Preliminary Report
for the survey of
Man of War Harbor,
Fleming Key
in the
Florida Keys National Marine Sanctuary

Conducted by the Program in Underwater Archaeology (PUA),
Florida State University Department of Anthropology,
and the Academic Diving Program (ADP)
March 8-10, 2000

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Archaeological Research Reports #8
Program in Underwater Archaeology
Department of Anthropology
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Introduction

The Florida State University Department of Anthropology and Academic Diving Program (ADP) have conducted non-intrusive archaeological surveys of several shipwreck sites in the Lower Florida Keys in conjunction with the National Oceanic and Atmospheric Administration (NOAA) and the Florida Keys National Marine Sanctuary (FKNMS). These investigations of shipwrecks have ranged from the survey of a proposed mid-19th century vessel wrecked near Maryland Shoal to a survey of Flagler vessels in Boot Key harbor and a late 19th or early 20th century wood and iron vessel on the northwest shore of Fleming Key.

The partnership between FSU and FKNMS has served to accomplish two goals. First, data collected by FSU-supported research alongside FKNMS research contributes to the continual investigation of Florida Keys archaeological resources. Second, students from FSU and the ANT 4131 class gain access to and participate in important scientific investigations of biological, archaeological, and other types of resources. The ANT 4131 *Techniques of Underwater Site Research* class offers students a wide range of training and experience in applying scientific diving and field techniques to a number of disciplines that operate underwater. The students apply in-water search and survey techniques in order to locate and identify targets as cultural or natural in origin. Biological and archaeological survey of the Fleming Key wreck allowed the students to conduct two distinct types of data collection and recording underwater.

This year, from March 8-10, 2000, FSU worked in conjunction with FKNMS on the systematic remote sensing survey of the Man of War Harbor, Fleming Key. Potential archaeological targets obtained during side scan sonar survey in March 1998 were also investigated during this project in order to identify these targets as cultural or natural in origin. This survey was conducted over a three day period in order to ground truth and survey those targets obtained from the 1998 survey and to conduct further remote sensing investigation utilizing side scan sonar and magnetometer devices. Further biological and archaeological surveys of the Fleming Key wreck, FKNMS G3001 (formerly recorded as FKNMS B3001), were also conducted to monitor and assess any variations in the biological and archaeological record that may have occurred since the FSU survey in 1998.

Description of the Study Area

Four targets, out of seven, obtained from the side scan sonar survey in March 1998 by FSU, were located and investigated in order to determine if they were cultural or natural in origin. These targets are located in the Man of War Harbor of Fleming Key, which is located directly north of Key West. The depth of the targets surveyed ranged from three to sixteen feet (see Figure 1).

The remote sensing survey, eight track lines measuring approximately one kilometer in length and 100 meters apart, was completed on March 9, 2000 in Man of War Harbor. Track lines ran approximately north-south.

Table 2. Table of targets

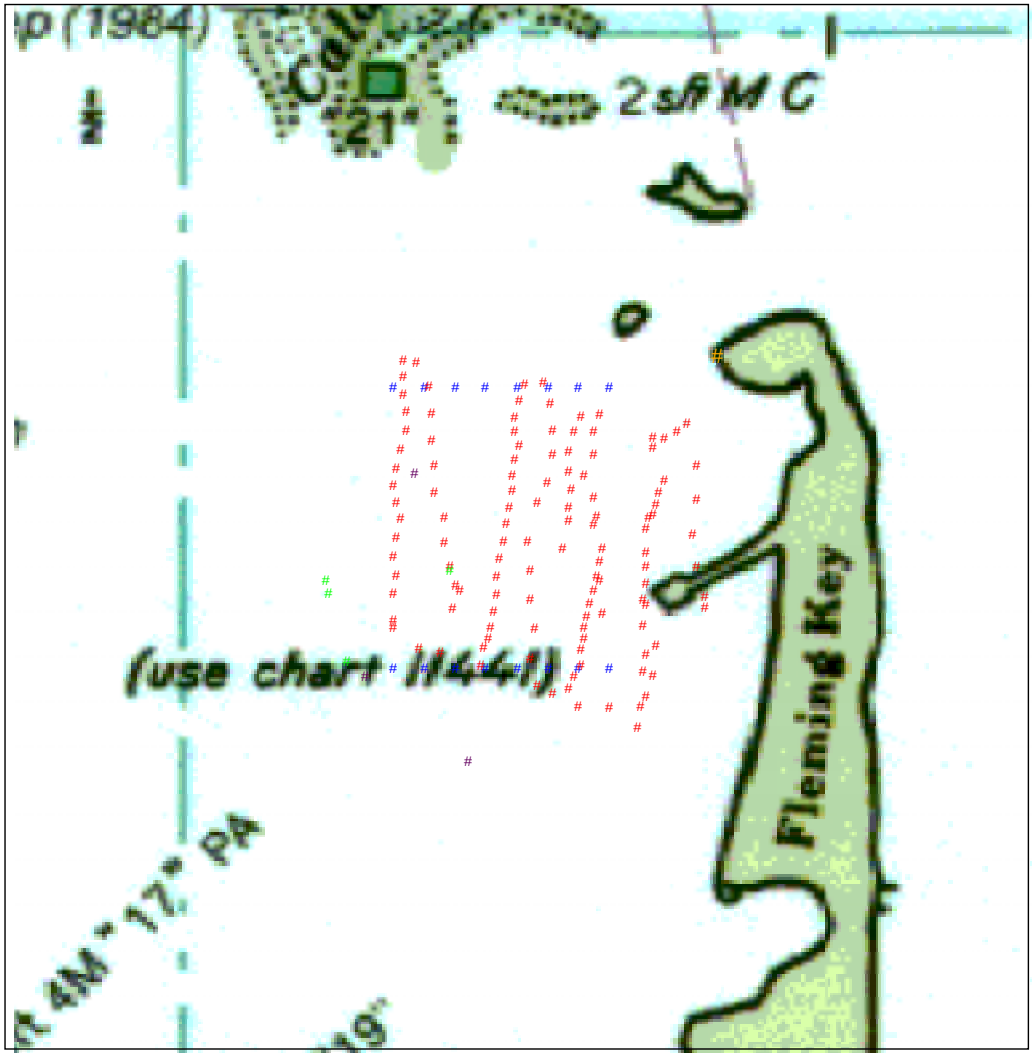
Target	**Results**	**Location-decimal minutes**	**Location-decimal degrees**
A – wreck?	not located	24° xx.xxx N	24.xxxxx N
	negative	81° xx.xxx W	-081.xxxxxW
B – wreck?	modern refuse	24° xx.xxx N	24.xxxxx N
	pipe and iron	81° xx.xxx W	-081.xxxxx W
C – wreck?	not located	24° xx.xxx N	24.xxxxx N
	negative	81° xx.xxx W	-081.xxxxx W
G – “hole”	not located	24° xx.xxx N	24.xxxxx N
	negative	81° xx.xxx W	-081.xxxxx W
Targets not investigated		**Location-decimal minutes**	**Location-decimal degrees**
D – “anchor”		24° xx.xxx N	24.xxxxx N
		81° xx.xxx W	-081.xxxxx W
E – unknown		24° xx.xxx N	24.xxxxx N
		81° xx.xxx W	-081.xxxxx W
F – unknown		24° xx.xxx N	24.xxxxx N
		81° xx.xxx W	-081.xxxxx W

The Fleming Key wreck, FKNMS G3001, is located east of channel marker # 6 on the northwestern shore of Fleming Key, north of the lighthouse. It lies at a depth of three to ten feet from the stern to the bow. A biological survey was conducted on the wreck and the following was observed:

Table 3. Organisms identified on Fleming Key Wreck

Coral	Star coral-more than 30
	Finger coral-20 to 30
	Fire coral- 1 to 10
	Brain coral- 1 to 10
Invertebrates	Tunicates- more than 30
	Sponges-more than 30
	Crabs- 1 to 10
	Anemones- more than 30
	Lobster- 1 to 10
	Mussels- more than 30
	Combjelly- 1 to 10
	Sea star-1 to 10
Seagrass	*Halodule*
	Thalassia
	Syringodium
Mammals	Dolphins- 4
	Humans- 10 to 12 snorkelers
Fish	Yellowtail snapper-more than 30
	Schoolmaster Snapper-21 to 30
	Porkfish- more than 30
	Rainbow parrotfish- 1 to 10
	Sergeant Major- more than 30
	Bermuda Chub- 1 to 10
	Barracuda- 1 to 10
	Grey Snapper- more than 30
	Yellowfin mojarra- 11 to 20
	Needlefish- 1 to 10

Figure 1. ArcView map of Fleming Key



Fleming Key Survey March 2000

400 0 400 800 1200 1600 Meters

N

LEGEND

- Fleming Key Wreck
- Targets not investigated
- Targets investigated
- Side scan tracklines
- Waypoints

Historical Background

Research is currently being planned to determine any background information about the Fleming Key wreck. The naval base on Fleming Key as well as the Monroe County library have been contacted for possible information. The final report will include a summary of the information that is attained.

Field Methods

Four goals were defined for the project and conducted in a systematic manner to ensure that accurate data was collected. The first goal of the project was to locate and identify the targets acquired through side scan sonar survey in March 1998. These targets were relocated using a Differential Global Positioning System (DGPS) and a buoy was dropped on the location. Two dive teams were deployed to conduct circle searches around the anchored buoy at two-meter intervals until a 50-meter radius had been covered. Targets that did not contain cultural materials were then classified as negative targets.

Any archaeological materials located would be surveyed using a baseline and measuring offsets from the baseline (tape measure) to various points of the archaeological feature(s). Mapping of diagnostic features would be conducted in order to identify the target as a shipwreck or other cultural remains.

The second goal was to conduct a remote sensing survey, utilizing a Marine Sonic 600 kHz side scan sonar and Geometrics 866 proton precession magnetometer. This survey took place on 9 March 2000 aboard a NOAA 24-foot vessel operated by David Whall of FKNMS. A Trimble NT200D global positioning system device with differential capabilities was used for location control. Unfortunately, DGPS information could not be imported into the side scan sonar CPU (central processing unit). In order to maintain location control, (latitude, longitude, speed over ground, beginning and ending times for image file saving and survey transect lanes) this information had to be recorded by hand every minute. By recording what time each side scan sonar image file was saved, it is possible to locate any potential targets with latitude/longitude readings that correspond with those recorded times and files. Each latitude/longitude reading as well as time, speed over ground, file saving times and track line beginning and ending times were processed using the Microsoft Excel 98© program and imported into ArcView in order to plot the track lines.

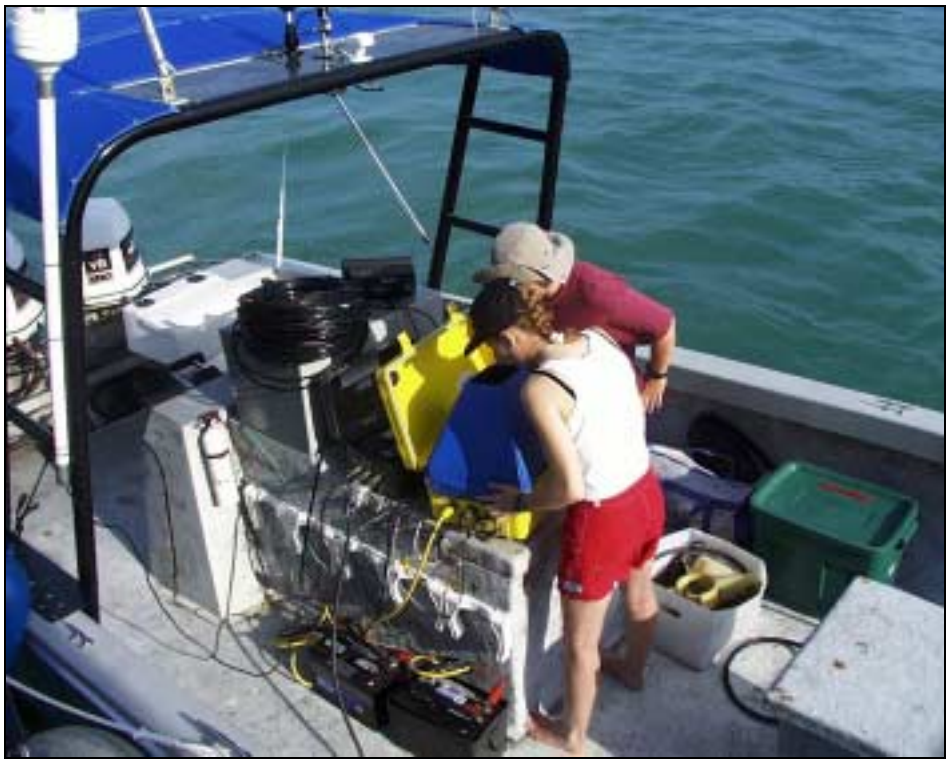
It was later determined that the Trimble unit was not functioning properly. During the course of the survey, a drift in the GPS coordinates was noted. The GPS coordinates that were recorded during the two-hour survey corresponded with the waypoints but by the end of the survey the GPS was inaccurate by approximately 100 meters. This was determined by comparing the Trimble GPS coordinates of the channel marker with its NOAA nautical chart location.

The third goal was to return to the Fleming Key wreck and conduct a monitoring exercise of its biological and archaeological record. Measurements and drawings were made of the

Fleming Key wreck (see Figures 3&4) and compared to data gathered previously during the 1998 survey. Any damage that may have occurred to the wreck since 1998 was also noted.

The fourth and final goal of this field operation was to conduct a biological survey on the Fleming Key wreck. This survey determined if the wreck is a viable reef supporting populations of marine life that may be unique to this area.

Figure 2. Setting up equipment for side scanning



Melanie Damour and Thadra Palmer Stanton setting up the side scan and magnetometer equipment on board the NOAA *RV Maine*.

Figure 3. Side scan sonar mosaic of Fleming Key Wreck with approximate positions of drawings.

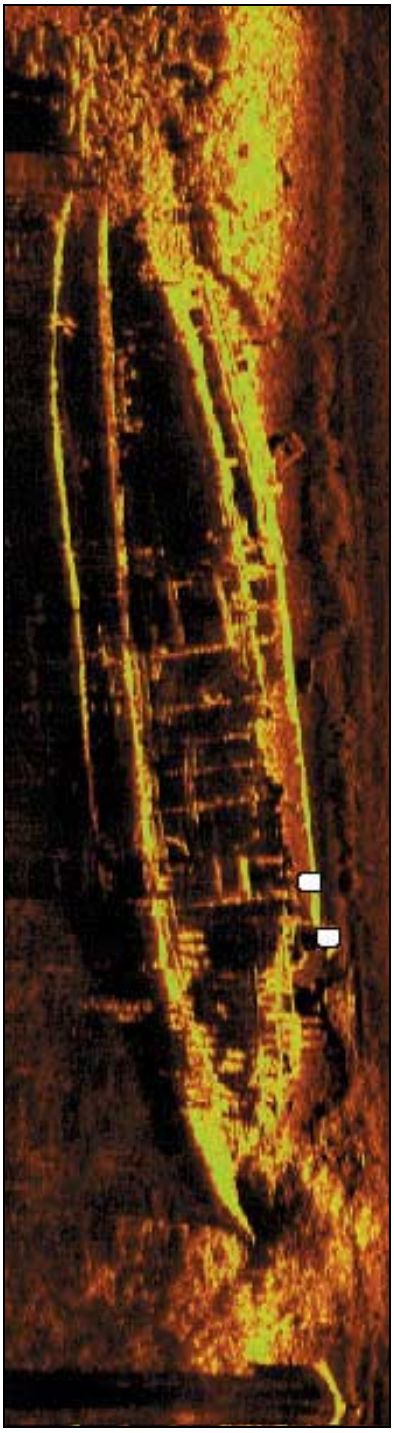


Figure 4. Port side drawing of frames. Original drawing by Rachel Horlings.

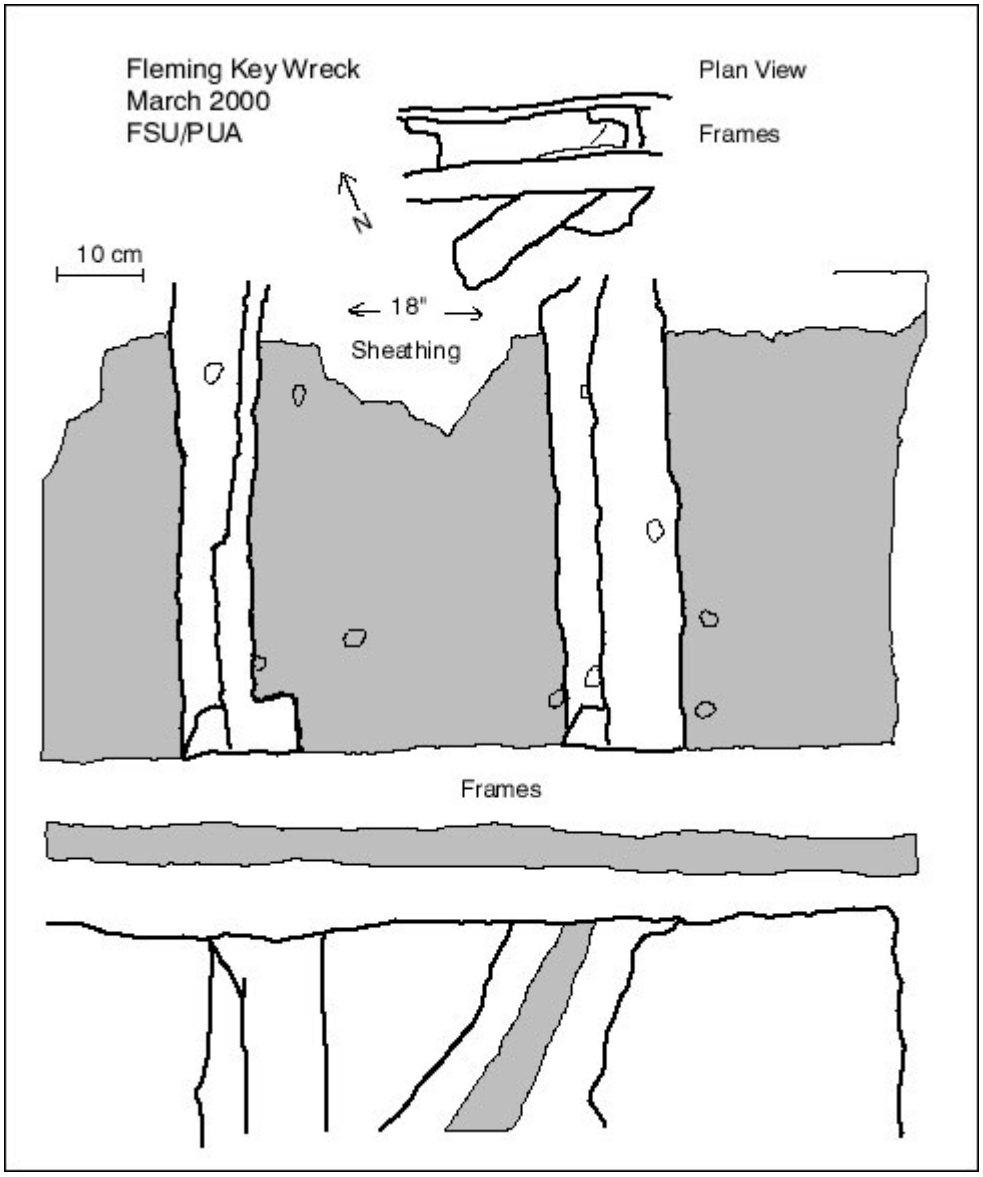
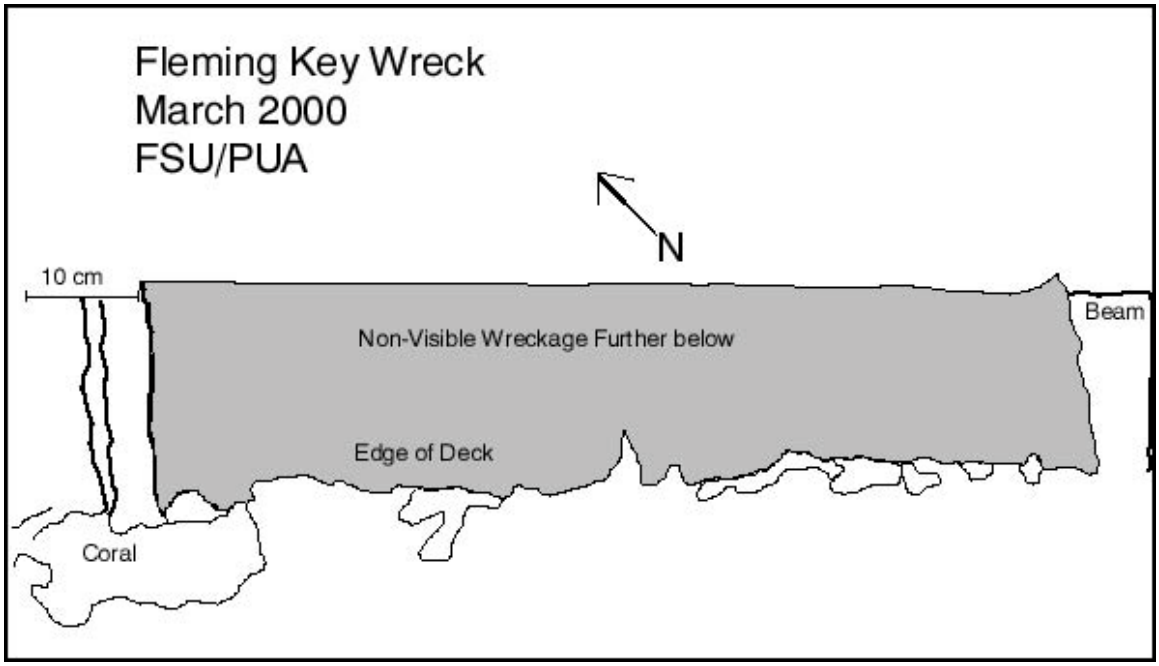


Figure 5. Port side drawing of frames along bottom.
Original drawing by Amanda Daws.



Target Site Description

Target A
Four divers conducted a circle search out to 24 meters at 2-meter intervals from the datum. Flags were placed by any objects of interest. Only miscellaneous disarticulated objects were observed. The target was designated as non-archaeological. After some discussion it was decided not to continue diving the site. The flags were recovered at the end of the dive and no permanent datum was left. A biological survey was also conducted and the following organisms were observed: assorted tunicates, brown sponges, spiny lobster, several coral-species, and *Thalassia testudin*um.

Target B
Four divers conducted a circle search out to 8 meters at 2-meter intervals from the datum. Further than eight meters, a large pile of metal was located. It was at first assumed to be articulated wreckage and a second dive was recommended. Second teams of four divers were brought in for additional investigation of the metal pile. There were four large metal tubes, along with car parts, thin metal planking, large metal springs and other trash and debris. It was determined that this was a modern refuse pile approximately 30 years old rather than a historic wreck. After the second dive, the DGPS was brought out over the center of the metal debris. The coordinates recorded were 24° xx.xxxx N, -081° xx.xxxx W. A cursory biology survey was conducted which noted barrel sponges, few fish and very little coral growth. The length of the debris was 21 meters (east-west) long and 12 meters (north-south) wide.

Figure 6. Divers leaving to investigate Target A.

Front to Back. Chris Horrell, Tyler Cremeens, Amanda Daws and Thadra Palmer Stanton in the FIO's Whaler.

Target C

Four divers were placed on this target and performed a circle search out to 32-meters at 2-meter intervals. The current was one half-knot to a knot and the wind was strong causing two feet sea, making the survey difficult. Visiblity was less than four feet. Nothing of cultural origin was located and it is suspected that the differential component of the GPS unit was not functioning properly.

Target G

Four divers were placed on this site and performed a circle search to 16 meters at two-meter intervals. The divers stopped due to time constraints and a strong current. When attempting to use compasses underwater it was noted that they appeared to be off due to metal buried under the sand but since no hand fanning was conducted it was impossible to determine whether metal was the cause of the faulty compass readings.

Conclusions and Recommendations

Over the course of three days the Program in Underwater Archaeology was able to investigate four sites, a total of eight dives (with at least four people on each dive) and 1, 405 minutes were spent diving. Work was continued on the Fleming Key wreck. Two hours of side scan sonar survey and 54.8 megabytes of data were collected.

Target B was the only target that proved to be of any interest. All other targets investigated proved to be insignificant or inconclusive. Target B is not a historical site and not of historical importance. Due to time constraints, targets D, E, and F should be investigated as possible sites. Additional side scan sonar surveys of the Man of War Harbor should be undertaken to determine if there are any additional historic sites of interest.

The Fleming Key wreck is facing great problems in the future due to the frequency of human activity. Guide boats bring snorkelers to the site on a daily basis. Snorkelers touch both the wreck and delicate corals causing great damage. Anchors are dropped on the site and boats are tied off to the wreckage as well. If this activity continues, the vessel will rapidly degrade. It is our recommendation that a mooring buoy should be established near the wreck. A set of guidelines should be set up around the wreck so that snorkelers can hold on to the rope instead of the wreck. Once the historical background of this wreck has been investigated, a plaque should be placed on the wreck for visitors. Signs with only two or three sentences placed around the wreck should be posted informing visitors of the species of fish occupying the site. These signs should be stable so that snorkelers could hold on to the signs and read them. By using the guidelines and signs this will encourage snorkelers not to hold on to or touch the wreck. This wreck provides a unique opportunity to snorkelers because of the location and depth of the wreckage.

References

Faught, Michael, John Patrick Kilgo, and Melanie Damour
2000 Report on the Shipwreck and Biological Survey Conducted Near Fleming Key, 17-20 March 1998.

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1996 Final Management Plan for the Florida Keys National Marine Sanctuary, Vol. I-III. National Oceanographic and Atmospheric Administration, Washington.