

## **FIELD OBSERVATION REPORT**

**Date:** September 23-25, 2014  
**Project:** Lido Key Hurricane and Storm Damage Reduction Project  
Benthic Resource Investigation  
**Location:** Lido Key, Sarasota County, Florida  
**Commission No.:** 153076.03  
**Field Representatives:** Katy Brown (biologist), Judd French (field support), Ben Alcocer (field support), and Scott Tillman (captain)

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CB&I completed a benthic resource investigation in support of the Lido Key Hurricane and Storm Damage Reduction Project from September 23-25, 2014. The project is anticipated to be constructed in 2015 and includes beach nourishment and construction of three (3) groins. This investigation was required in order to locate seagrass and/or hardbottom resources that may be present in the footprint of the beach fill and groin placement areas and the proposed water quality mixing zones for the beach fill and the Big Sarasota Pass borrow areas. Results from this report will be used in support of obtaining the Florida Department of Environmental Protection (FDEP) permit and consultation with NOAA National Marine Fisheries Service (NMFS) Habitat Conservation Division (HCD). Aubree Hershorin (USACE) and Mark Sramek (NMFS HCD) joined the CB&I crew on September 23 to observe and participate in the resource survey.

### **METHODS**

The initial phase of this investigation involved reviewing existing data, including sidescan sonar survey data provided by the USACE, in-house aerial photographs, and previous Lido Key *in situ* resource investigations (CPE, 1992; Dial Cordy, 2001). These recent and historical data were used to determine areas of potential seagrass and hardbottom resources and to plan field investigation sites. Figure 1 shows the location of the overall investigation area, the specific investigation methodologies conducted and the sidescan contacts (areas that warranted investigation). To efficiently investigate the large survey area, a combination of methods was employed, including towed video, towboard diver surveys and diver verification.

First, a DGPS-integrated towed video camera method was used to survey the borrow areas in Big Sarasota Pass and the nearshore fill placement area to locate potential benthic resources. This method allowed for the collection of data over a large area. The camera was deployed from the vessel and the streaming video was viewed by a biologist topside in real-time. When potential seagrass or hardbottom was observed, a fix was taken in Hypack navigational software to mark the location of the resource. The position data was also recorded and displayed as GPS coordinates overlaid on the video. The preliminary survey lines were spaced 500 ft apart; however, if resources were observed, then the spacing was systematically decreased to delineate the resource area. Cross lines (e.g., C1) were also run to determine the outer extent of resources. Towed video survey lines were concluded once the investigation area boundary was reached or when the water depth became too shallow (less than 1 m [3 ft]) for the vessel to operate.

When general conditions allowed, the towboard survey method was used. This method allowed biologists to directly assess areas of potential seagrass inside Big Sarasota Pass. This method

involved two snorkelers being towed astern of the vessel at slow speeds, allowing for a visual survey of the seafloor. This method was only conducted along one survey line when sea conditions were relatively calm and boat traffic was minimal.

The third method of diver verification was utilized to further investigate areas where seagrass or hardbottom were observed during the towed video and towboard surveys. Figures 2a-b show the location of seagrass and hardbottom resources confirmed by diver verification. A CB&I biologist, accompanied by a field support diver, collected data on the species present, percent cover, substrate type, and depth, and took representative photographs of the site. When conditions permitted, divers delineated the resource using a towed buoy equipped with a DGPS antenna and attached by a cable connected to a topside laptop running HYPACK navigational software to record the positioning data. A summary of the investigation findings is provided below.

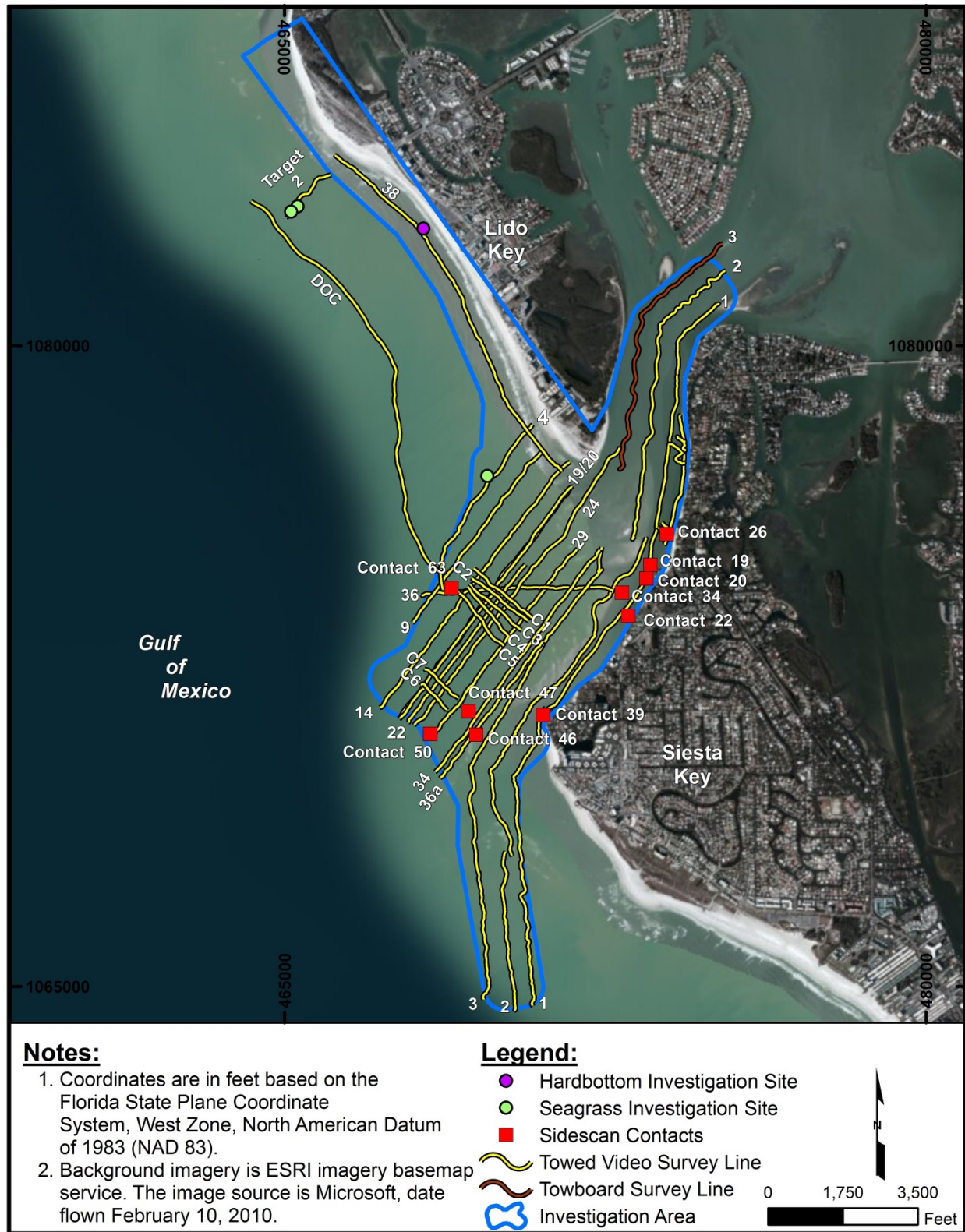


Figure 1. Map of the investigation area located in Big Sarasota Pass. The planned field investigation sites and the towed video and towboard survey lines are shown. A towed video survey line was also conducted along the depth of closure (DOC) even though it was outside of the investigation area. Labels for each line correspond to the labeled towed videos provided on the enclosed DVDs.

## **RESULTS**

### **Seagrass Resources**

Figures 2a-b and Table 1 summarize the seagrass observed during these investigations. No seagrass resources were observed in the nearshore Lido Key fill placement area. A towed video survey was also conducted offshore of the fill placement area along the depth of closure (DOC) (see Figure 1) at approximately 5-6 m (18 ft). No seagrass resources were observed here. Seagrass resources were observed using the towed video and towboard survey methods in three main locations within the investigation area: (1) inside Big Sarasota Pass; (2) on the southwest portion of the Big Sarasota Pass ebb shoal; and (3) offshore of Siesta Key in the southern portion of the investigation area.

Inside Big Sarasota Pass (Figure 2a), seagrass was present in the northeastern and northwestern sections of the investigation area and along the seawall located along the north end of Siesta Key. In the northeastern section a dense patch (Patch 1) of *Syringodium filiforme* (75-100% cover) was observed from the vessel and confirmed by diver verification. The patch was delineated using the diver-towed buoy equipped with a DGPS antenna. The depth was less than 1 m (~2 ft) and the patch extended outside of the investigation area. In the northwestern section of the Big Sarasota Pass investigation area, several patches of seagrass were observed during the towboard survey and subsequently confirmed by diver verification. A dense patch (Patch 2) of *Syringodium filiforme* (75-100% cover) at approximately 1-2 m (4 ft) depth was observed along the edge (and continuing outside) of the investigation area and was delineated from the vessel. Two small patches (Patches 3 and 4) of *Halodule wrightii* (approximately 50-75% cover) were observed at a depth of 1.5-2 m (5-6 ft), and fixes were taken at the center of the patches. Three larger patches (Patches 5, 6, and 7) of *H. wrightii* were also observed and delineated using the diver towed buoy. The percent coverage of *H. wrightii* was greater at Patch 5 (approximately 75-100%) than at Patches 6 and 7 (both had approximately 50-75% cover), and depths ranged from 1.5-2 m (5-7 ft). A patch (Patch 8) of *S. filiforme* was observed along the seawall at the north end of Siesta Key during the towed video survey and fixes were taken from the vessel (Figure 2b). This patch was located near the start of the rocky rubble area in approximately 4 m (14 ft) depth. Due to the strong tidal currents, divers could not safely dive the site to collect *in situ* data. Representative photographs of the seagrass resources in Patches 1-8 are presented in Figures 3 through 5.

On the southwest portion of the Big Sarasota Pass ebb shoal, four large patches (Patches 9, 10, 11 and 12) of *H. wrightii* were observed during the towed video survey and confirmed by diver verification (Figures 2b and 6). Cover by *H. wrightii* was sparse, less than 5% at each of the patches, and depths ranged from 2-3 m (9-11 ft). The substrate consisted mostly of fine sand with areas of shell hash and dense aggregations of sand dollars (*Mellita tenuis*). To ensure the areas surrounding Patches 9-12 were adequately surveyed, intersecting towed video lines were conducted and fixes were taken to confirm the outer limits of each patch (see lines C1-C7 in Figure 1).

In the southern portion of the investigation area, located southwest of the north end of Siesta Key, two small patches (Patches 13 and 14) were observed during the towed video survey and subsequently confirmed by diver verification (Figures 2b and 7). Fixes were taken at the center

of each patch. Patch 13 was a sparse patch (few individuals, less than 5% cover) of *H. wrightii* that covered approximately 0.5 m<sup>2</sup> at 3 m (9 ft) depth. Patch 14 was a dense patch (50-75% cover) of *Halophila decipiens* that covered approximately 0.5 m<sup>2</sup> at 5 m (17 ft) depth. The substrate consisted of fine sand and sand dollars at both sites.

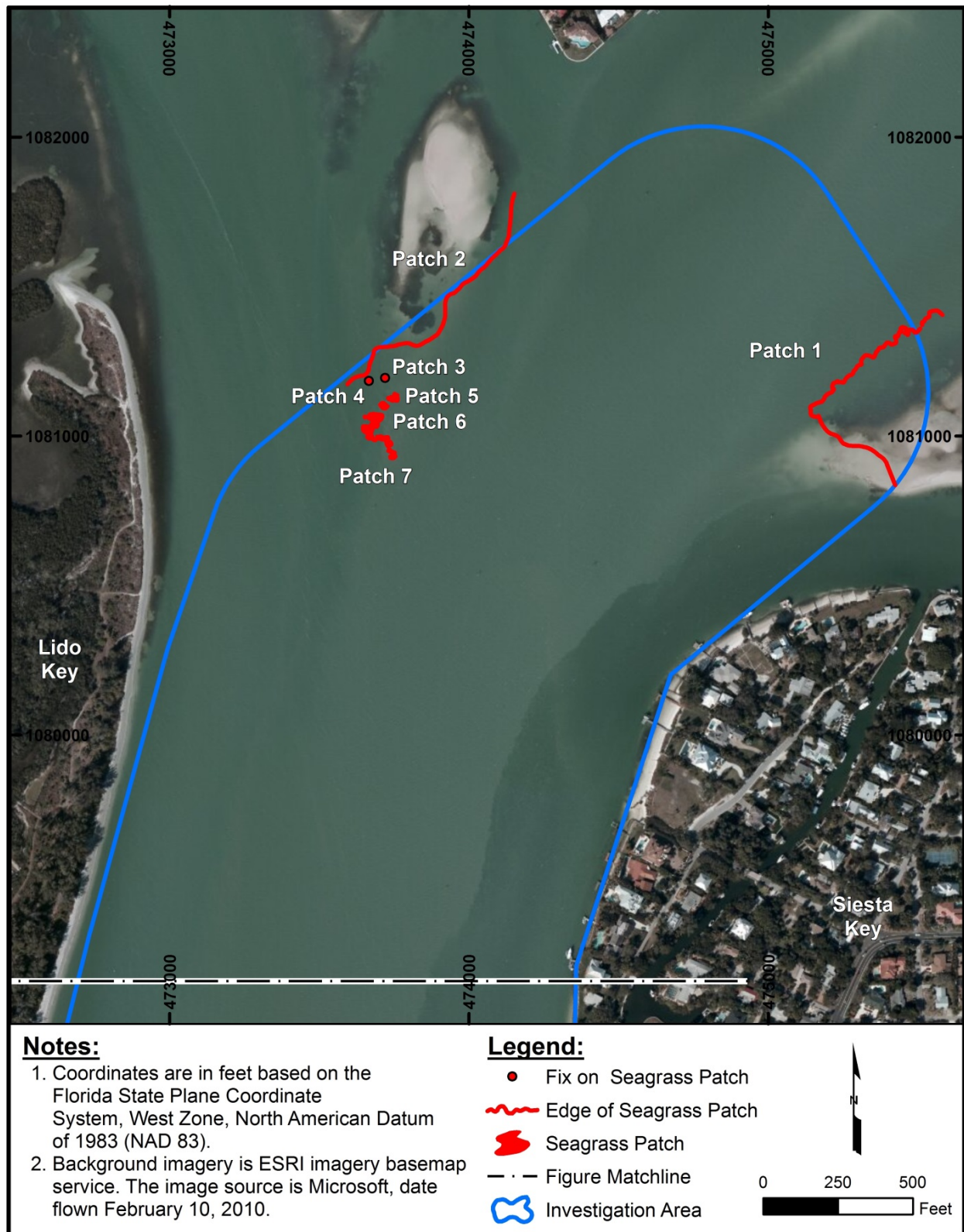


Figure 2a. Location of seagrass patches (Patches 1-7) observed inside Big Sarasota Pass.

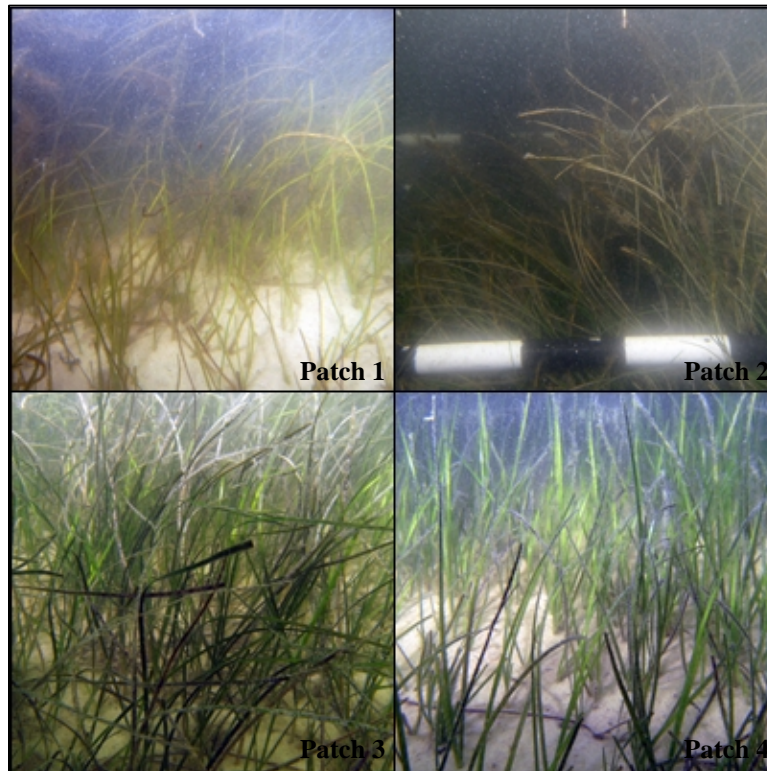


**Figure 2b. Location of seagrass patches (Patches 8-14) observed along the seawall on the north end of Siesta Key, on the southwest portion of the Big Sarasota Pass ebb shoal, and in the southern portion of the investigation area (offshore of Siesta Key). The location of the rock/rubble resources along the southern seawall is also shown.**

**Table 1. Summary of seagrass observations in the investigation area.**

Site	Depth (m)	Species	Percent Cover
Patch 1	1	<i>Syringodium filiforme</i>	75-100%
Patch 2	1	<i>Syringodium filiforme</i>	75-100%
Patch 3	2	<i>Halodule wrightii</i>	50-75%
Patch 4	2	<i>Halodule wrightii</i>	50-75%
Patch 5	2	<i>Halodule wrightii</i>	75-100%
Patch 6	2	<i>Halodule wrightii</i>	50-75%
Patch 7	2	<i>Halodule wrightii</i>	50-75%
Patch 8	4	<i>Syringodium filiforme</i>	*
Patch 9	3	<i>Halodule wrightii</i>	numerous, but < 5%
Patch 10	3	<i>Halodule wrightii</i>	numerous, but < 5%
Patch 11	2	<i>Halodule wrightii</i>	numerous, but < 5%
Patch 12	3	<i>Halodule wrightii</i>	numerous, but < 5%
Patch 13	3	<i>Halodule wrightii</i>	few, < 5%
Patch 14	5	<i>Halophila decipiens</i>	50-75%

\*Divers were unable to collect *in situ* data for Patch 8 due to the unsafe diving conditions at the site.



**Figure 3. Photographs of seagrass Patches 1-4 located inside of Big Sarasota Pass. Patches 1 and 2 are *S. filiforme* and Patches 3 and 4 are *H. wrightii*.**

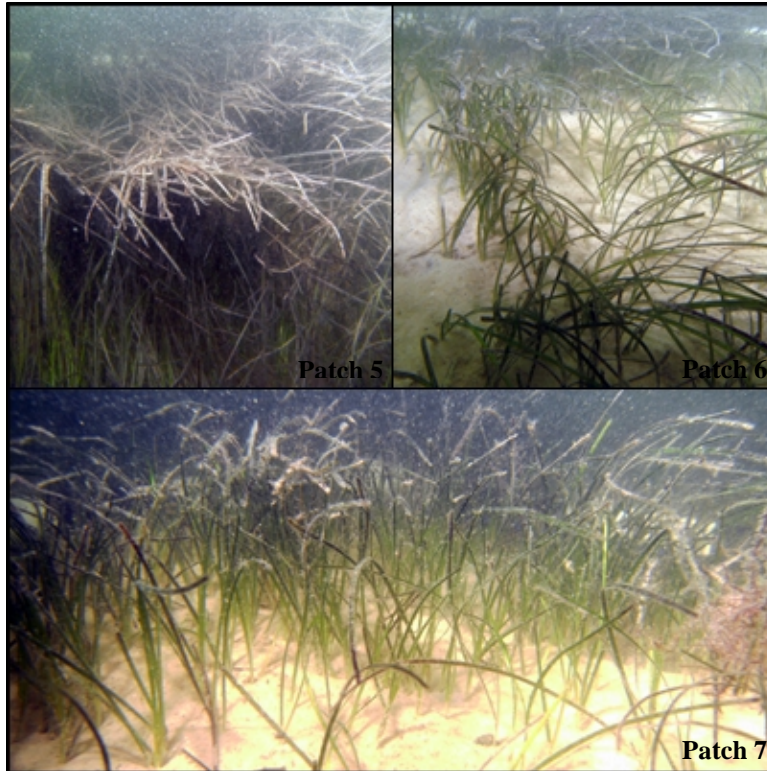


Figure 4. Photographs of seagrass Patches 5-7 located inside of Big Sarasota Pass. All patches consist of *H. wrightii*.



Figure 5. Image of Patch 8 recorded during the towed video survey within the channel in Big Sarasota Pass.

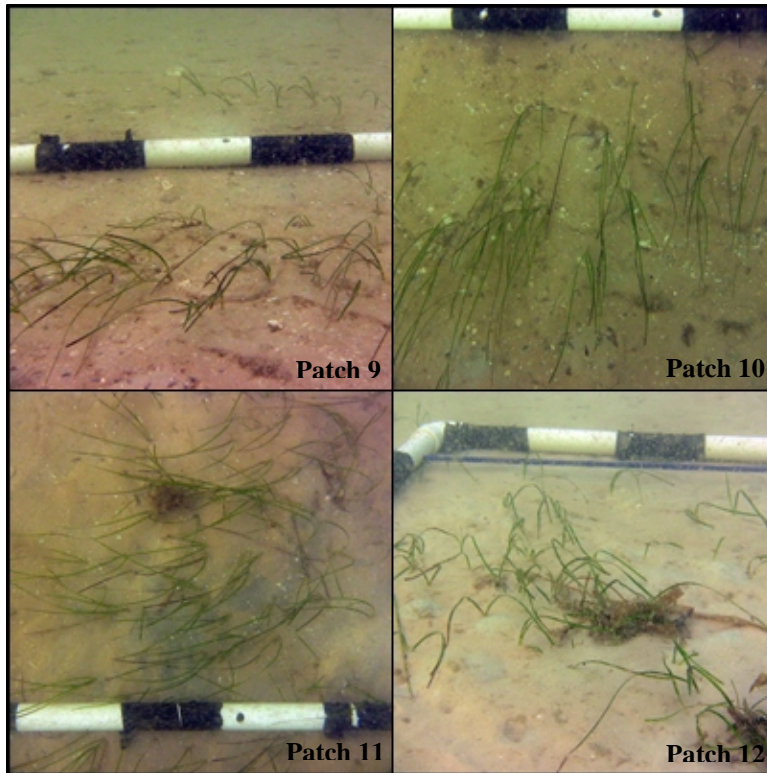


Figure 6. Photographs of seagrass Patches 9-12 located in the southwestern portion of the Big Sarasota Pass ebb shoal. All patches consisted of *H. wrightii*.

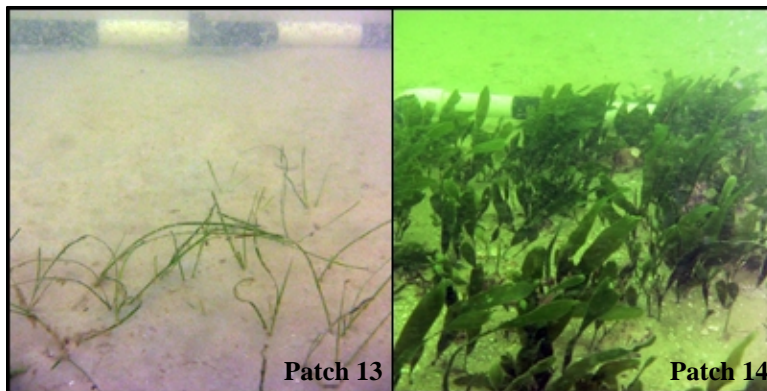


Figure 7. Photographs of seagrass Patches 13 and 14 located in the southern portion of the investigation area, offshore of Siesta Key. Patch 13 consists of *H. wrightii* and Patch 14 is *Halophila decipiens*.

#### Hardbottom Resources

Sidescan sonar data provided by the USACE was examined prior to the field survey, and ten contacts were determined to be potential resources that required further investigation. Also, one site of potential hardbottom was determined from analysis of aerial images (see Figure 1 - hardbottom investigation site). The towed video camera was used to investigate these 11 sites, four of which resulted in identification of potential resources. All four of these sites (Contacts 19, 20, 22, and 26 in Figure 1) were located along the seawall at the north end of Siesta Key within Big Sarasota Pass. Towed video camera surveys were conducted along the length of the channel as well as perpendicular to the shoreline to delineate the edges of benthic resources

(Figures 1 and 2b). Figure 8 shows representative images of the rock and rubble resources recorded during the towed video. Diver verification was attempted within the channel and a few photographs were taken, however due to the strong tidal currents the diving activities were limited for safety reasons. The benthic resources in this location consisted of large rocks, rubble, and debris that supported growth of sponges (e.g., *Cliona celata*, *Pione lampa*), macroalgae (e.g., *Caulerpa* sp.), and octocorals (e.g., *Leptogorgia virgulata*) (Figures 8 and 9). Fish species, such as sheepshead (*Archosargus probatocephalus*), were also observed utilizing this habitat (Figure 10).

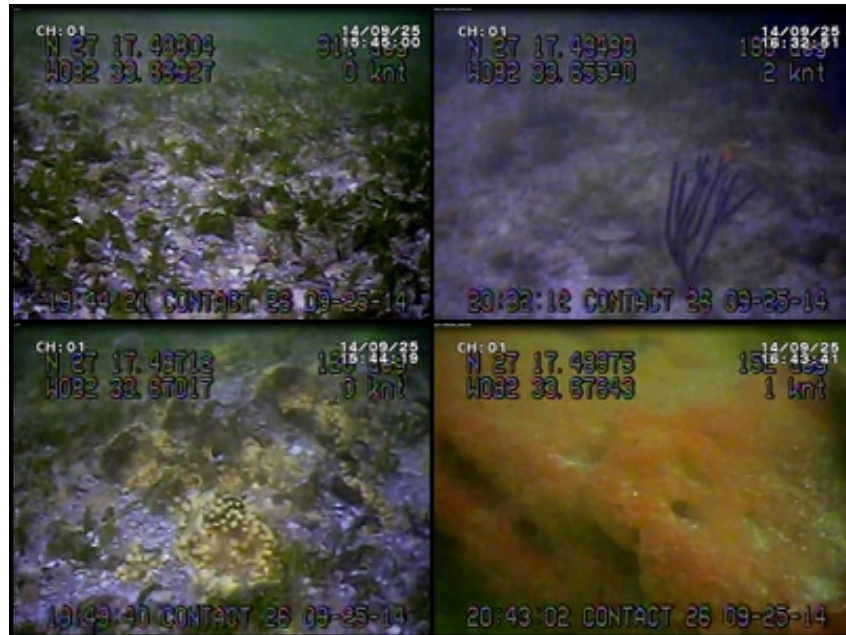


Figure 8. Hardbottom resources located within the channel in Big Sarasota Pass recorded during the towed video survey. Clockwise from the top: *Caulerpa* sp., *Leptogorgia virgulata*, *Cliona celata*, and *Pione lampa*.

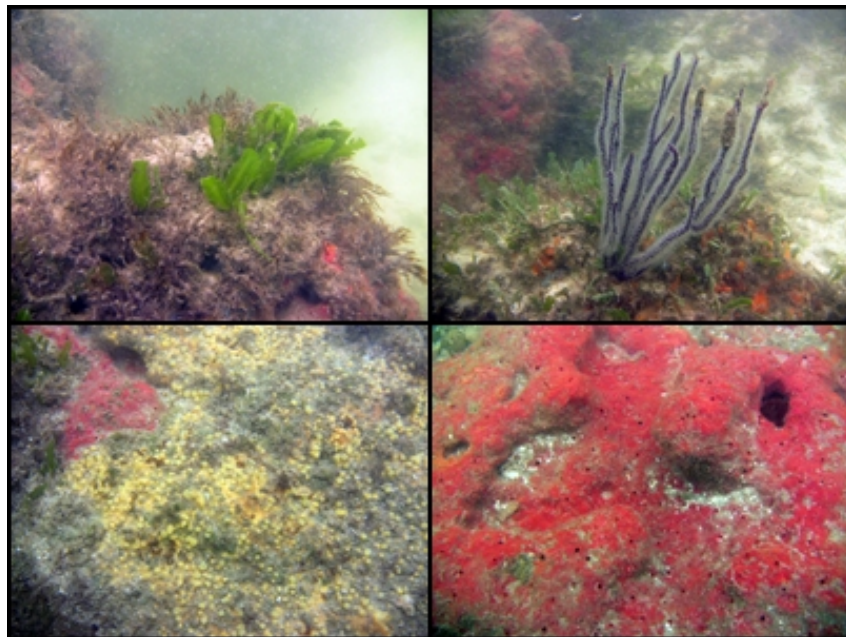


Figure 9. *In situ* photographs of the hardbottom resources located within the channel in Big Sarasota Pass. Clockwise from the top: *Caulerpa* sp., *Leptogorgia virgulata*, *Cliona celata*, and *Pione lampa*.



**Figure 10.** *Archosargus probatocephalus* (sheepshead) were one of the fish species recorded during the towed video survey within the channel in Big Sarasota Pass.

#### **LITERATURE CITED**

Coastal Planning & Engineering, Inc. (CPE). 1992. Lido Key Beach Nourishment Project, Environmental Study. Prepared for the City of Sarasota, Florida. April 1992. 32 p. + app.

Dial Cordy and Associates, Inc. 2001. Lido Key Shore Protection Project, Marine Resource Survey Report (October 2001) for the U.S. Army Corps of Engineers. Jacksonville, Florida. 7 p.