

SITE SUMMARIES

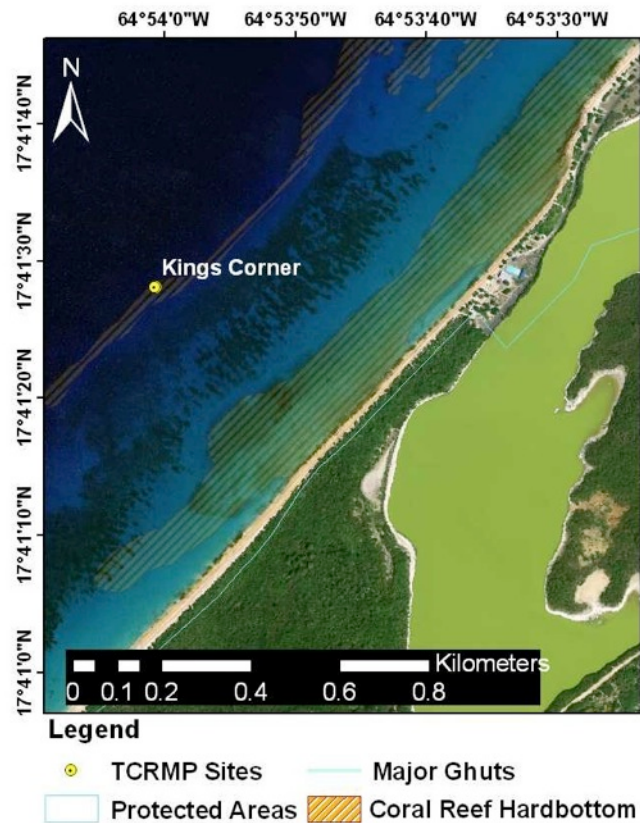
KINGS CORNER

Description. The Kings Corner monitoring site is a part of a patchy reef complex along the steeply sloping west coast of St. Croix in depths of 15-25 m. The reef contains a high diversity of corals and sponges on mounds surrounded by sand. Kings Corner has been monitored since 2006, with permanent transects installed in 2007.

Outstanding Feature. Kings Corner is a commercially important recreational dive site. The site supports a high diversity and density of fishes. It is also a very aesthetically pleasing site with high topographic relief.

Threats. Kings Corner is open to fishing and is easily accessible as part of the calm lee of western St. Croix near Frederiksted. Derelict fishing lines, fish traps, fish weights, and other marine debris are in evidence in and around the site. Large plumes of sediment that wrap around Sandy Point from the south coast of St. Croix also periodically affect the site. Plumes can drop visibility to near zero and lead to high incidence of sediment on coral and spotty bleaching.

Figure 50. Kings Corner. (top) Location. (right) A representative photo of the reef with a school of lane snapper (*Lutjanus synagris*).



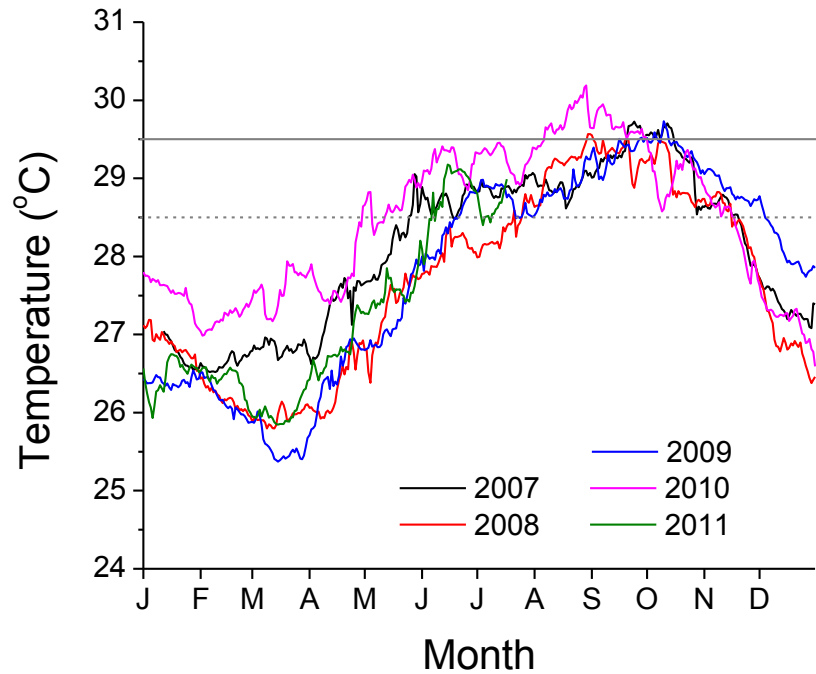


Figure 51. Kings Corner benthic temperature (17 m depth)

Physical Characteristics

Current. Kings Corner currents have not been measured directly. The site is protected from wave action, but can experience strong unidirectional currents at times, particularly at shallower depths.

Temperature. Kings Corner has moderately high temperatures.

SITE SUMMARIES

Benthic Community. The Kings Corner site supports a diverse community of hard corals dominated by *Orbicella* spp. The site also has a very abundant population of sponges. This site was not monitored until after the 2005 bleaching event, so the impacts on coral cover are not known. Epilithic algae dominate the algal community at Kings Corner, with very low abundance of macroalgae and filamentous cyanobacteria. Sand is prominently interspersed among the coral banks.

Coral Health. Non-thermal bleaching with moderate prevalence but low extent on colonies is a common feature at this site, likely as the result of chronic sedimentation. The prevalence of coral diseases has been low with dark spots disease predominating. Old partial mortality has been very high at this site since monitoring started and may be an indication of impacts from the 2005 coral bleaching event.

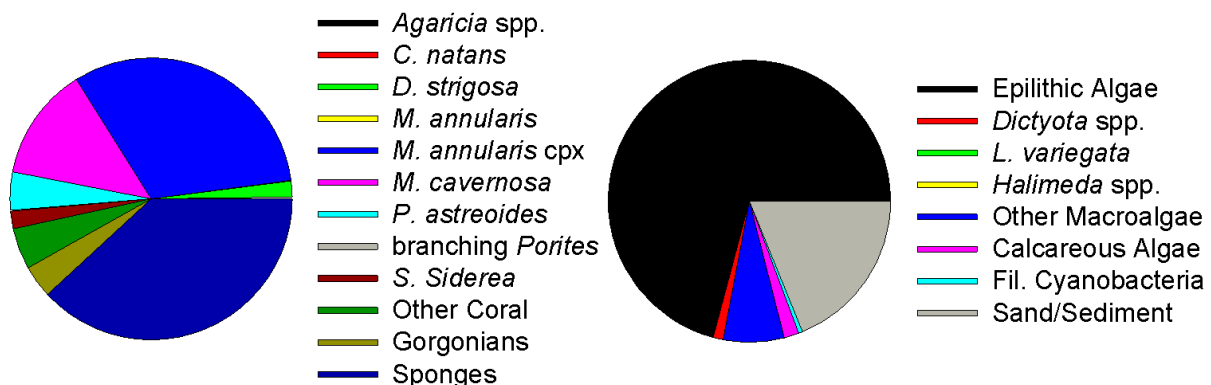


Figure 52. Kings Corner (left) Relative composition of the sessile epibenthic animal community. (right) Relative composition of the algal community and unconsolidated sediment.

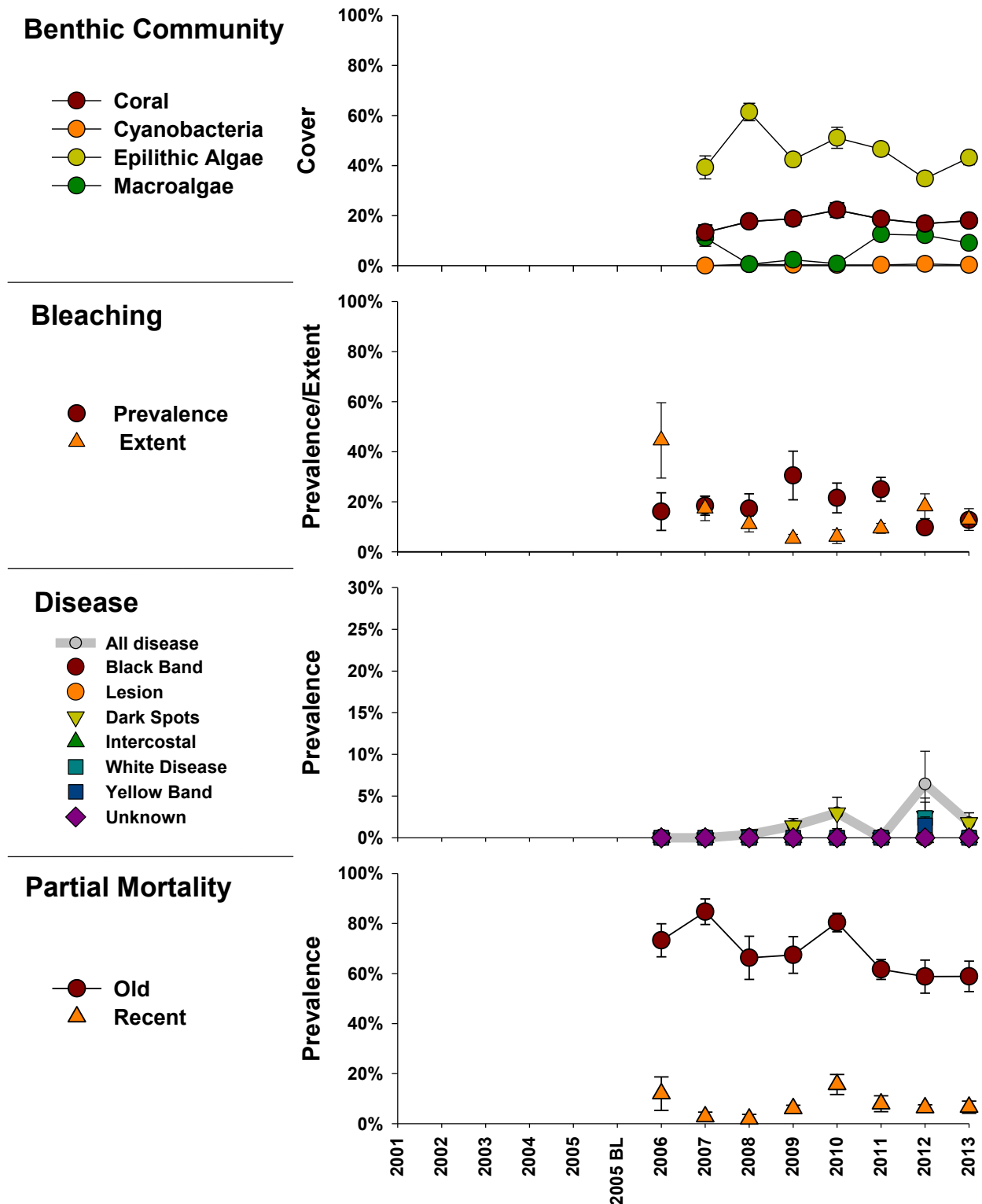


Figure 53. Kings Corner benthic cover and coral health through time (mean $\pm$ SE).

SITE SUMMARIES

Fish Community. Kings Corner represents the most diverse fish community with the highest fish biomass in the St Croix monitoring program, with a huge variety of resources available for foraging and habitat. The site is dominated by invertivores, influenced highly by the large numbers of the nocturnal feeding blackbar soldierfish, a zooplanktivore, and the tomtate, a more opportunistic and benthic feeder of invertebrates, zooplankton and benthic algae. Other common planktonic feeders include the black durgon, creole wrasse and yellowtail snapper. Common benthic herbivores include the blue tang and ocean surgeonfish as well as most of the parrotfishes (stoplight, princess, redband, redband, queen, and striped). Grunts are common on the site; however, in the 2012 census mutton snapper made up the bulk of the invertivore trophic group by biomass. Piscivores as a group were relatively high in biomass in 2012, primarily as a result of the great barracuda observed in relatively high numbers at the site. Other piscivores were represented by bar jacks (pelagic), glass-eye snapper and bigeye (nocturnal feeders), and graysby, lionfish and small snappers (diurnal bottom feeders).

KINGS CORNER

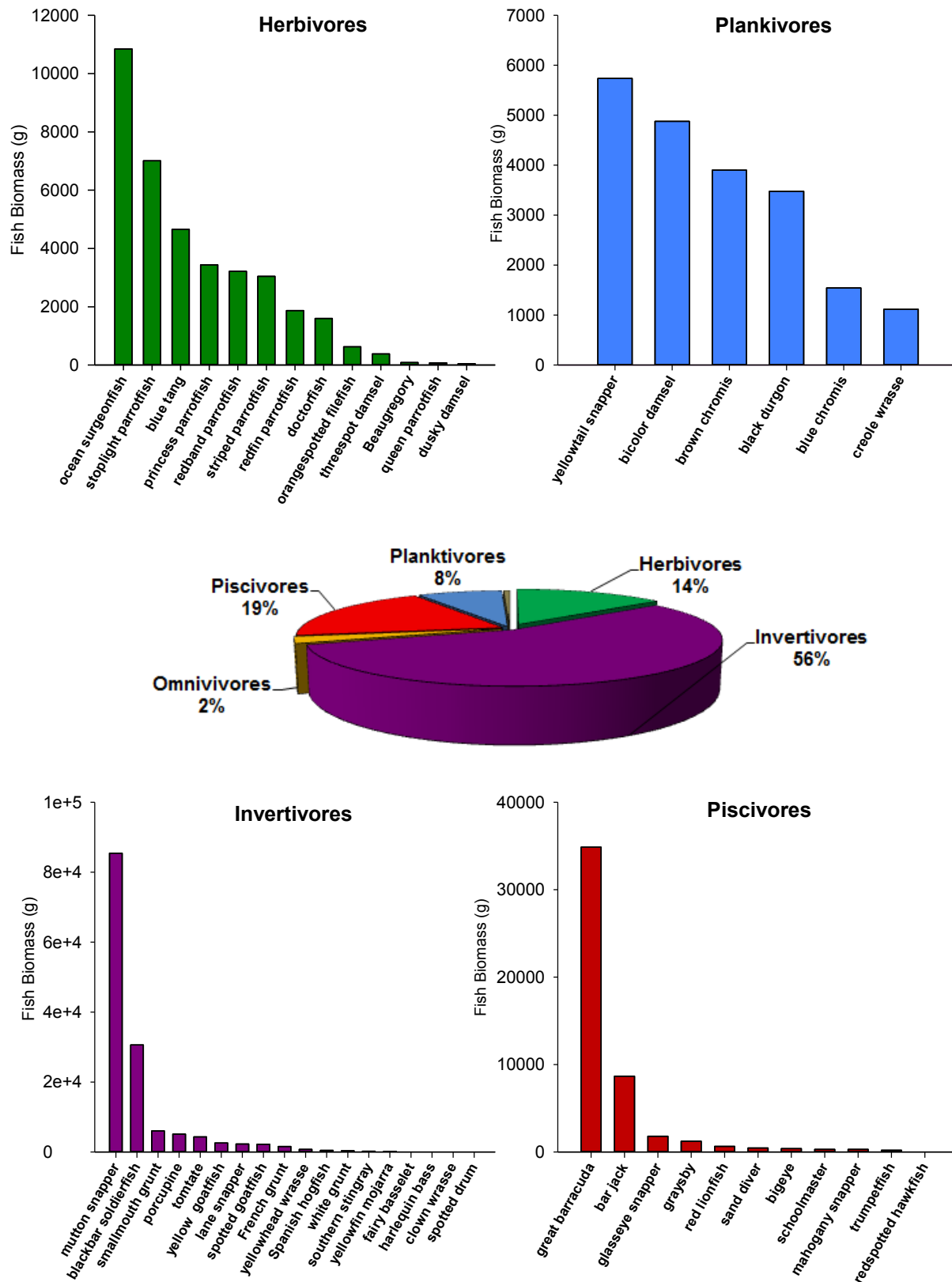


Figure 54. The Kings Corner fish community by absolute and relative biomass.

SITE SUMMARIES

LANG BANK EAST END MARINE PARK

Description. The Lang Bank EEMP site is a shelf edge mesophotic coral reef located at a depth of 27 – 30 m. The monitoring site sits just above a steep shelf break and is composed of rolling coral knolls dominated by boulder star corals (*Orbicella* spp.). This site was established in 2009.

Outstanding Feature. The Lang Bank EEMP site appears to be a well-developed mesophotic boulder star coral reef on St. Croix, where these reef are rarer than the northern US Virgin Islands.

Threats. The Lang Bank EEMP is in the outer park area and is open to fishing year-round. Therefore fisheries pressure is present. Its offshore location protects it from land-based sources of pollution.

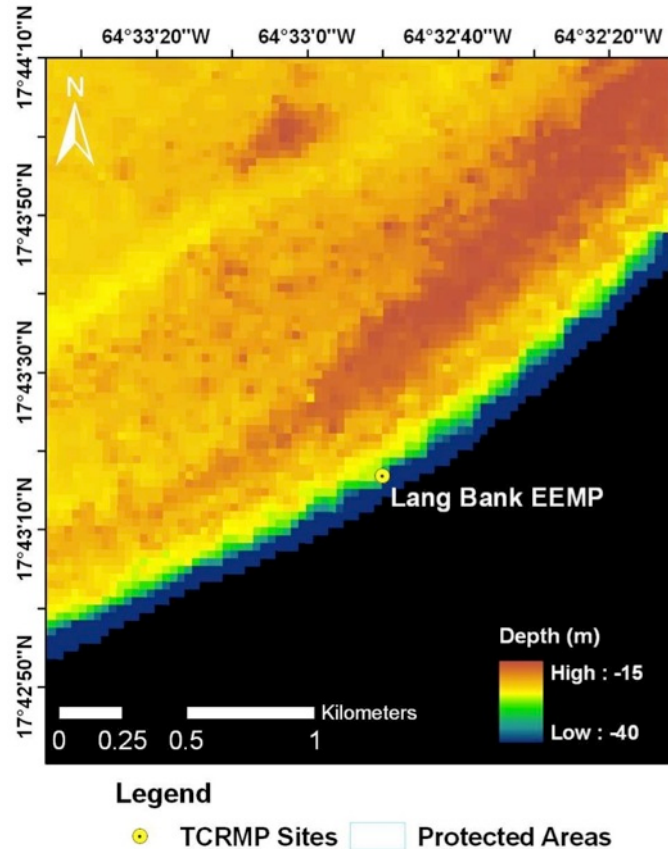


Figure 55. Lang Bank EEMP. (top) Location. (right) A representative photo of the reef.



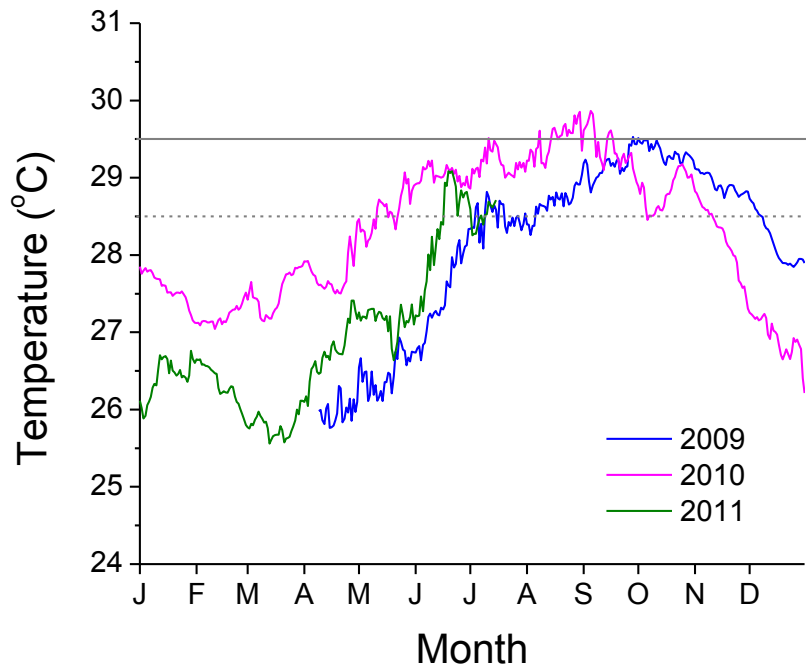


Figure 56. Lang Bank EEMP benthic temperature (28 m depth)

Physical Characteristics

Current. Direct current measurements have not been taken at Lang Bank EEMP. The depth buffers the site from wave-driven oscillatory currents. Only weak unidirectional benthic currents have been experienced at the site during monitoring; however, midwater and surface currents can be moderate to strong ($>10\text{cm s}^{-1}$).

Temperature. Lang Bank EEMP has temperature that is reduced relative to shallow water sites, as shown by the relatively mild temperatures experienced during the warm water event of August to September 2010. This may be protective during mass bleaching events, but temperatures are not as reduced as at other mesophotic sites.

SITE SUMMARIES

Benthic Community. Lang Bank EEMP supports many coral species but is dominated by *Orbicella* spp.. Sponges are also quite prominent and make up a quarter of the sessile epibenthic animal community. Epilithic algae, *Lobophora variegata*, and filamentous cyanobacteria near equally represent the algal community. The prominence of filamentous cyanobacteria is quite striking and has reached almost 40% of the substrate in some years.

Coral Health. Background, non-thermal bleaching prevalence is quite high at Lang Bank EEMP. White disease showed an outbreak in 2011. Lang Bank EEMP was not initially monitored until well after the 2005 coral bleaching event; however, a high prevalence of old partial mortality suggests that corals were impacted. Many of the large faviids show lesion patterns that are consistent with the large lunate dead areas caused by white diseases following bleaching in 2005.

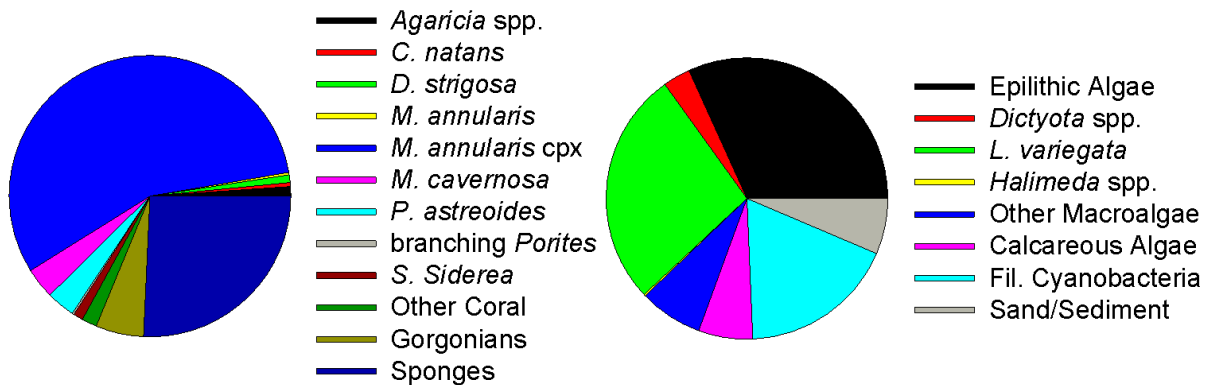


Figure 57. Lang Bank East End Marine Park (left) Relative composition of the sessile epibenthic animal community. (right) Relative composition of the algal community and unconsolidated sediment.

LANG BANK EEMP

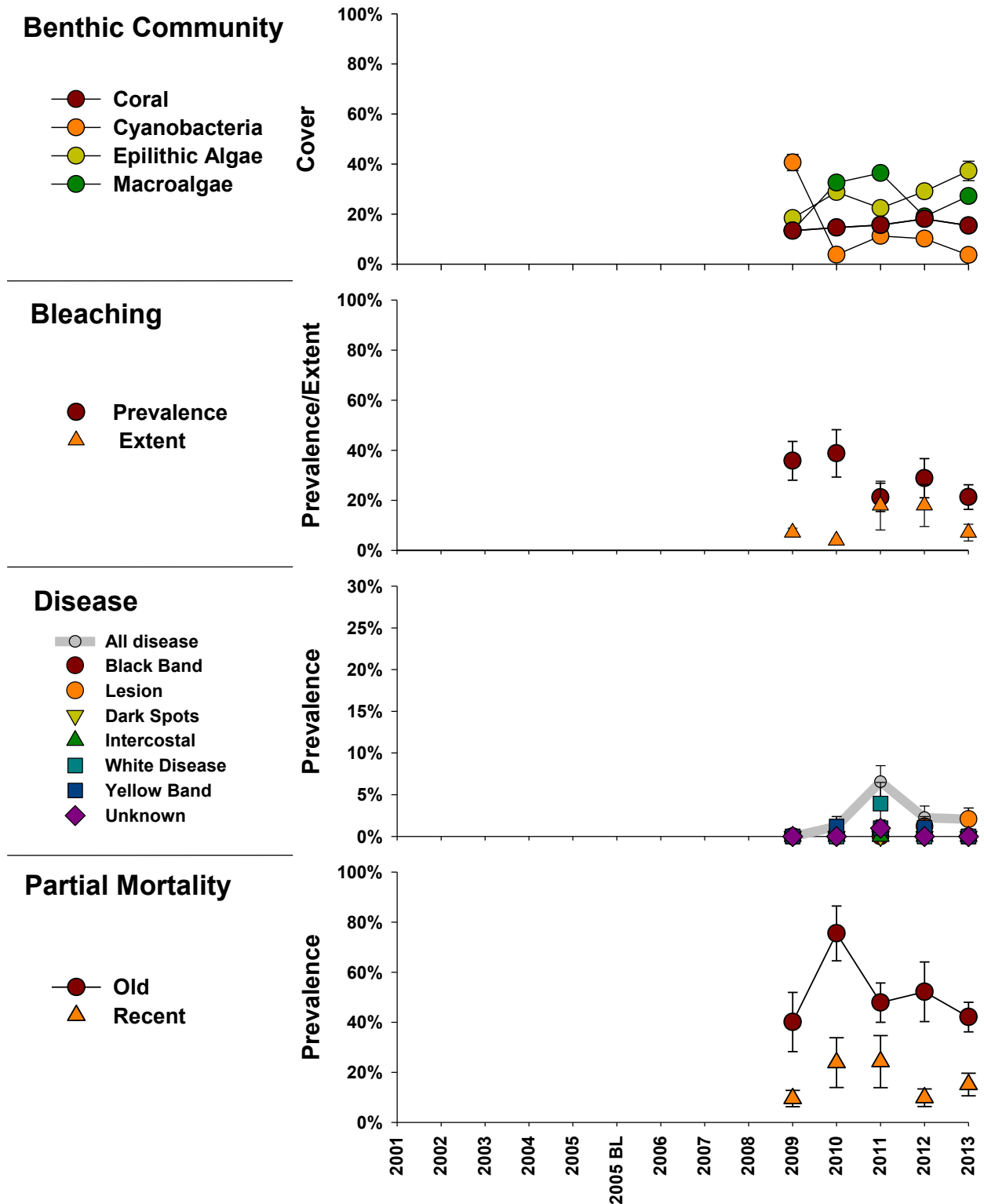


Figure 58. Lang Bank EEMP benthic cover and coral health through time (mean ±SE).

SITE SUMMARIES

Fish Community. The Lang Bank East End Marine Park site represents a mesophotic reef community that is characterized by a high biomass of planktonic feeders. In 2012 the high overall biomass of the group was influenced primarily by the black durgelon while numerically creole wrasse were dominant. Many queen triggerfish were observed in roving dives. Benthic herbivores were dominated both numerically and in biomass by the redband parrotfish in 2012. Large parrotfish were uncommon; however, small parrotfish (striped and princess), as well as the doctorfishes, were common. The benthic invertivores at the site were diverse and included nocturnally feeding blackbar soldierfish and squirrelfish, as well as several species of grunt (French, tomtate, white, bluestriped, Caesar and smallmouth). Piscivores were dominated in biomass by a single barracuda; however, graysby were common numerically. Red hind spawn during the full moon of December, January and February on the Lang Bank site, with queen trigger following a few days after. The bank is closed year-round to all bottom gear, and from December-February to all fishing. One red hind was observed during June on roving dives at Lang Bank. Several queen triggerfish were seen in roving dives. Other piscivores on the site included the horse-eye jack and cero mackerel, indicators of a deepwater community. Two lionfish were observed on the East End Marine Park site in 2012 on belt transects, however none were observed during roving dives.

LANG BANK EEMP

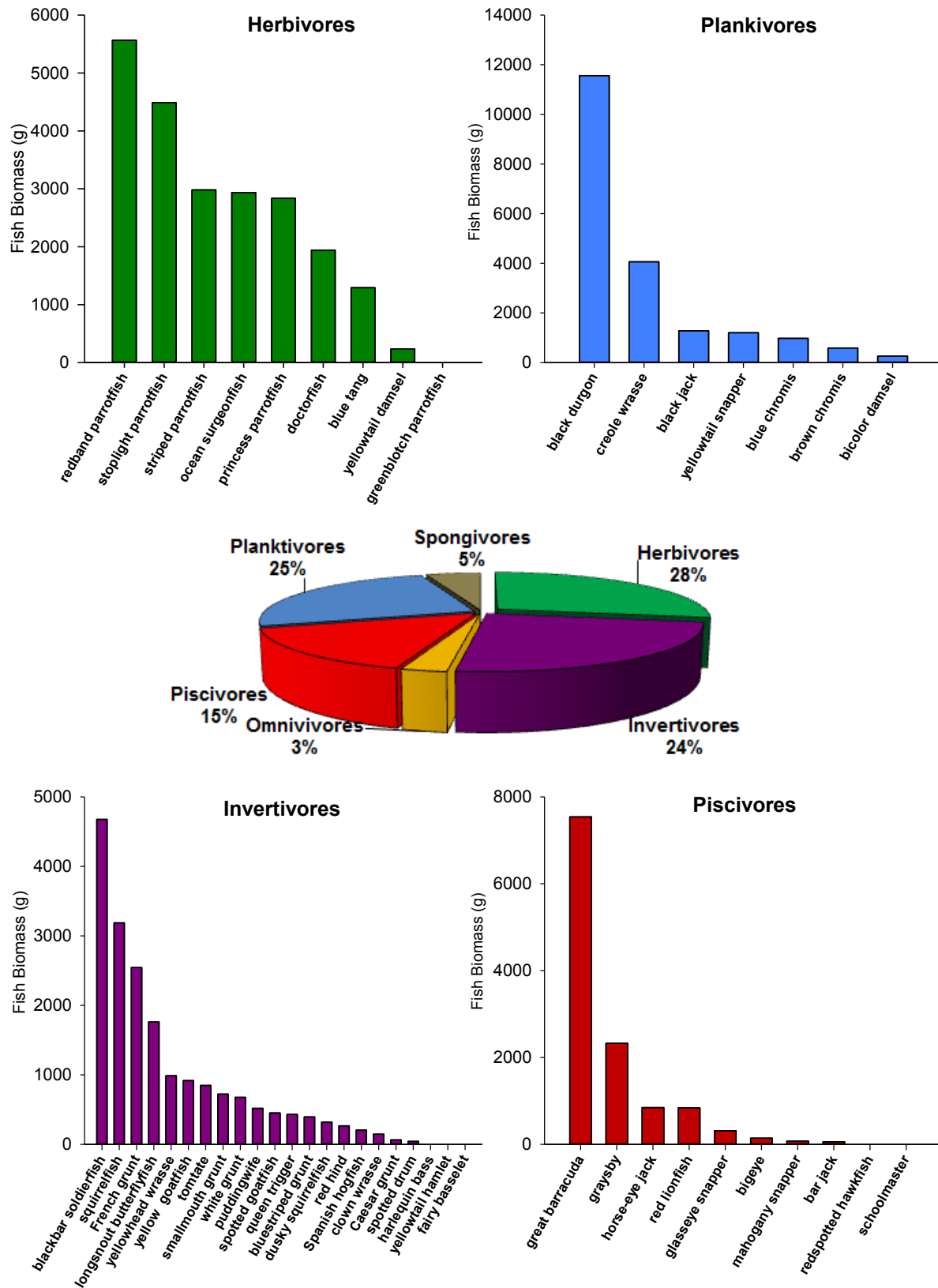


Figure 59. The Lang Bank EEMP fish community by absolute and relative biomass.

SITE SUMMARIES

LANG BANK RED HIND FISH SPAWNING AGGREGATION

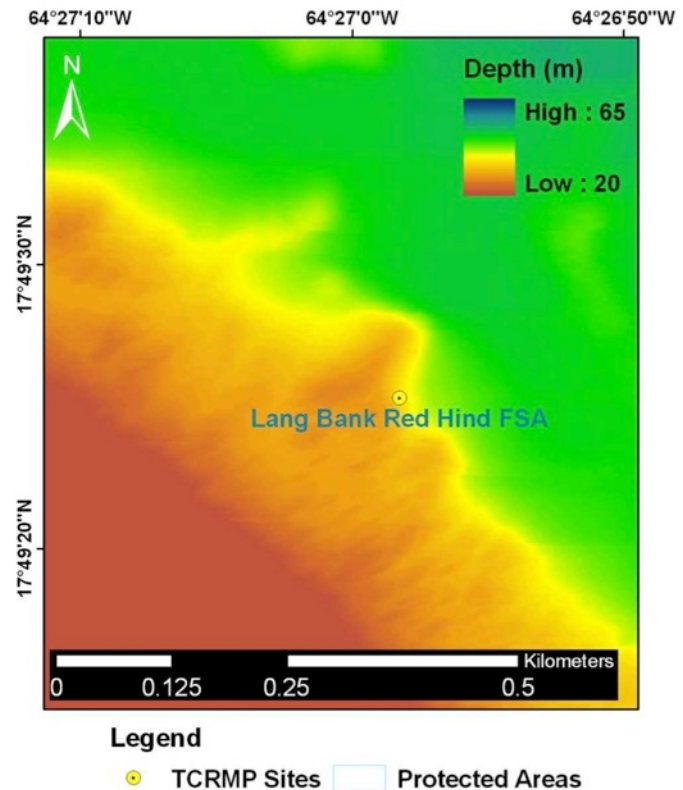
Description. The Lang Bank Red Hind Fish Spawning Aggregation (Lang Hind) monitoring site is a mesophotic reef of relict spur and groove structure at a depth of 30 – 35 m. The site is perched on the southeast side of the spur, which is a large finger that rises to 24 m to the west and drops on all other sides to a rhodolith/sand plain at about 50 m. Lang Hind was initially monitored in 2001 at a site on the shallower (24 m) portion of the bank to the west.

Monitoring in 2004-2007 occurred along random transects in a deeper portion of the reef (~33 m depth) and benthic transects were made permanent in this area in 2009

Outstanding Feature. Lang Hind supports an annual fish spawning aggregation of the red hind (*Epinephelus guttatus*). This site also possesses high water clarity and an abundance of fishes, including sharks.

Threats. The Lang Hind site is removed from land-based stressors. Fishing of the red hind aggregation was common prior to closure of the area to fishing in 1993. However, the aggregation is near the closure boundary.

Figure 60. Lang Bank Red Hind FSA. (top) Location. (right) A representative photo of the reef.



LANG BANK RED HIND FSA

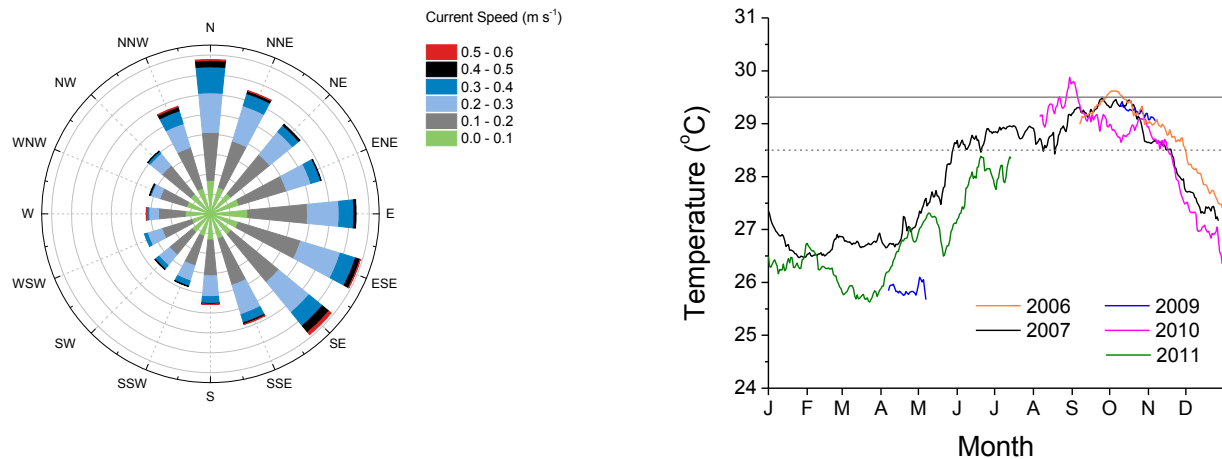


Figure 61. Lang Bank Hind current speed (left) and benthic temperature (right; 33m depth)

Physical Characteristics

Current. Lang Hind had benthic currents recorded with ADCP every 30 minutes from 11/20/05 to 8/20/06, and 12/11/06 to 3/10/07. Bottom currents most typically alternate between north and southeast and can attain strong speeds periodically exceeding 0.4 m s^{-1} .

Temperature. Lang Hind has temperatures that are reduced due to the depth and proximity of the warm season thermocline. However, temperatures are not as cool or variable as sites on the southern Puerto Rican shelf, indicating that this site may be more susceptible to warming ocean temperatures.

SITE SUMMARIES

Benthic Community. Lang Hind has a diverse sessile epibenthic community dominated by hard corals, predominantly *Orbicella* spp., gorgonians and sponges. Coral cover actually increased by 110% between the coral bleaching event and re-monitoring in 2006, but this may reflect the fact that transects were laid in random, rather than permanent, locations prior to 2009. The algal community is largely open epilithic algal communities, but also contains large proportions of *Lobophora variegata* and filamentous cyanobacteria. The algal community shows high inter-annual variability.

Coral Health. Lang Hind was heavily affected during the 2005 coral bleaching event, with a very high prevalence of corals that were 100% bleached over the colony surface. Non-thermal bleaching with moderate prevalence and low extent on colonies also occurred in later years. The site was heavily affected with white diseases after the coral bleaching event and has had high disease prevalence in all years of monitoring. Old partial mortality jumped after the 2005 bleaching event and was variable in later years. Recent partial mortality is unusually high at Lang Hind, largely as the result of fish bites and predation by the corallivorous snail *Coralliophila* spp.

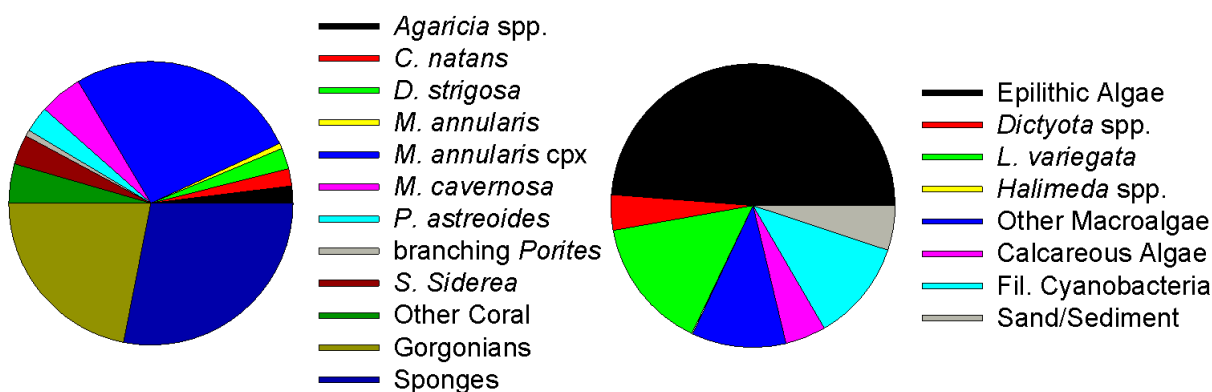


Figure 62. Lang Bank Red Hind FSA (left) Relative composition of the sessile epibenthic animal community. (right) Relative composition of the algal community and unconsolidated sediment.

LANG BANK RED HIND FSA

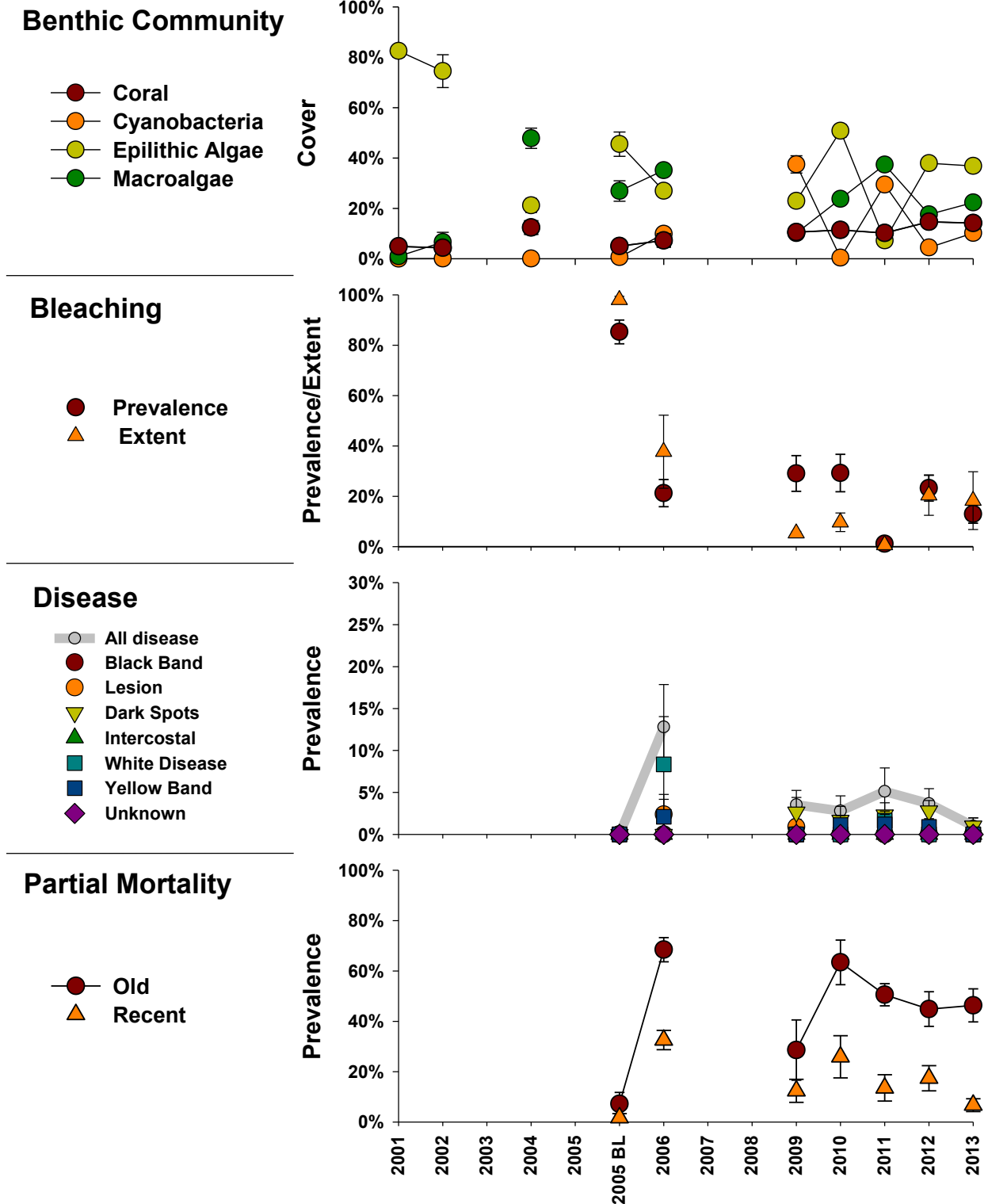


Figure 63. Lang Bank Red Hind FSA benthic cover and coral health through time (mean $\pm$ SE).

SITE SUMMARIES

Fish Community. The fish community at Lang Hind is indicative of a mesophotic reef system. High water column planktonic feeders are abundant and include the black durgelon, creole wrasse, yellowtail snapper and creolefish. Bicolor damselfish are numerous while herbivorous damselfishes are uncommon. Benthic herbivores are relatively low in diversity, abundance and biomass compared to nearshore sites. Invertivores are diverse and include many planktivores as well as benthic feeders, utilizing the varied resources of the bank. Four species of angelfish were observed on transects reflecting the high sponge cover. Lang Hind supports a red hind spawning site, active during December through February each year, and several red hind were observed in 2011 on both roving dives and transects. In addition one Nassau grouper was observed in 2011; a first observation across all St. Croix monitoring sites. There is reportedly a historic Nassau grouper spawning site near the Lang Hind monitoring site, and with the bank now closed to trap fishing there is hope of some re-establishment of the species on St. Croix. Mahogany snapper dominated piscivorous fish on Lang Hind. No other large groupers or snappers were observed although a Caribbean reef shark was seen. Sharks are commonly observed while diving the deep bank.

LANG BANK RED HIND FSA

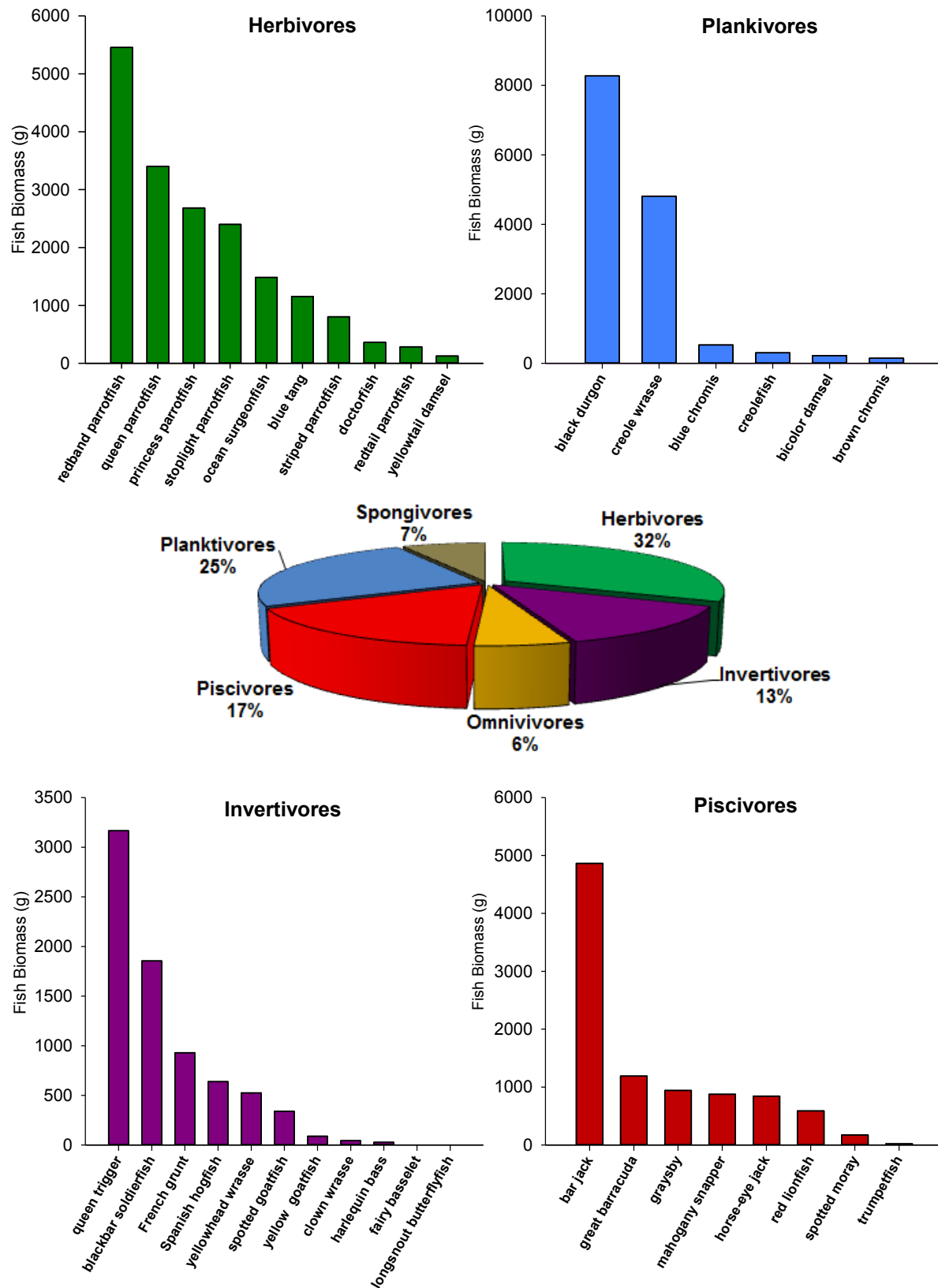


Figure 64. The Lang Bank Red Hind FSA fish community by absolute and relative biomass.

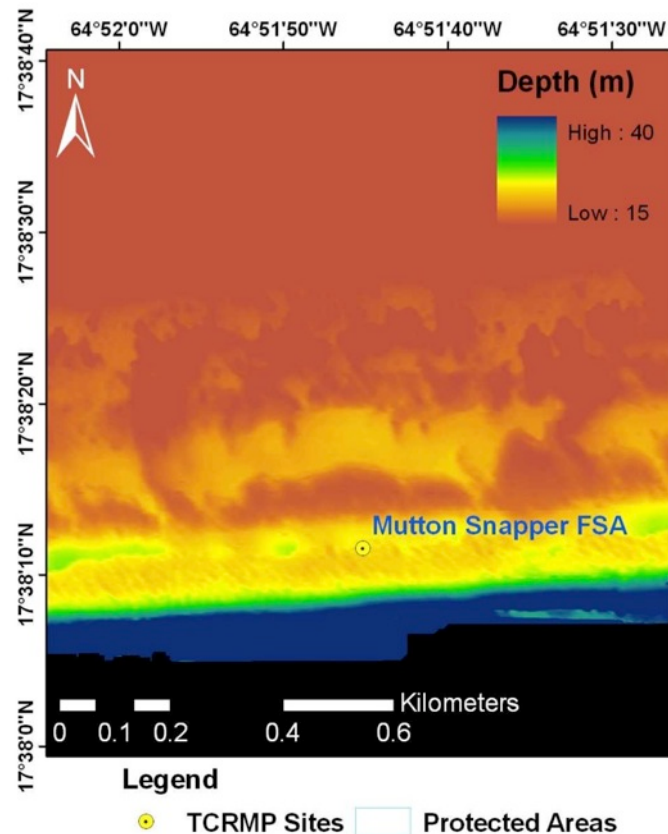
SITE SUMMARIES

MUTTON SNAPPER

Description. The Mutton Snapper site is located on the landward side of a shelf edge spur and groove reef on the southwest shelf of St Croix in depths of 22-24 m. The reef was dominated by boulder star coral (primarily *Orbicella franksi*) until a mass coral die-off following the 2005 bleaching event. Mutton Snapper has been monitored since 2003.

Outstanding Feature. The Mutton Snapper site was located in conjunction with the possible proximity of a mutton snapper (*Lutjanus analis*) spawning aggregation. It is seasonally closed to fishing. The site was devastated by the 2005 coral bleaching event, with an 87% drop in coral cover and a concomitant increase in algae.

Threats. The Mutton Snapper site is threatened by fishing pressure as evidenced by the abundance of fishing line and fishing trap debris. This site is offshore and less likely threatened by land-based stressors. The clear waters and warm temperatures make this site vulnerable to long-term seawater warming.



MUTTON SNAPPER

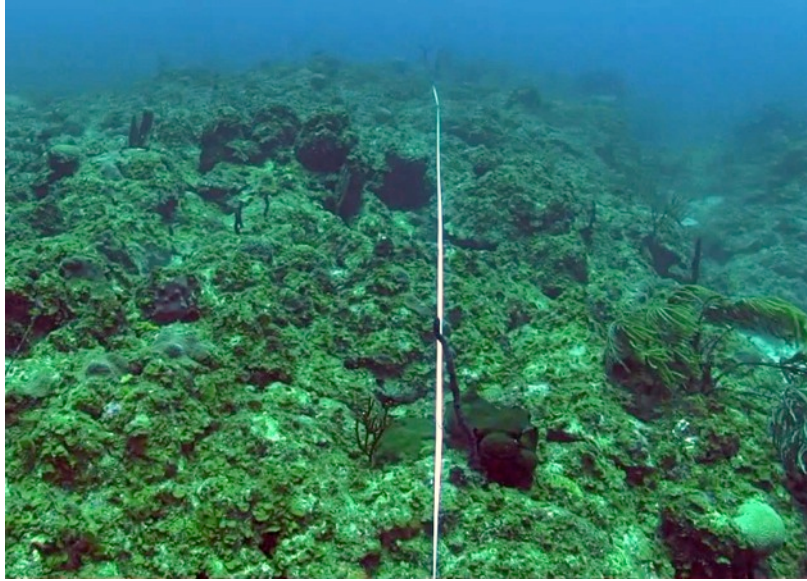


Figure 65. Mutton Snapper. (top) Location. (right) A representative photo of the reef.

SITE SUMMARIES

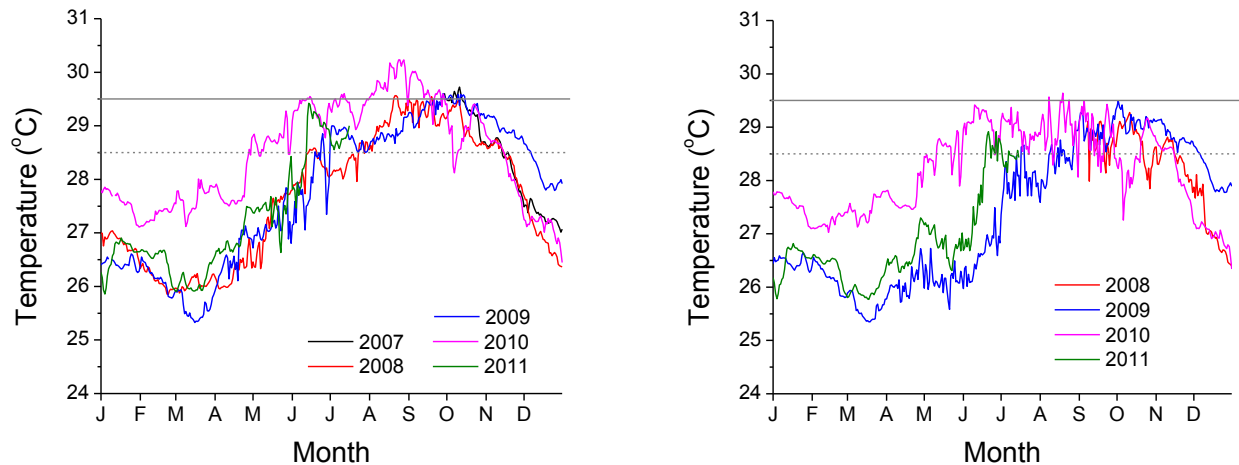


Figure 66. Mutton Snapper benthic temperature record at 23 m (left) and 39 m depth (right).

Physical Characteristics.

Current. Current records have not been taken at Mutton Snapper. There seems to be little wave-driven oscillatory flow. There are often strong unidirectional currents in a westward direction that penetrate to nearly the bottom.

Temperature. Benthic temperatures at the Mutton Snapper site (23 m) show warming above the bleaching threshold during the 2010 bleaching event, whereas benthic temperatures just off-shelf from the site (40 m) show few excursions above the bleaching threshold.

MUTTON SNAPPER

Benthic Community. The Mutton Snapper site's sessile epibenthic animal community is dominated the boulder star coral (*Orbicella* spp.), with sub-dominance of sponges. This site lost an extreme amount of coral cover (87.0%) in the 2005 coral bleaching event and has not regained any cover (-2.3%) as of 2011. *Lobophora variegata*, epilithic algae, and filamentous cyanobacteria dominate the algal community. Apparent is the rise in the abundance of macroalgae and filamentous cyanobacteria after 2005. Filamentous cyanobacteria reached extreme cover values (57.7%) in 2009. Current levels of herbivory no longer appear to be able to control algal abundance.

Coral Health. Mutton Snapper bleached heavily in the 2005, with 100% of corals bleaching over 90% of the colony surface. Bleaching prevalence has remained high for most years since 2005, but at low colony extent, indicating continued impairment of corals. White disease has been at consistently high values through many years of monitoring. Old partial mortality increased after 2005, and then subsided as whole colonies were lost from the system. Impairment of this site is puzzling as stressors besides fishing appear to be low. Clear water and low genetic diversity of corals may increase susceptibility to environmental stress and white disease.

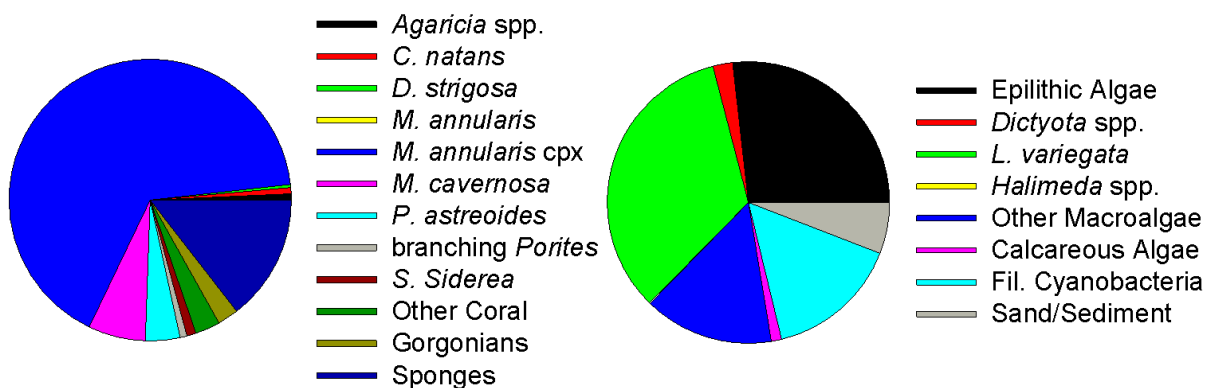
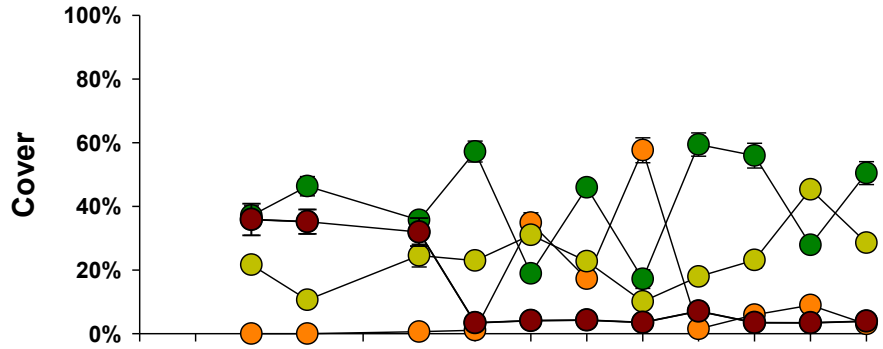


Figure 67. Mutton Snapper (left) Relative composition of the sessile epibenthic animal community. (right) Relative composition of the algal community and unconsolidated sediment.

SITE SUMMARIES

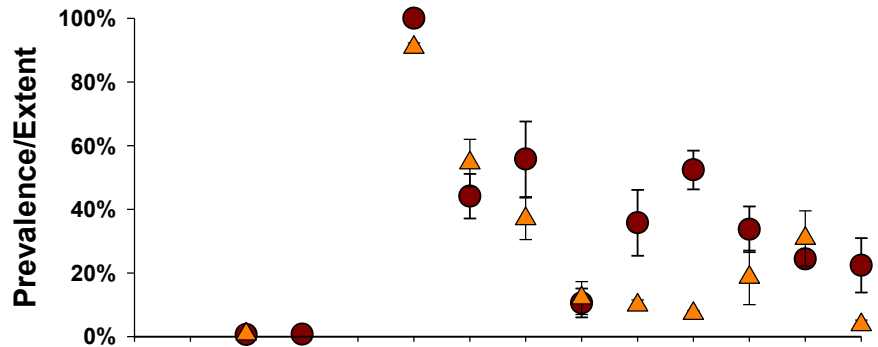
Benthic Community

- Coral
- Cyanobacteria
- Epilithic Algae
- Macroalgae



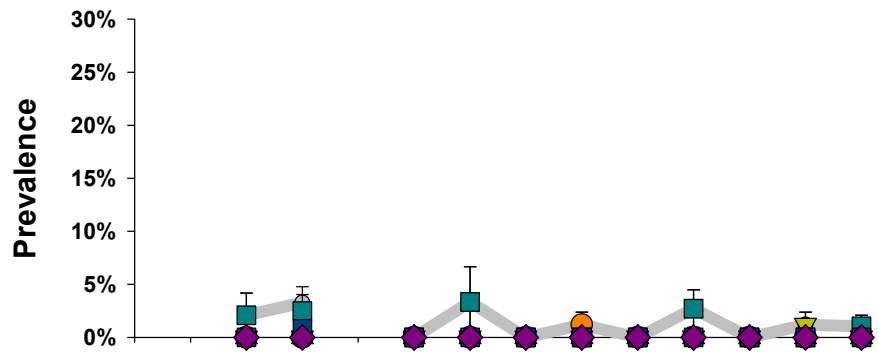
Bleaching

- Prevalence
- ▲ Extent



Disease

- All disease
- Black Band
- Lesion
- ▼ Dark Spots
- ▲ Intercostal
- White Disease
- Yellow Band
- ◆ Unknown



Partial Mortality

- Old
- ▲ Recent

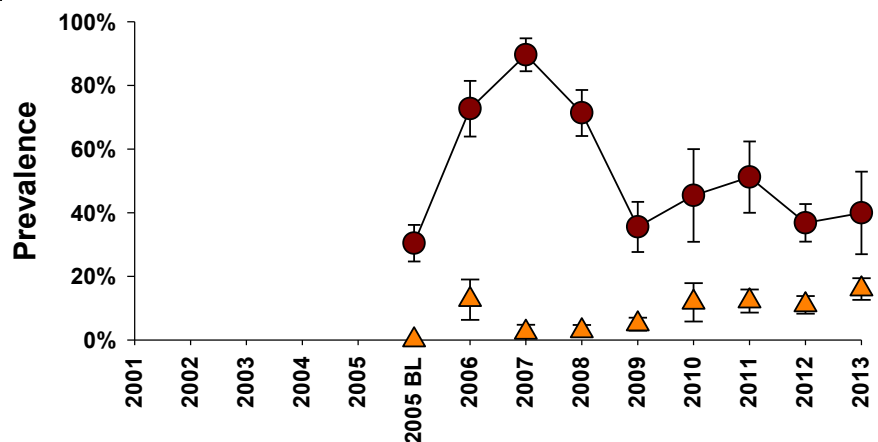


Figure 68. Mutton Snapper benthic cover and coral health through time (mean $\pm$ SE).

MUTTON SNAPPER

Fish Community. The Mutton Snapper site is an offshelf site with a fairly diverse and rich fish community. It is reportedly in an area that mutton snapper spawn, however mutton snapper have been very rare in surveys conducted at the site over the past 5 years. The Mutton Snapper site is very highly dominated in biomass by the black surgeon, a phytoplankton feeder, and numerically dominated by the creole wrasse, a zooplankton feeder. Stoplight parrotfish and doctorfish contributed the most biomass to the benthic herbivore group in 2012 surveys. Many parrotfish species can be found on the Mutton Snapper reef, however sub-adult and juveniles are by far the majority encountered. The invertivore group is also diverse, indicative of the variety of resources available on the reef. Piscivores are not common on Mutton Snapper and in 2012 the biomass of this group was made up of primarily bar jack and barracuda. The sole piscivorous serranid was the graysby, and sole lutjanid the mahogany snapper. Several red lionfish were observed in roving surveys and in transects in 2012.

SITE SUMMARIES

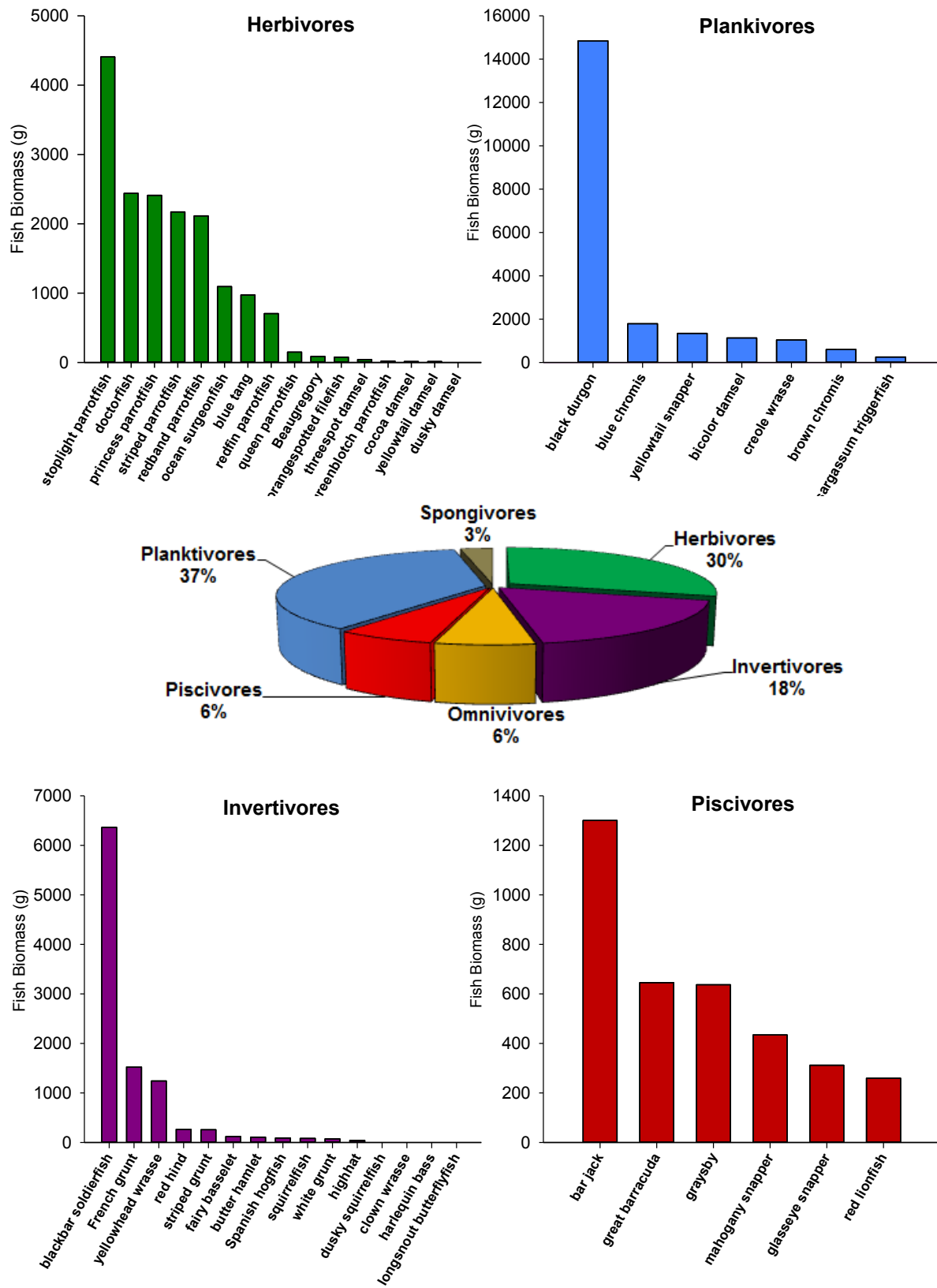


Figure 69. The Mutton Snapper fish community by absolute and relative biomass.

SITE SUMMARIES

SALT RIVER WEST

Description. Salt River West lies just atop the Salt River Canyon west wall in a depth of 9 m. The reef is a flat colonized hardbottom/coral community atop ancient carbonates. Salt River West has been monitored since 2001.

Outstanding Feature. Salt River West is a popular tourist dive site with a unique sharp drop to the wall environment.

Threats. Salt River West is exposed to the outflow from the Salt River Canyon and resuspension of sediment from the Salt River eastern flats. The site is now within in the Salt River National Historic Park and Ecological Preserve.

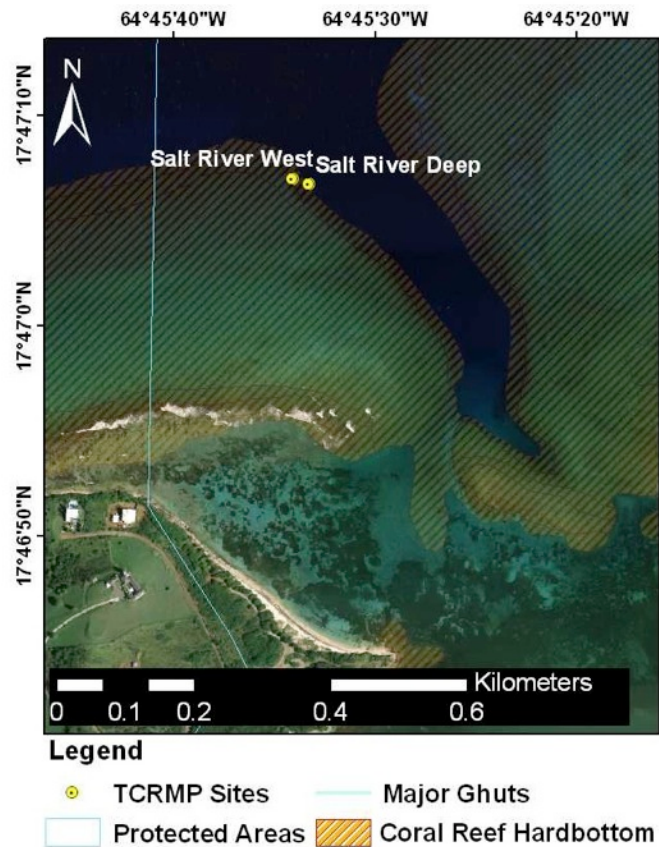


Figure 70. Salt River. (top) Location. (right) A representative photo of the reef.



SALT RIVER WEST

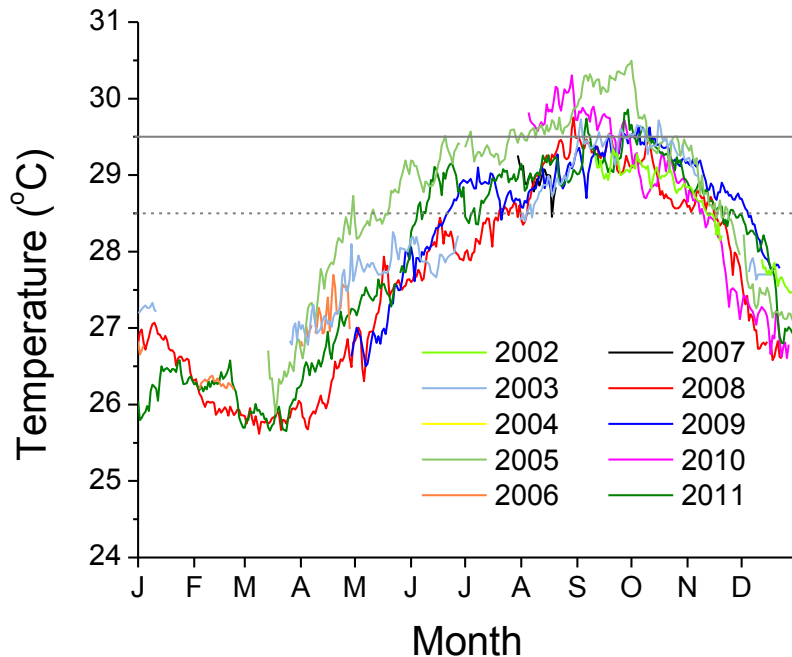


Figure 71. Salt River West surface-benthic temperature record (1 and 5m depths). Data provided by the NOAA ICON monitoring network.

Physical Characteristics.

Current. Currents have not been directly measured by the TCRMP. Due to the northern exposure and shallow depth, Salt River West experiences wave-driven oscillatory flow, which can be strong. Unidirectional benthic currents are typically weak to moderate ($<15\text{cm s}^{-1}$).

Temperature. The temperature at Salt River West can be very warm and in 2005 surpassed the bleaching threshold (29.5°C) for approximately 2.5 months between August and October. The record also shows how 2010 was actually warmer than 2005 until the passage of Hurricane Earl in late August dropped temperatures precipitously.

SITE SUMMARIES

Benthic Community. The Salt River West epibenthic sessile animal community has a diverse hard coral community of small massive head corals and large proportions of sponges and gorgonians. The site lost an imperceptible amount of coral cover in the 2005 coral bleaching event (-13.6%) and had regained nearly half of that cover by 2011 (37.1%). The algal community shows extreme dominance by epilithic algae and low abundance of macroalgae and filamentous cyanobacteria. However, filamentous cyanobacteria have increased slightly since 2005.

Coral Health. Corals were severely bleached during the 2005 coral bleaching event, with over 90% of corals bleached over 80% of the colony surface. Corals were assessed just prior to the 2010 bleaching event in August, but were showing increased prevalence of low colony extent bleaching by then. Diseases are typically low, with the outstanding case of dark spots disease, which attains some of the highest values seen in TCRMP sites. Of note, is the fact that dark spots disease actually decreased following severe bleaching and recovery in 2005 and 2006. Old partial mortality increased rapidly after the 2005 bleaching and then subsided somewhat by 2011. Recent partial mortality can be high and is primarily caused by fish biting, such as from parrotfish. However, extent is quite low (data not shown).

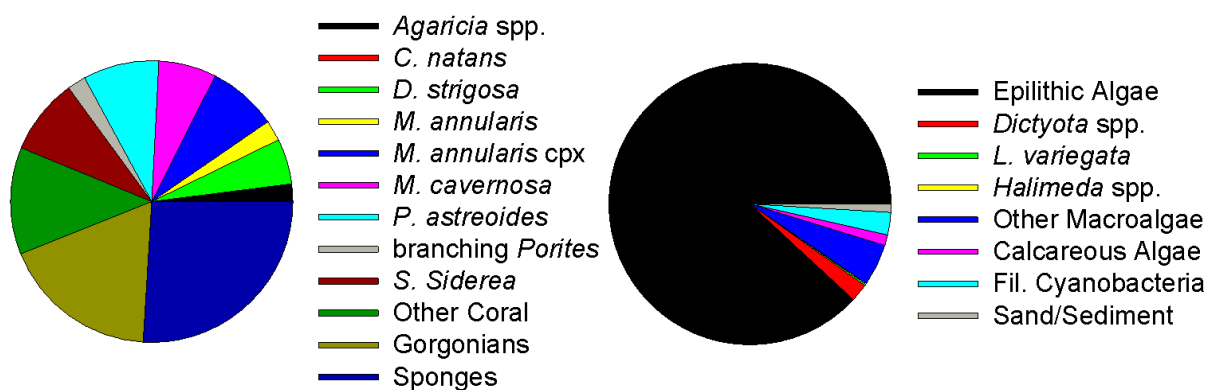
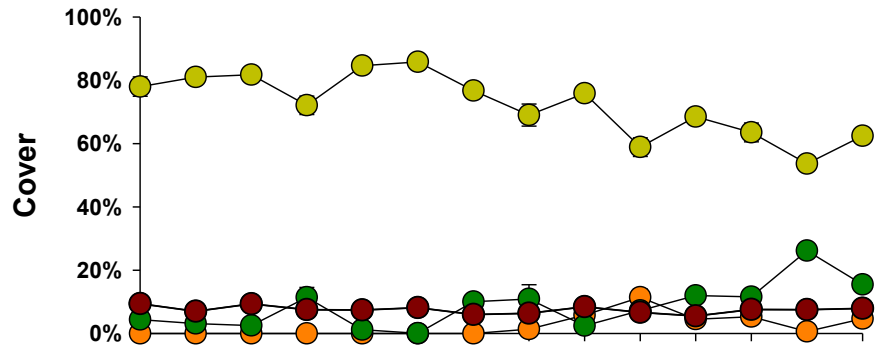


Figure 72. Salt River West (left) Relative composition of the sessile epibenthic animal community. (right) Relative composition of the algal community and unconsolidated sediment.

SALT RIVER WEST

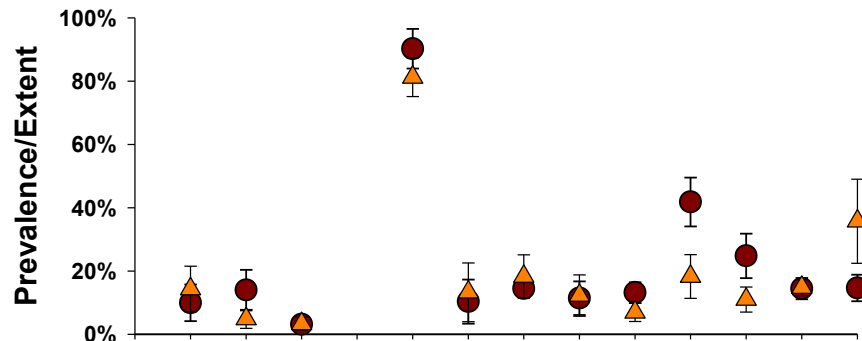
Benthic Community

- Coral
- Cyanobacteria
- Epilithic Algae
- Macroalgae



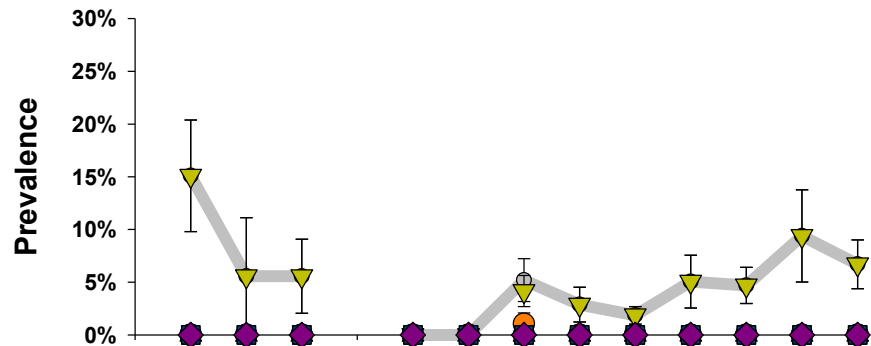
Bleaching

- Prevalence
- ▲ Extent



Disease

- All disease
- Black Band
- Lesion
- ▼ Dark Spots
- ▲ Intercostal
- White Disease
- Yellow Band
- ◆ Unknown



Partial Mortality

- Old
- ▲ Recent

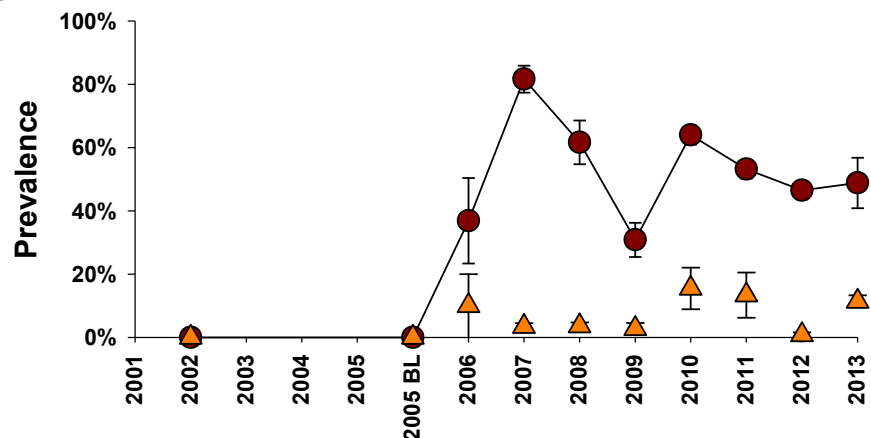


Figure 73. Salt River West benthic cover and coral health through time (mean $\pm$ SE).

SITE SUMMARIES

Fish Community. Fish biomass is relatively low on the Salt River West site. A more diverse community of some larger fishes can be seen closer to the edge of the site, near the Salt River wall, however the top of the reef has little structure for larger fishes, with low lying coral heads, gorgonians and sponges. Wrasses and damselfishes are both numerous and diverse; the most dominant species on the site is the bluehead wrasse followed closely by the bicolor damselfish. Black durgon, an opportunistic planktivore that feeds on zooplankton, phytoplankton and algae, dominated the Salt River West site in biomass, followed by the stoplight parrotfish, ocean surgeonfish and creole wrasse. Piscivores were nearly non-existent, and included only trumpetfish and graysby in 2012 belt transects. One red lionfish was seen on a roving dive. Yellowfin snapper were the only snappers observed on the Salt River West site and these were recorded only on roving dives near the shelf edge.

SALT RIVER WEST

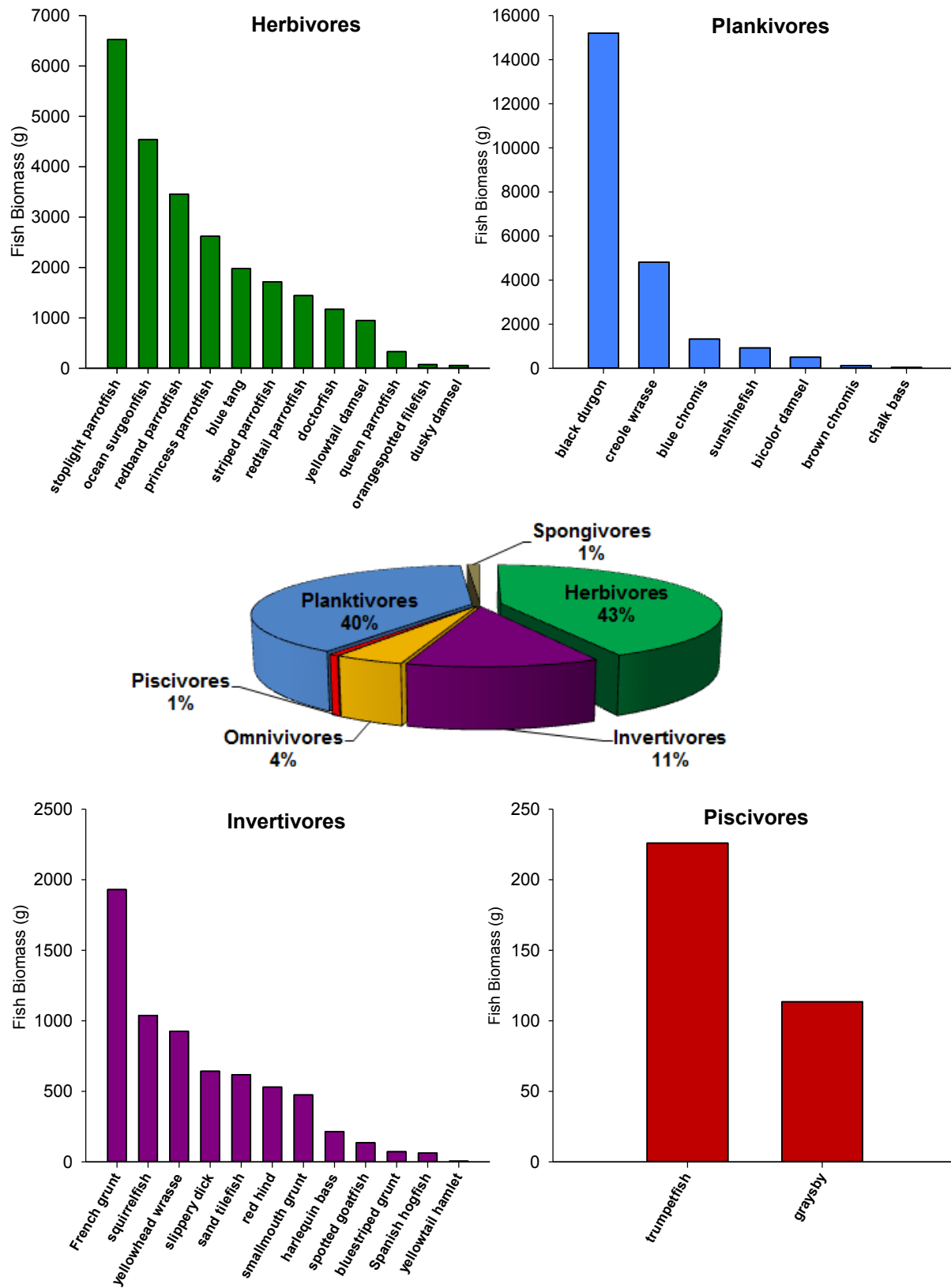


Figure 74. The Salt River West fish community by absolute and relative biomass.

SITE SUMMARIES

SALT RIVER DEEP

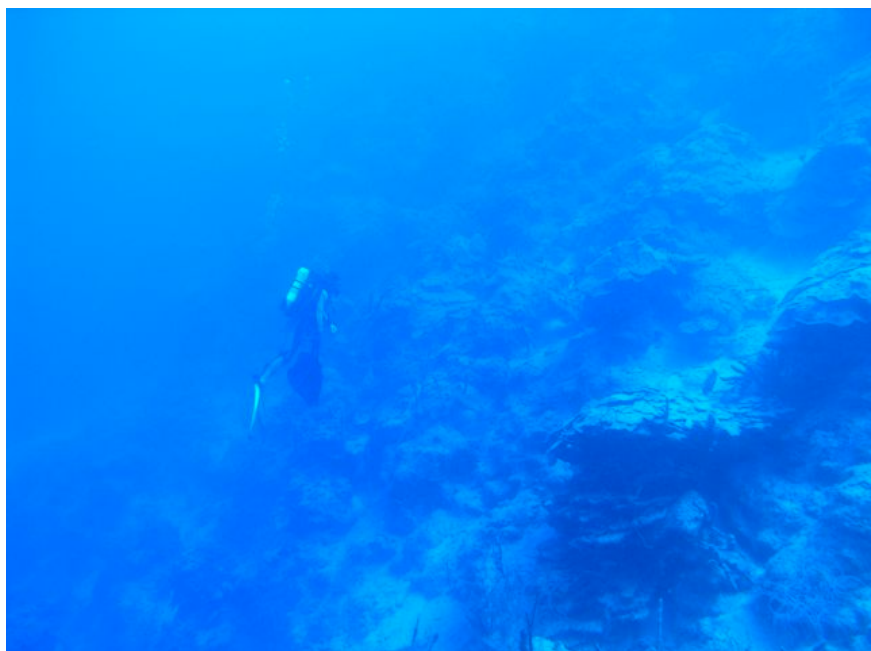
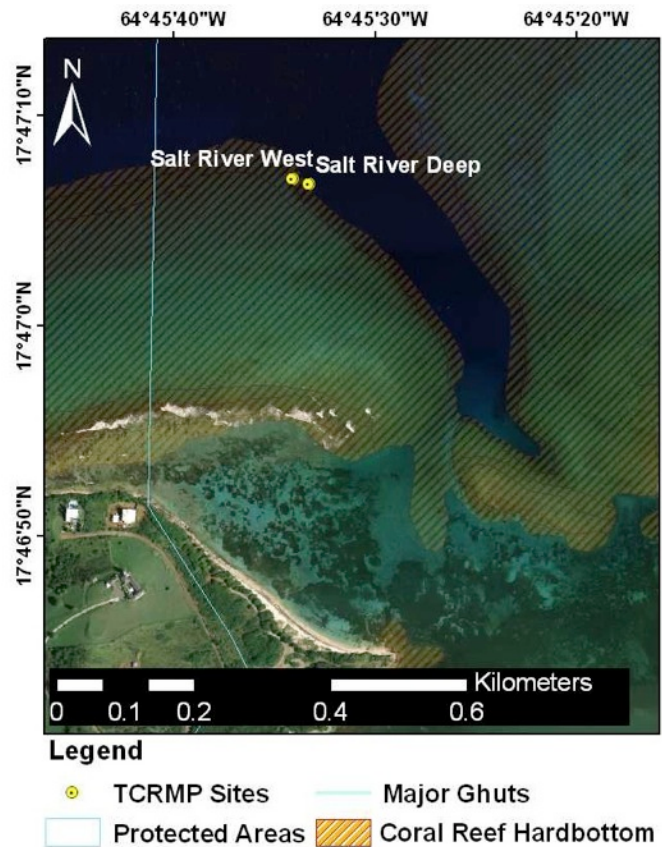
Description. The Salt River Deep site is located on the steep canyon wall just below the Salt River West monitoring site. The reef consists of vertical buttresses surrounded by extensive sand deposits. The reef is largely formed of plating coral at these deep, mesophotic depths. The initial site was deployed in 2009 with two transects at 30 m depth and 4 transects at 40 m. Due to low coral cover at 40 m transects were moved to 30m in 2010.

Outstanding Feature. Salt River Deep is a heavily visited recreational dive site.

The site has been under scientific investigation since the 1970's. The underwater HYDROLAB habitat was maintained near the site from 1977 to 1985 and the Aquarius habitat from 1986 to 1989.

Threats. Salt River Deep is threatened by land-based sources of pollution due to its proximity to the Salt River Canyon outflow. The site may also be susceptible to warming temperatures.

Figure 75. Salt River Deep. (top) Location. (right) A representative photo of the reef.



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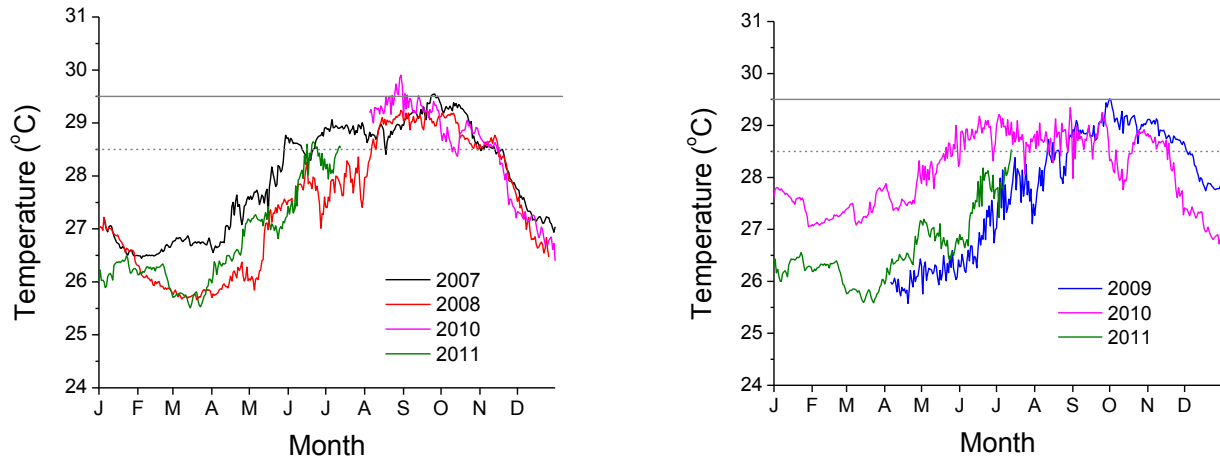


Figure 76. Salt River Deep benthic temperature at 30 m depth (left) and 40 m depth (right).

Physical Characteristics.

Current. Salt River deep currents have not been measured directly by the TCRMP. Only very weak oscillatory and unidirectional currents have been experienced at the site.

Temperature. Temperatures on the wall have been measured at two depth levels at 30 m and 40 m. Both sites have temperatures that are much cooler than the shallow site. The 40 m site experiences even greater cooling and experiences more diel variability (not shown) and day-to-day variability due to the influence of internal waves. Despite some interaction with the thermocline, cooling is not as great as at the mesophotic reefs at similar depths on the southern Puerto Rican Shelf.

SITE SUMMARIES

Benthic Community. Hard coral community of the Salt River Deep monitoring site is dominated by plating lettuce corals (*Agaricia* spp.); however, sponges, gorgonians, and black corals dominate the overall sessile epibenthic animal community. The site was not monitored during the 2005 bleaching event, but as with the Cane Bay Deep site, severe bleaching was observed down to depths of 40m. The algal community is dominated by epilithic algae and unidentified diminutive macroalgae. The site is notable for the high composition of sediment, which cascades from the upper reef between spurs and buttresses.

Coral Health. Low extent coral bleaching is typically in moderate to high prevalence at the Salt River Deep site. Interaction data (not shown) indicates that sediment and *Lobophora variegata* overgrowth are responsible for much of the bleaching. Diseases have not been observed. Old partial mortality is high on corals, which may be a reflection of the 2005 bleaching event and cumulative impacts from interaction with sediment and algae.

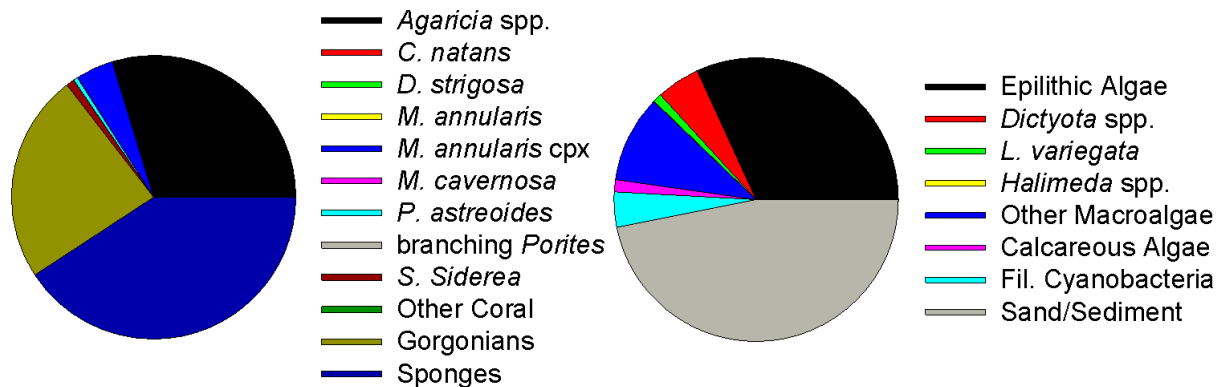


Figure 77. Salt River Deep (left) Relative composition of the sessile epibenthic animal community. (right) Relative composition of the algal community and unconsolidated sediment.

SALT RIVER DEEP

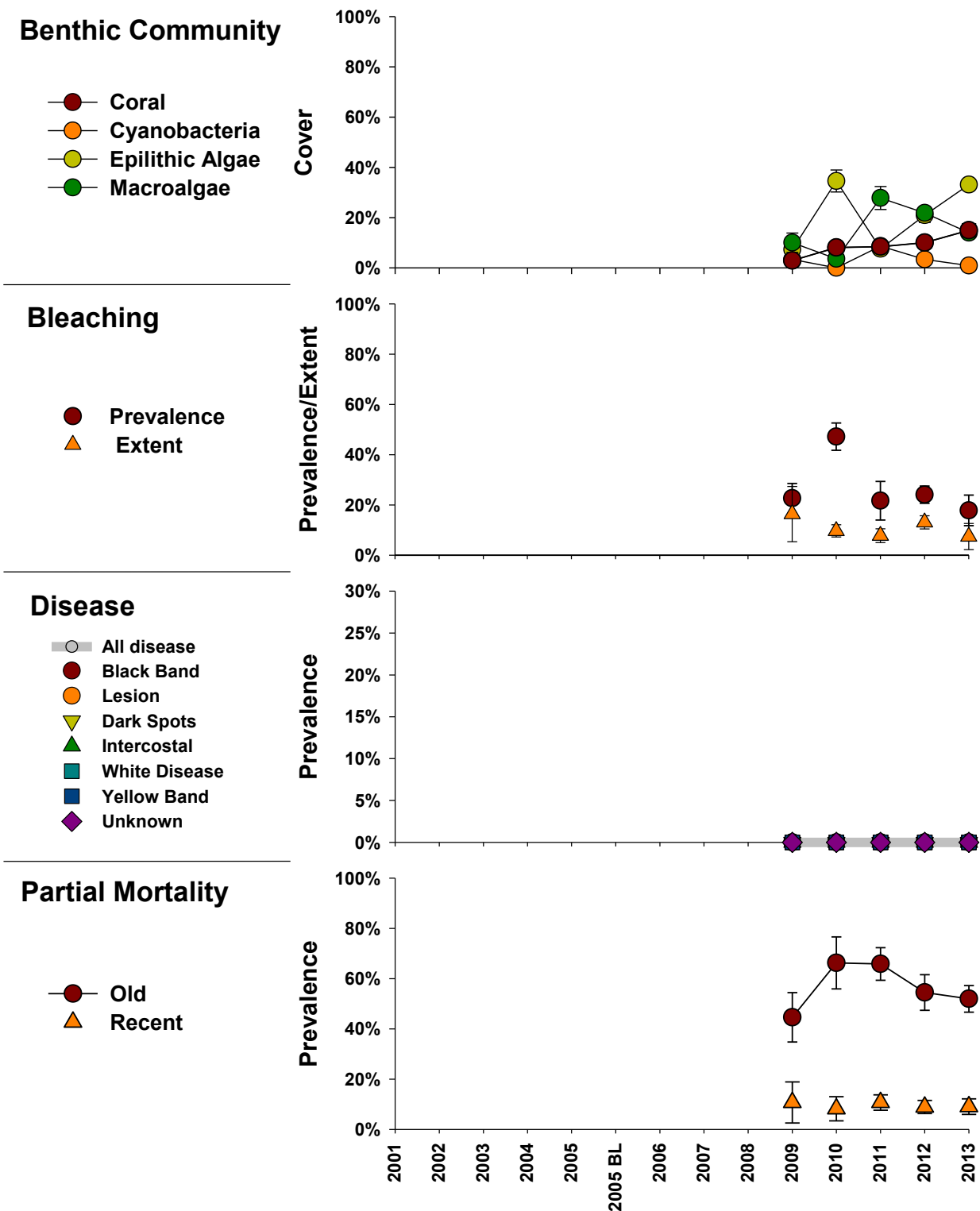


Figure 78. Salt River Deep benthic cover and coral health through time (mean $\pm$ SE).

SITE SUMMARIES

Fish Community. The relatively high turbidity and high composition of sand and silt bottom, as a consequence of river discharge, influences the fish community of Salt River Deep. The mesophotic reef wall site is characterized by a primarily invertivore fish community, leading in both biomass and species richness. Invertivores are dominated numerically by the functionally plantivorous blue chromis and creole wrasse. The benthic feeding yellow goatfish highly dominated the invertivore group by biomass in 2012, swimming in small schools along the sandy wall. Mahogany snapper and graysby dominated the piscivore group both numerically and by biomass. Sub-adult princess and redband parrotfish dominated the herbivores. Characteristic deepwater fishes observed commonly on Salt Water Deep include the sunshinefish, bantum bass, fairy basslet and longsnout butterflyfish. As on the Cane Bay Deep site, occasional cubera snapper (*Lutjanus cyanopterus*), mutton snapper (*L. analis*) or southern stingrays (*Dasyatis americana*) are observed during roving dives on the wall, and commonly one or two Caribbean reef sharks (*Carcharhinus perezii*) are present.

SALT RIVER DEEP

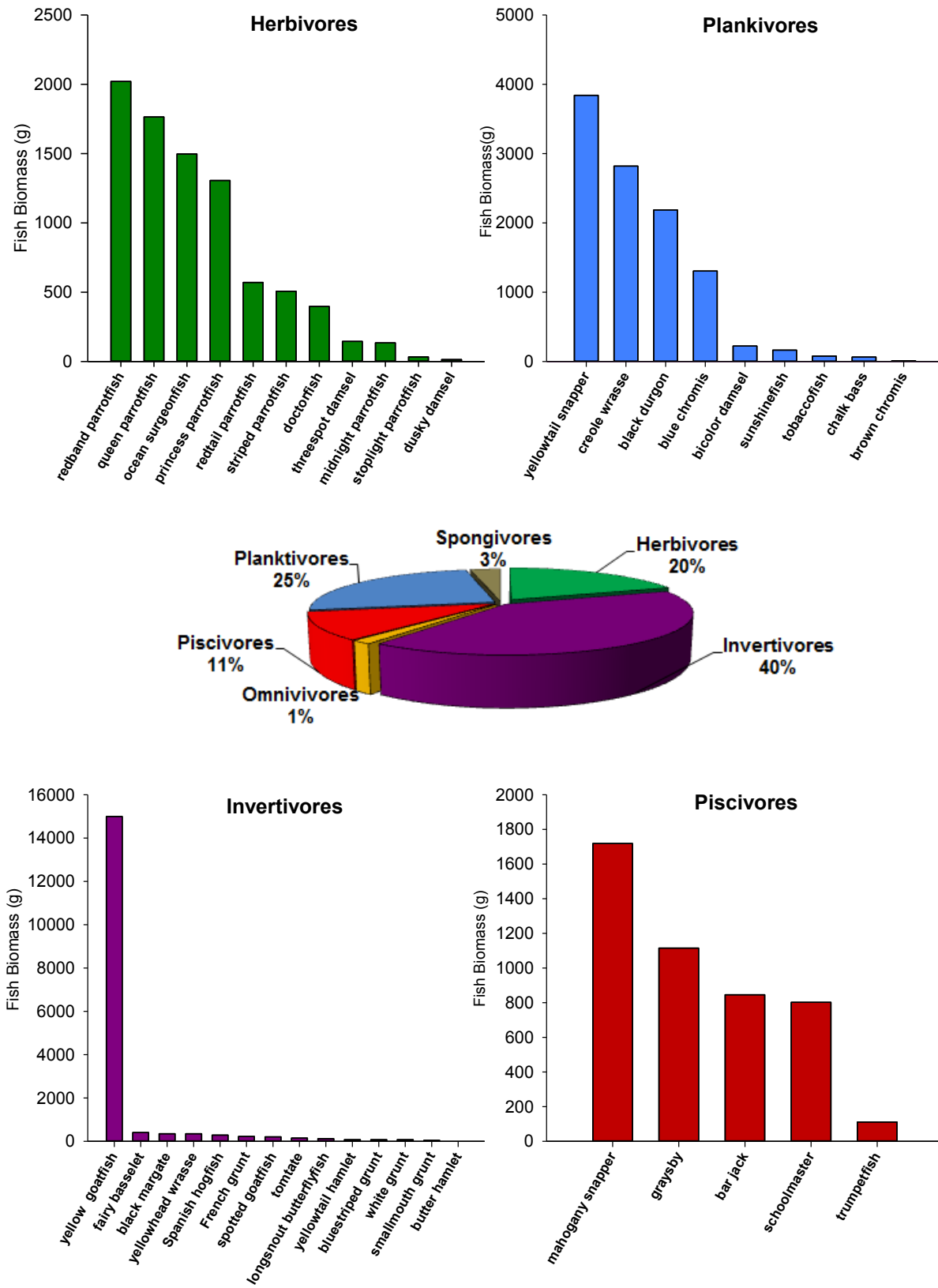


Figure 79. The Salt River Deep fish community by absolute and relative biomass.

SITE SUMMARIES

SPRAT HOLE

Description. The Sprat Hole site is a nearshore/shelf-edge fringing reef in depths of 7 – 10 m. The site is a rolling boulder star coral (*Orbicella annularis*) reef. The slope to the west drops off to an attractive mixed coral community with abundant fish. Sprat Hole has been monitored since 2001.

Outstanding Feature. Sprat Hole is a heavily visited reef for snorkel and dive tours.

Threats. The Sprat Hole reef is vulnerable to land based sources of pollution if there is increased development of the watershed. Low wave action and light currents favor settling of small particles of terrestrial sediment that injure corals. The site is also frequently fished and there is derelict fishing gear in abundance. Recreational overuse may also be a threat.

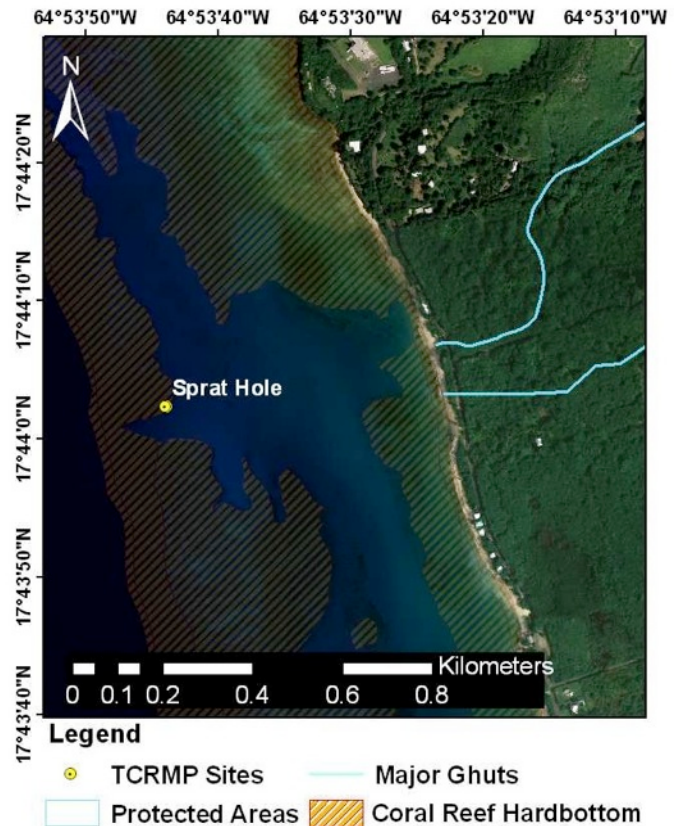


Figure 80. Sprat Hole. (top) Location. (right) A representative photo of the reef.



SPRAT HOLE

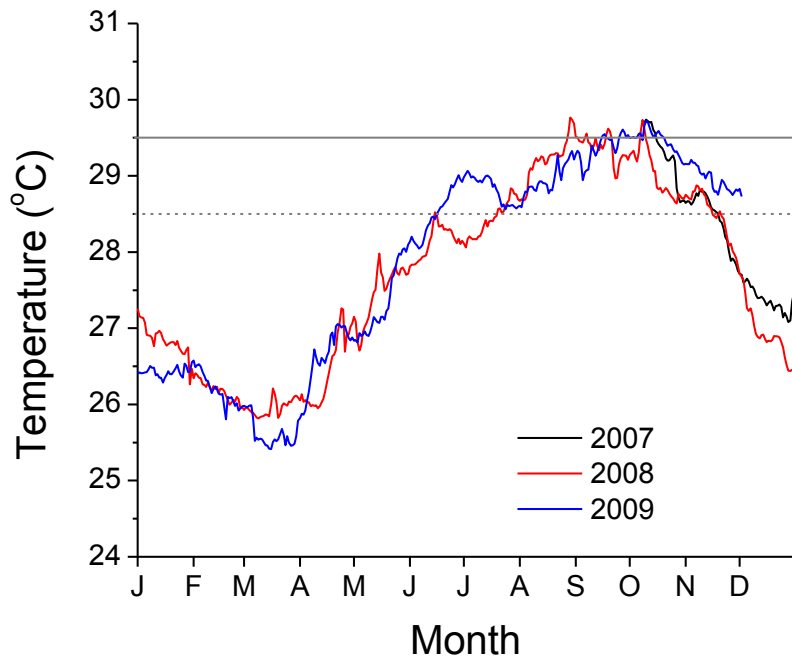


Figure 81. Sprat Hole benthic temperature (7 m depth).

Physical Characteristics.

Current. Currents have not been measured at Sprat Hole. Oscillatory currents are typically weak on the western lee of St. Croix. Unidirectional currents during monitoring have always been weak ($<10\text{cm s}^{-1}$).

Temperature. Sprat Hole temperature has not been monitored over many years due to loss of probes. This is likely due to the high exposure to recreational and commercial fishing divers. In general Sprat Hole appears to be a warm site.

SITE SUMMARIES

Benthic Community. Sprat Hole is a fringing *Orbicella annularis* dominated reef, with a good diversity of other coral species. There was a 62.3% decline in coral cover due to the 2005 coral bleaching event, with a regain of 11.9% of cover by 2011. Epilithic algae dominate the algal community, with smaller amounts of a diverse group of macroalgae, including *Dictyota* spp. and *Halimeda* spp. There has been variable, but increasing cover of filamentous cyanobacteria since 2005.

Coral Health. The coral community at Sprat Hole was heavily affected during the 2005 coral bleaching event, with a high prevalence of bleaching at a very high extent. Bleaching prevalence has tended to be higher since the event. Disease prevalence can be quite high, particularly for white disease. Dark spots disease has also been in high prevalence in certain years. Old partial mortality was high on colonies from 2005 to 2011, and low when recorded in 2002. In this case, old partial mortality is a very common feature of *O. annularis* and it is likely that low values are due to observer bias and a different method for estimating partial mortality. Recent partial mortality is consistently very high at Sprat Hole, due in part to the high abundance of territorial damselfish (*Stegastes* spp.) forming algal lawns on *O. annularis*.

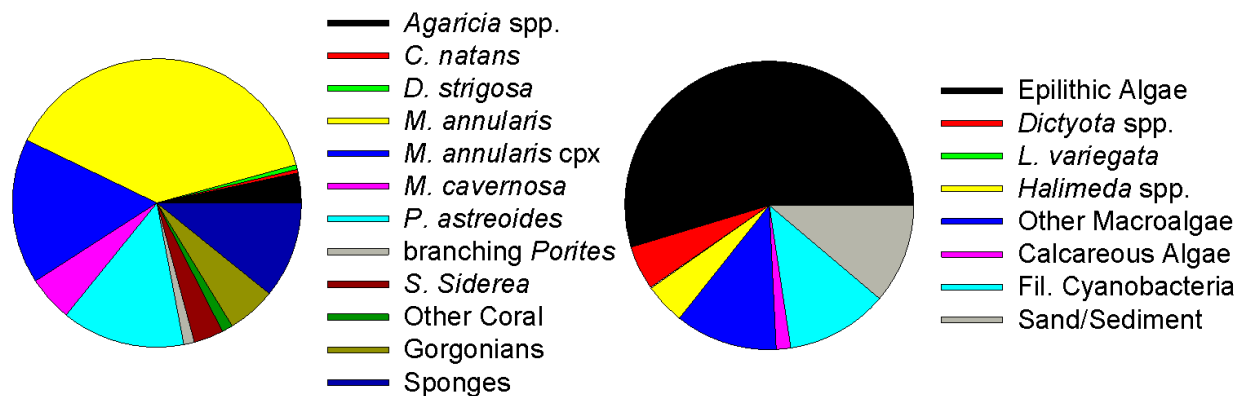
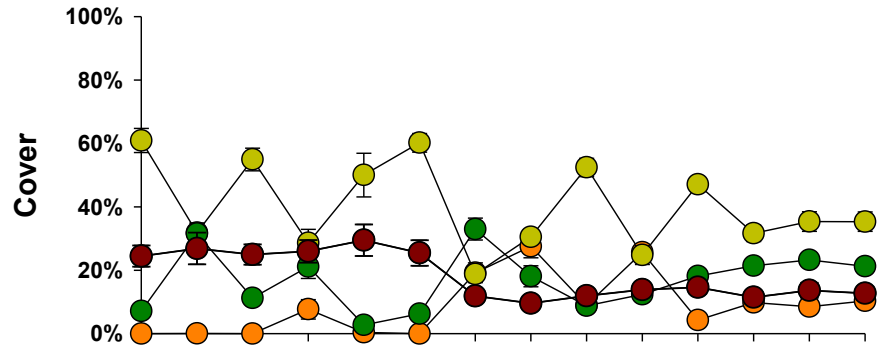


Figure 82. Sprat Hole (left) Relative composition of the sessile epibenthic animal community. (right) Relative composition of the algal community and unconsolidated sediment.

SPRAT HOLE

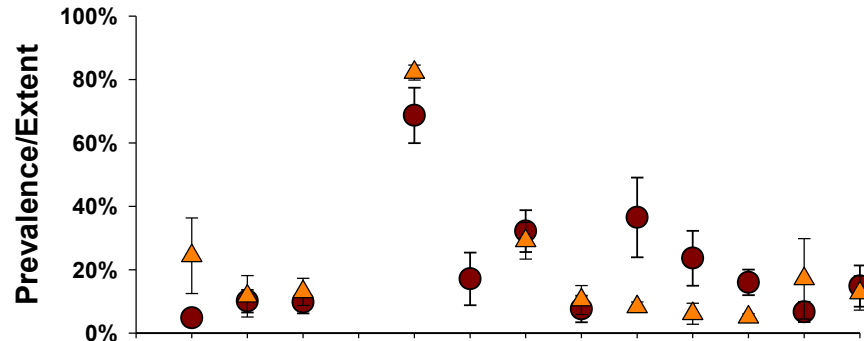
Benthic Community

- Coral
- Cyanobacteria
- Epilithic Algae
- Macroalgae



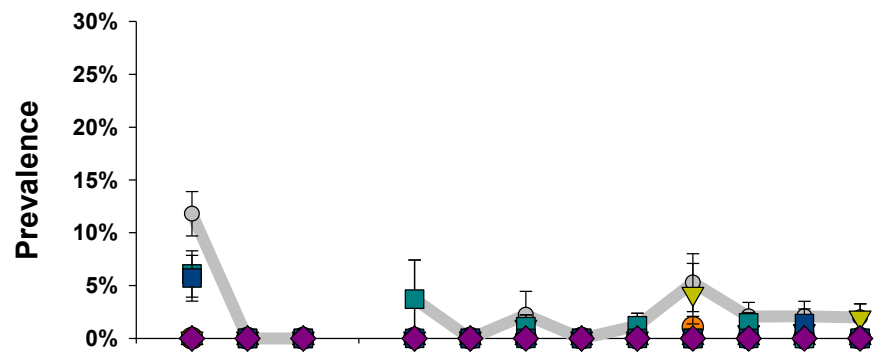
Bleaching

- Prevalence
- ▲ Extent



Disease

- All disease
- Black Band
- Lesion
- ▼ Dark Spots
- ▲ Intercostal
- White Disease
- Yellow Band
- ◆ Unknown



Partial Mortality

- Old
- ▲ Recent

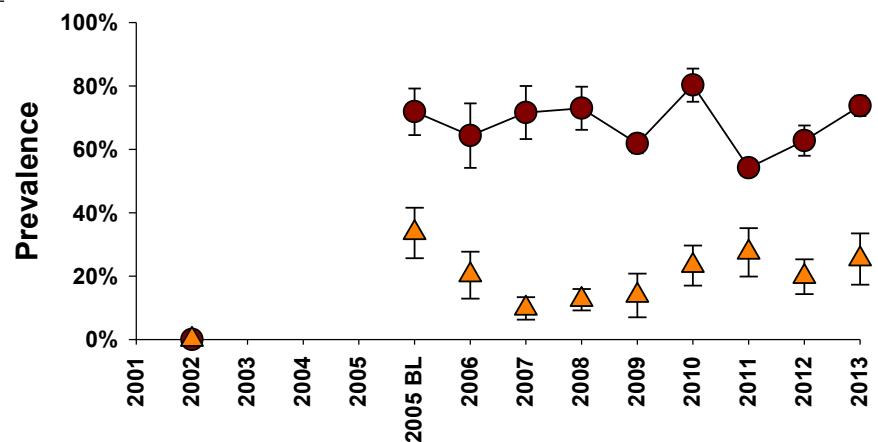


Figure 83. Sprat Hole benthic cover and coral health through time (mean $\pm$ SE).

SITE SUMMARIES

Fish Community. Sprat Hole exhibits a fairly typical fish community structure for a nearshore coral reef ecosystem receiving some amount of terrestrial runoff from the watershed. Fish biomass is moderate, and the site is dominated numerically by the creole wrasse and blue chromis, planktivorous invertivores. Benthic herbivores are common and include small parrotfish and all three Caribbean acanthurid species. Invertivores are diverse and include both planktivores and benthic feeders; mostly small fish in small numbers. A mutton snapper was recorded on four belt transects in 2012, elevating the invertivore biomass significantly, however these observations probably represented only one individual. Numerically and by biomass the graysby dominated the piscivore group in 2012. Larger piscivorous serranids and lutjanids were absent, as on all nearshore reefs off St. Croix. Two lionfish were observed on the Sprat Hole site in belt transects in 2012.

SPRAT HOLE

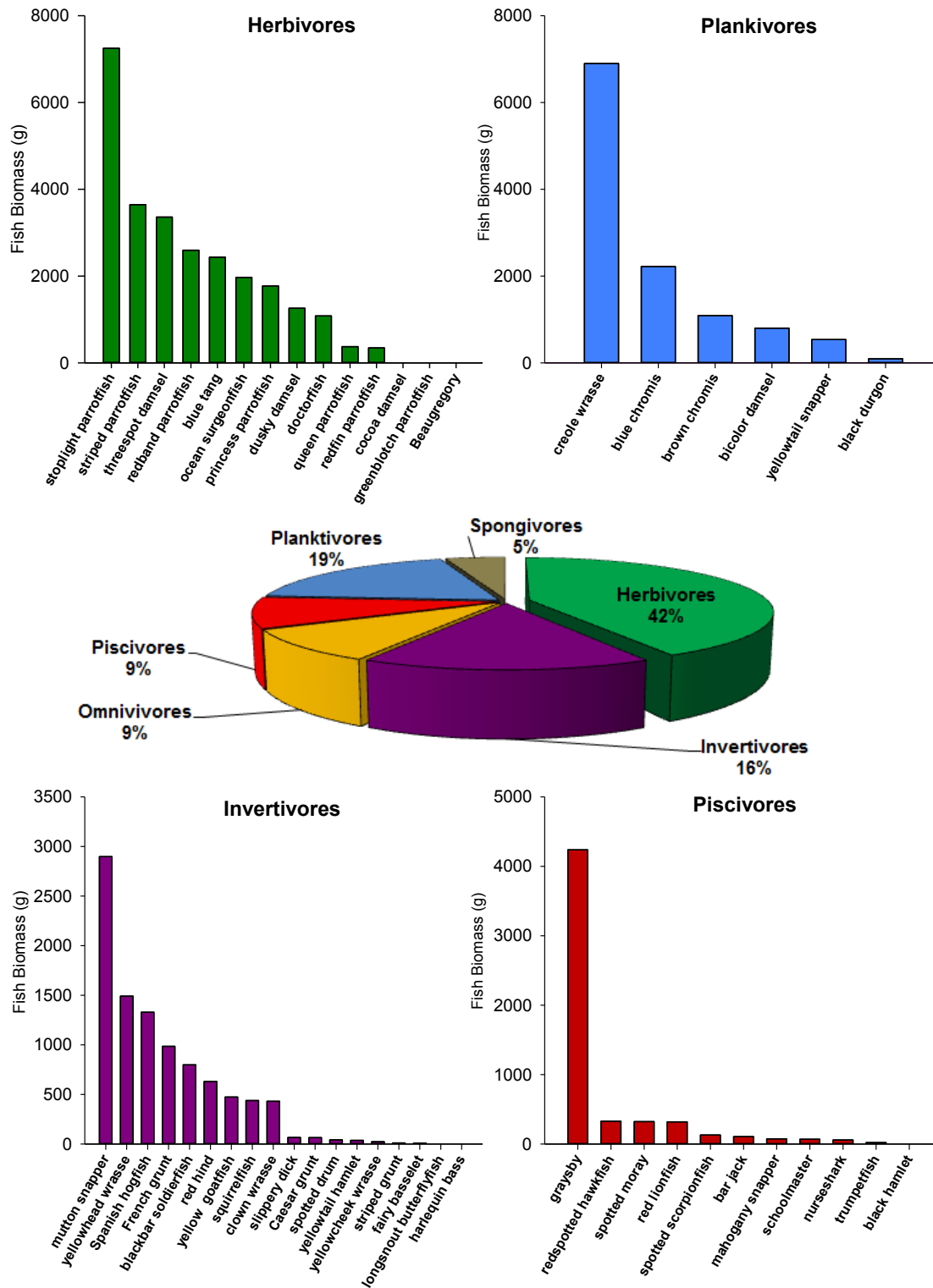


Figure 84. The Sprat Hole fish community by absolute and relative biomass.