	Shoreline hardening	High	E, G
30	Harmful algal blooms	High	G, H
21	Utility corridors	Medium	A, B, D, E, K
22	Incompatible recreational activities	Medium	A, B, E, I, K
23	Incompatible industrial operations	Medium	A, B, C, D, I, K
24	Disruption of longshore transport of sediments	Medium	G
25	Industrial spills	Medium	A, B, C, E, H, I, K
26	Placement of artificial structures	Medium	A, B, C, D, E, G, K
27	Military activities	Medium	E

Sources of Stress		Habitat Source Rank	Related Stresses (see above)
28	Solid waste	Medium	A, E
Statewide Threat Rank of Habitat		Very High	

Conservation Actions

Actions to abate the threats to Coral Reef that were also identified as statewide threats (see list above), are in the Chapter Multiple Habitat Threats and Conservation Actions. Outcomes identified for this habitat address restoration of *Diadema* populations, reducing pollution inputs, and ensuring that ship anchorages are not sited over sensitive areas, and reducing the probability that vessels run aground.

Highest ranked actions identified for abating this source of stress focused on:

- Expanding the recommendations made by the Land Based Sources of Pollution Focus Team of the Southeast Florida Coral Reef Initiative statewide to include all estuarine and nearshore areas of the State
- Funding research and communication on parasites, pathogens, and biotoxins
- Establishing a funding source for remediation of damages from vessel impacts
- Development of a vessel anchoring management plan and use of mooring buoys

Additional actions included:

- Improving management of water control structures to restore freshwater flows to nearshore systems
- Developing additional methods using new technologies to keep vessels away from sensitive areas
- Supporting restoration of damaged areas and replacement of species lost

Dam Operations

Overall Rank	Land/Water/Species Management	Feasibility	Benefits	Cost
M	Encourage improvement of management of water control structures to protect and enhance downstream environmental conditions.	M	M	M

Climate Variability

Overall Rank	Research	Feasibility	Benefits	Cost
L	Continue and support research to better understand how coral reefs and other marine/estuarine habitats react to climate variability issues.	H	L	M

Nutrient Loads

Overall Rank	Land/Water/Species Management	Feasibility	Benefits	Cost
H	Support Southeast Florida Coral Reef Initiative (SEFCRI).	VH	M	M

Parasites/Pathogens

Overall Rank	Capacity Building	Feasibility	Benefits	Cost
H	Develop regional biotoxin working groups, such as the one in the IRL, to address fish and wildlife disease events.	VH	M	L
Overall Rank	Land/Water/Species Management	Feasibility	Benefits	Cost
H	Improve capabilities/sophistication for inspection, recognition, and treatment of aquatic organism diseases and parasites.	VH	M	M
H	Continue and support response teams/hotlines associated with disease outbreaks, traumas, strandings, fish kills for marine and estuarine species.	VH	M	M
L	Expand the number and capabilities of rehabilitation facilities for diseased and injured wildlife.	H	L	VH
Overall Rank	Research	Feasibility	Benefits	Cost
H	Conduct additional research for aquatic wildlife parasites and diseases and the impacts of biotoxins on fish and wildlife resources.	VH	M	H
H	Synthesize and consolidate understanding, and identify gaps in understanding, of marine flora/fauna diseases, pathogens, and biotoxin impacts on fish and wildlife resources.	VH	M	L
M	Research and examine use of parasites as indicators of estuarine and marine health.	VH	L	M

Key Predator/Herbivore Loss

Overall Rank	Research	Feasibility	Benefits	Cost
L	Fund research on bacterial/viral signature of healthy versus diseased specimens of selected species (i.e., urchins and corals).	M	L	H

Vessel Impacts

Overall Rank	Land/Water/Species Management:	Feasibility	Benefits	Cost
VH	Support a marine/estuarine restoration trust fund.	M	VH	H
M	Develop a passive warning system for vessels to alert operators of sensitive or danger zones (shallows, reefs).	M	M	H
M	Encourage avoidance of anchorage and moorage in sensitive areas.	M	M	M
M	Identify appropriate areas for anchorage and moorings. Develop educational tools on low-impact mooring techniques.	M	M	M
L	Support a nursery(ies) for replacement stock of corals, submerged aquatic vegetation, etc.	M	L	H