

# Oyster Habitat Restoration and Assessment in Sarasota Bay, Florida

## Introduction

Oyster bars are an important habitat type in Sarasota Bay. In 2003, the SBEP began a comprehensive program to assess oyster habitat within its watershed to determine if there were areas that would benefit from enhancement. The SBEP reviewed historical oyster distribution, current water quality conditions and oyster recruitment potential to choose optimum sites for restoration.

In 2005, sites were identified, permit obtained and habitat created at two sites in Sarasota County (White Beach and Turtle Beach). North Creek, an area with extensive, healthy oyster populations, served as a reference site. In 2008, an additional site in Manatee County (Gladiola Fields) was permitted. In 2010, oyster habitat was created at this site, and White Beach oyster habitat was greatly expanded (Fig. 1). Oyster recruitment monitoring was initiated within the first year and fish utilization monitoring began in 2011.

## Habitat Design and Monitoring

Five individual oyster habitats were created at each location. Each habitat was 0.2 acres in size and consisted of a perimeter of oyster "sausages", which were biodegradable mesh bags filled with fossil shell material. The interior was filled with loose fossil shell and shaped to create vertical relief and channels for fish passage.

Recruitment monitoring began with the original (2005) project. Year 1 spat monitoring had two components: 1) removable settlement plates and 2) collection of shells from reefs at each site (Fig 2). The settlement plates allowed us to monitor spat recruitment over time while monitoring the shells enabled us to assess how well the habitat structures functioned in attracting new oyster recruits. In year 2, we replaced the settlement plates with suspended strings of shell to more closely mimic the reef material (also Fig. 2). Oyster recruitment to shells from the reefs are presented in Fig. 3.

The first independent fisheries sampling took place on the new and expanded reefs in 2011. Replicate seines were pulled over reefs at each site. An identical number of seines were pulled over bare bottom adjacent to the reefs for comparison.

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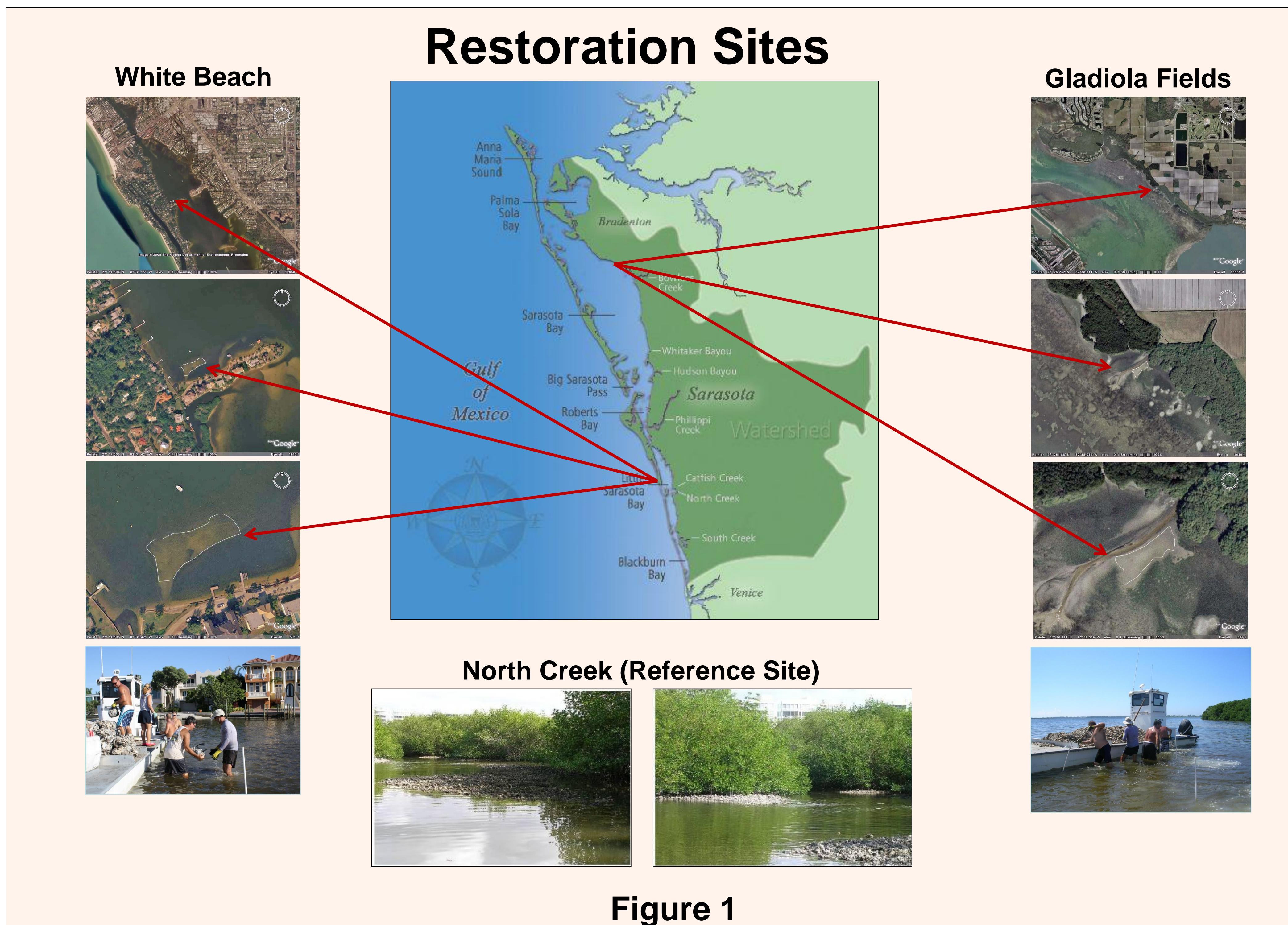
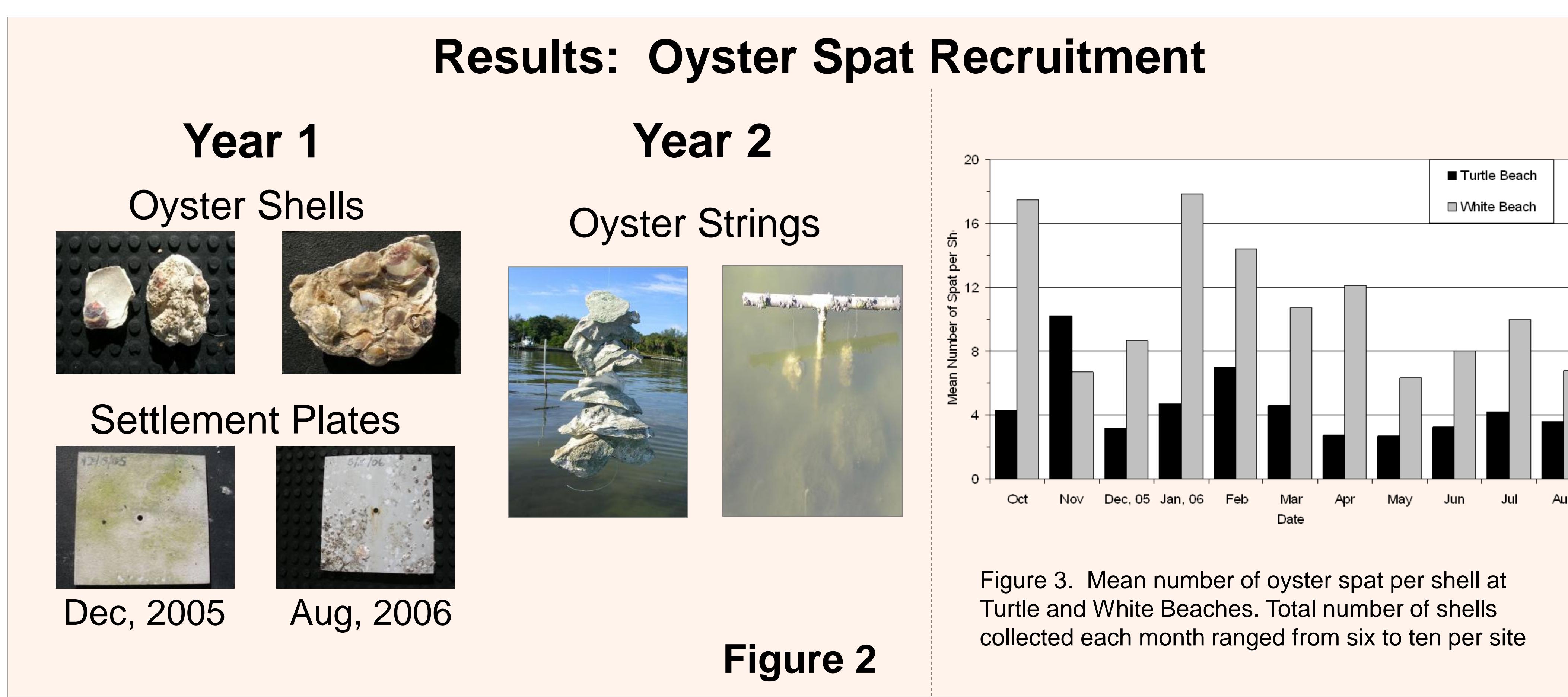
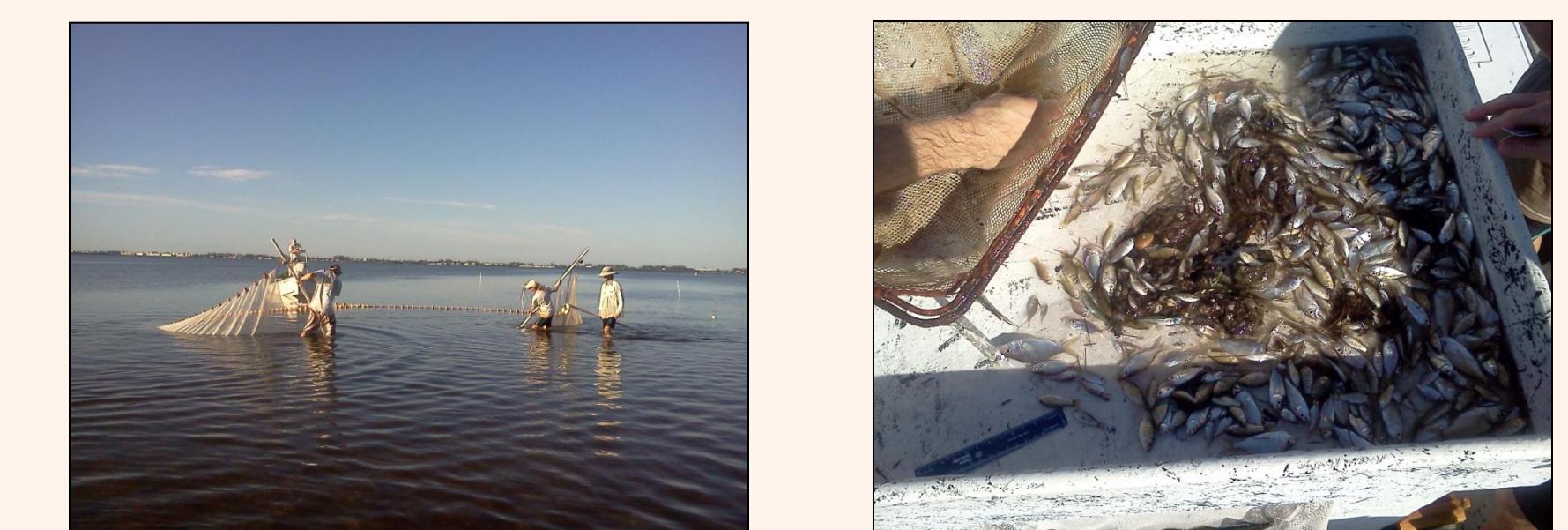


Figure 1



Acknowledgements: Funding (The Nature Conservancy); Construction (Reef Innovations); Volunteers (Parrot Head Club; USF SustainaBULLS)

## Results: Fisheries Utilization



Scientific name	Mud (n=1)	Sand (n=5)	Oyster (n=6)	Total (n=12)
<i>Achirus lineatus</i>	2	1		3
<i>Anchoa hepsetus</i>	1		12	13
<i>Archosargus probatocephalus</i>			3	3
<i>Bairdiella chrysoura</i>	220			220
<i>Callinectes sapidus</i>	29	4	1	34
<i>Cynoscion nebulosus</i>	6			6
<i>Eucinostomus gula</i>	5	10	115	130
<i>Eucinostomus harenulus</i>		257	59	316
<i>Eucinostomus spp.</i>	18	641	209	868
<i>Farfantepenaeus duorarum</i>	48	1		49
<i>Floridichthys carpio</i>		171		171
<i>Gobiosoma spp.</i>	2			2
<i>Harengula jaguana</i>		1	35	36
<i>Lagodon rhomboides</i>		1	4	5
<i>Lutjanus griseus</i>	2		5	7
<i>Lutjanus synagris</i>	1			1
<i>Menidia spp.</i>		3	92	95
<i>Microgobius gulosus</i>	1			1
<i>Microgobius thalassinus</i>	1			1
<i>Mugil spp.</i>		1		1
<i>Opisthonema oglinum</i>			68	68
<i>Opsanus beta</i>		1		1
<i>Pogonias cromis</i>		1		1
<i>Strongylura notata</i>		1	9	10
<i>Synodus foetens</i>		1	1	2
<b>Total</b>	<b>336</b>	<b>1,095</b>	<b>613</b>	<b>2,044</b>

Table 1. List of Fish Collected at Both Oyster Sites During October, 2011 (FWRI FIM Program).

## Conclusions

The presence of viable oyster spat at both sites indicates that we were successful in creating functional oyster habitats at White and Turtle Beaches in Sarasota Bay. However, White Beach had consistently higher rates of recruitment than Turtle Beach, and oysters have continued to grow at White Beach since the habitat was created. Oyster shell proved to be a far superior for monitoring recruitment than artificial materials.

White Beach was chosen as the better Sarasota County site for continued enhancement in 2010. New habitat was also created in Manatee County in 2010. We plan to supplement both sites with shell this spring (2012).

Fisheries data from our oyster habitats are very preliminary. We will continue to monitor fish utilization over the coming years as the reefs mature to assess their suitability as fish habitat.