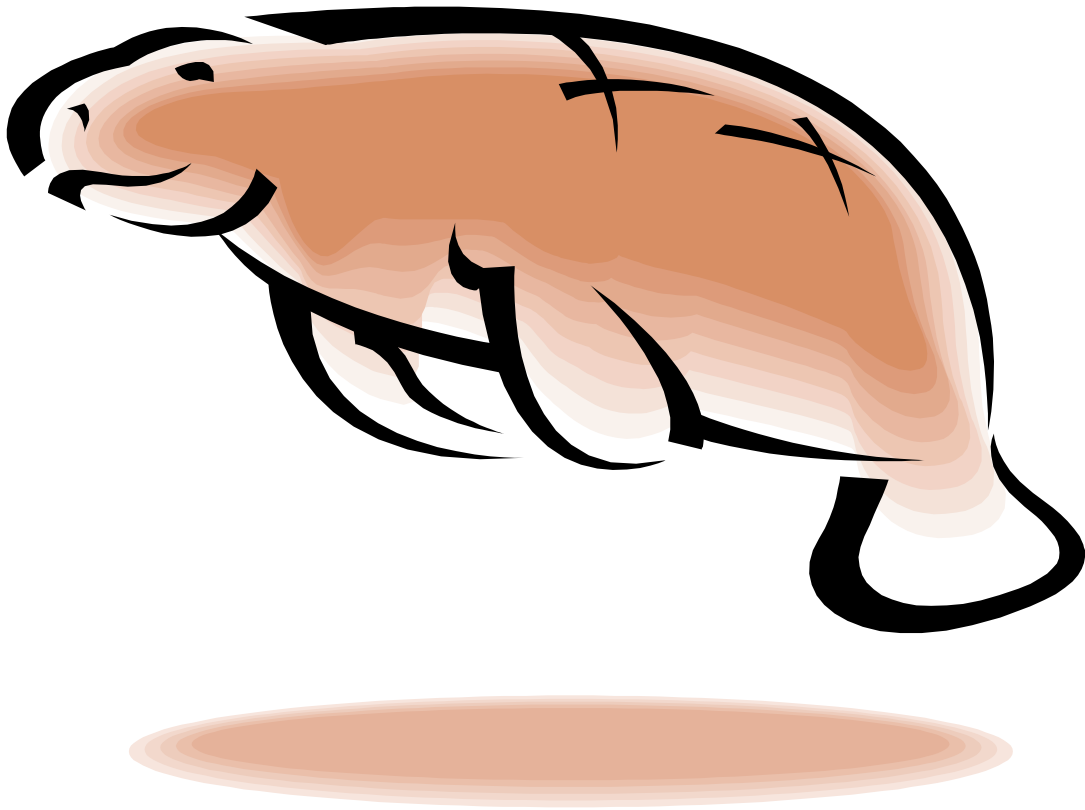


**DUVAL COUNTY
MANATEE PROTECTION
PLAN**

2nd Edition

August, 2006



Prepared by:

Jacksonville University

**for the Waterways Commission
of the Jacksonville City Council**

EXECUTIVE SUMMARY

The Duval County Manatee Protection Plan (MPP) was developed by the Jacksonville Waterways Commission for the Jacksonville City Council. Jacksonville University conducted the research on which the plan is based. Extensive studies were conducted beginning in 1994 and have continued to present. In 1999, the Florida Department of Environmental Protection (FDEP) approved the Duval County Manatee Protection Plan. In April 2000, the state rule implementing the boat speed zones were adopted by the Florida Wildlife Commission (FWC). The MPP contains a provision that the plan be reviewed and updated annually. In 2004, the recommendation was made that the 1999 Edition of the Duval County MPP be updated into a new edition. Data, figures, tables and agency names were outdated or no longer appropriate. The latter, was considered to be an administrative update and did not affect the inner workings of the Duval MPP itself.

This document is the 2006 version of the Duval County MPP. It represents additional population inventory and analysis of data gathered between 1999 and August 2006 by Jacksonville University.

Vessel Traffic: In the State of Florida total registered vessels increased by 13% or 130,293 vessels over the last 6 years. Commercial vessels represented about 3% of total vessels decreased by 2,191 over the same time period. In Duval County, total registered vessels decreased by 1.2% or 412 vessels in the last 6 years. Commercial vessels represented an average of 2% of total vessels in the County, decreased by 46 vessels over the same time period.

Aerial Sightings: A comparison of yearly means for the time periods 1994-1999 and 2000-2006 indicated no significant difference in numbers of manatees per survey with an average of 37-40 manatees/survey was observed in LSJR and 4-5 manatees/survey in the ICW. Means were slightly lower during 2000-2006 because of a decrease in sightings during 2000-2001, when there was a period of drought. There was a consistent mean of 21-22 surveys/year in LSJR and 19 surveys/year in the ICW over the study period. From 1994-July 2006, 514 bimonthly surveys, a total 11,391 manatee sightings were recorded, 7.5 % were calves. Single Highest Day Count (SHDC) for LSJR was lower than previous years 116 manatee per survey (June 2006). SHDC for LSJR was 170 manatees per survey in June 2005. This number represents the highest count to date (1994-2006). In 2004 it was 160 manatees per survey. In 2003 SHDC was 150 manatees per survey in June and in 2002 it was 106 manatees per survey in May. Dry weather caused higher salinity in the LSJR that lead to poor or no regeneration of tape grass beds (*Vallisneria americana*) that manatees primarily rely on for food. As a result, over all per survey counts were generally lower than expected. Apart from the year 2000/2001 data, it appears that highest day counts have increased. Increased counts may be attributed to observers having gained a better knowledge of the survey area and where manatees are likely to occur. In the ICW the SHDC was also lower with 19 manatees per survey (2006) than 29 manatee per survey (2005) and 23 manatees per survey (2004 and 2003). SHDC of 29 manatees in 2005 (remains the highest since 1994) was similar to 23 manatees in the 2001 and higher than 13 reported in 2000. The 2001-2006 counts appear to be more consistent with counts prior to the period of drought for years 1994-1998. The increased numbers probably mean that more animals are moving into the area from south Florida rather than an actual increase in the Atlantic sub-population.

The proportion that calves represented of the total number of manatees sighted ranged from 5.82 % to 11.53 % (LSJR) and 7.1 % to 12.1 % (ICW) from 1994-1999

and changed only slightly ranging from 3.40 % to 11.53 % (LSJR) and 0.91 % to 12.05 % (ICW) from 2000-2006. The low percent values for 2000-2001 represent years of drought which provided poor conditions in which to rear calves because of low food availability.

Cumulative counts of manatees at various locations in the ICW and LSJR are included to show density abundance and location of manatees in the County. The latter does not appear to have changed in spite of the lower numbers of manatee observed during 2001/2002. The 2002-2006 numbers indicate a rebound similar to the pre-drought years.

Highest concentrations of manatees occurred south of Fuller Warren Bridge (east and west banks) and Doctor's Lake in summer where substantial submerged aquatic vegetation exists. In 2002/2006, manatees were well spread throughout the County similar to 2000/2001. Also, more manatees were seen on the east bank of St. Johns River and west bank south of NAS JAX than in 2000/2001. Greater numbers in these areas can be attributed to regeneration of tape grass.

Manatee Mortality: In 2006, there were a total of 10 reported deaths of that 5 were watercraft, 1 perinatal, 1 cold stress and 2 undetermined and 1 verified but unrecovered as of **July 2006** (FWCC, FWRI 2006). The mean for the five-year running average for watercraft mortality was **3.53 (range 2-5)** deaths since 1980. In 2005, there were a total of 14 reported deaths of that 4 were watercraft, 2 perinatal, 2 cold stress and 6 undetermined. The mean for the five-year running average of watercraft mortality was **3.45 (range 2-5)** deaths since 1980. In a review of total and watercraft mortality for the County watercraft mortality was running at about 31% of total deaths over the last 17 years. In 2004, there were 15 reported deaths total of which 5 were watercraft, 4 perinatal, 1 cold stress and 5 undetermined (FWC, FWRI 2006). The mean for the five-year running average for watercraft mortality was **3.40 (range 2-5)** deaths since 1980. County, State and Federal agencies met November 9th to discuss the five watercraft deaths in Duval County during 2004 and how Duval County should respond to these incidents. It was noted that two of the deaths occurred in the Intracoastal Waterway where Duval County does not have jurisdiction to regulate boat speed or operations. Rules in the ICW are made by the state, not the county. County, State and Federal agencies agreed that in spite of an increase in watercraft mortality in 2002 (10 deaths) this was most likely a singular event similar to 1991, and not a trend. In 1991 watercraft mortality had increased to 9 deaths. It is thought that increased dredging activities and traffic associated with the construction of Wonderwood Expressway and the fact that these activities contributed to larger vessels having to deviate from usual traffic patterns may have contributed to most of these mortalities. Dredging in the port area stopped in July, 2002, and watercraft deaths also stopped. The State of Florida does not classify manatee deaths by vessel size. However, due to the nature of the injuries, it is likely that some deaths were caused by larger vessels. In spite of these manatee deaths, the five-year running average from watercraft mortality remains between 2-5 deaths since 1980.

Warm Water Attractants: Manatees have been observed assembled in groups at warm water out falls since aerial surveys started in March, 1994. Jacksonville Electric Authority's Southside (JEASS) and Kennedy Generating Stations (JEAKS) and Jefferson Smurfit's paper mill were located within a 7 mile radius of Downtown. Currently these facilities do not discharge warm water and ever decreasing numbers of animals have been observed at these locations. In winter of 2002/2003/2004 JEA undertook monitoring for manatees themselves using their own personnel. In spite of the plant being shut down in October 2002, manatees congregated at the site but did not remain. Also, JEA installed a retaining gate to prevent manatees moving into the

old discharge pipes. No animals were seen at JEASS Generating Station after December 3rd 2002. In 2003, no manatees were reported by JEASS until 4 adults were seen on 05/05/2003 and 2 adults and 2 calves were seen 04/15/2003. In winter 2004/05 and 2005/06 no manatees were reported at the site. In 2003, FDEP identified a warm water source in the Ortega River as a result of having to rescue six manatees from the Ortega Farms Basin just north of Timuquana Road Bridge, Jacksonville. After studying the area it was determined that a significant thermocline (17-24°C) and halocline (0.3-13 ppt) existed starting at about 4-5 meters water depth. FDEP hypothesized that the most likely reason for the phenomenon could be attributed to exothermic breakdown of detritus or a seep from a spring that vented ground water (Jim Mayer, FDEP, personal communication). In winter 2004/05 and 2005/06, no manatees were observed during aerial surveys in the vicinity of this site.

Vessel Compliance Studies LSJR: A vessel compliance study was conducted for 34 days in June/July 1999. Results indicated that 85 % of vessels were in compliance with existing MPP speed zones regulations at all sample locations. In April 2000, FWC adopted the state rule implementing “new” boat speed zones in Duval County. Subsequently, a vessel compliance study was conducted for 26 days in July 2002. Results pooled for all locations indicated that 46 % of vessels were in compliance with existing MPP speed zones. Lower compliance values were most likely attributed to a significant learning curve for vessel operators in light of the new regulations and an absence of law enforcement since September 11th 2001. In 2003, similar compliance studies were conducted for 34 days during May–July. Results indicated that 78 % of vessels were found to be in compliance. Education and increased enforcement presence are key requirements for better compliance.

Acoustical Study LSJR: For this study, underwater acoustical recordings of hopper dredging activities were conducted with the full cooperation and assistance of B&B Dredging. The noise from their 100 m long hopper dredge, “*Columbia*” was recorded while it performed maintenance dredging in the St. Johns River during August, September and October 2004. Jacksonville University researchers assisted in recording dredging activities in the vicinities of Dames Point Bridge, Talleyrand, Hart Bridge and Bartram Island. The following recommendations were made: Mitigation techniques suggested to abate noise radiation include; ship quieting technologies, reducing propeller cavitations, insulating and elevating the slurry pipeline, and minimizing the number and distance of transects back and forth to pump out stations. With respect to the effects on boat noise a direct mitigation would be to attach a low intensity, directional alarm (in a noise bandwidth above the masking frequencies) to the bows of slow and fast moving vessels (Edmund R. Gerstein and Joseph E. Blue, Leviathan Legacy Incorporated, Draft Final Report to Jacksonville Waterways Commission, Contract N0. 8548, September 2005).

Habitat: Indices for percent feeding indicated more animals feeding in 2002 than 2001, even more animals feeding in 2003 than 2002 and more still feeding in 2004 than 2003. This may be because the food supply continued to increase in 2003/2004 and there were more total numbers of manatees. However, food supply still remains below 1998 levels in terms of the percentage of transects without tape grass and the reduced depth on average that tape grass is now encountered (Jennifer Sagen 2004. LSJRB SAV Monitoring Project Coordinator, SJRWMD, personal communication). Feeding animals were for the most part located south of Buckman Bridge. Grass beds north of Buckman Bridge have regenerated significantly since late 2002. As a result, more manatees were observed in the area north of Buckman Bridge on the east bank of St. Johns River in 2004/2005/2006 than in 2003/2002.

Speed Zones imposed by USFWS: As of March 31st the Service proposed manatee protection regulations establishing, among other things, a 25 mph speed limit in the federal channel from Reddie Point to the Fuller Warren Bridge, and slow speed zones outside the channel; and, from the Fuller Warren to the Clay County line, 1,000' slow speed shoreline buffer zones. These regulations were made effective on September 5th 2003. Mandatory compliance with this rule will occur when appropriate signage has been installed in the regulated areas (Federal Register. August 6th 2003. 68(151): 46869-46917. A signage plan was developed and implemented June 2005.

In addition, Jacksonville University published a new boaters guide to the Duval County Manatee Protection Plan that included the new speed zones (January 2006). In addition, a copy was mailed to all registered boaters in the County.

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Attachment K criteria information

MANATEE PROTECTION PLAN GUIDELINES

Area-specific manatee protection plans need to be developed by all counties in which manatees regularly occur to ensure the long-range protection of the species and its habitat. The objective of manatee protection plans are: to reduce the number of boat-related manatee mortalities; to achieve an optimal sustainable manatee population (the goal of the Marine Mammal Protection Act); to protect manatee habitat; to promote boating safety; and to increase public awareness of the need to protect manatees and their environment. These plans will address manatee-human interactions, land use (including boat facility siting), and the protection of suitable habitat (including water

quality, thermal refugia, freshwater sources, and grass beds). The information needed to prepare manatee protection plans will include manatee studies, habitat assessments, and, if available, boating studies to evaluate boater use patterns and activities. Boat facility siting elements are necessary components of area-specific manatee protection plans. Boat facility siting must address marinas with wet slips and dry storage, and boat ramps. The objectives of boat facility siting plans are: to determine appropriate dock densities for particular areas; and to develop criteria for designating special use areas (i.e.; for water skiing, jet skiing, and commercial fishing).

Necessary components of a manatee protection plan are:

a. An Information Base	1-103
b. location and capacity of all marina storage and facilities in the county (proposed and existing);	75
c. location of all boat ramps in the county (proposed and existing);	75
d. boating activity patterns, travel routes and major destination areas;	52
e. manatee sighting information for the county;	124
f. manatee mortality for the county;	28
g. any aquatic preserves; Outstanding Florida Waters or other refuge/reserve information;	65
h. port facility information	124
i. location of significant habitat resources (grass beds, warm water discharges and fresh water sources);	65
j. location of manatee protection and boating safety speed zones in the county (proposed and existing);	110
k. location of manatee information displays; and	124
l. other relevant data as determined by the Department of Natural Resources.	125

Recommendations—with an Accompanying Implementation Schedule—to Increase Manatee Protection in the County

a. boating expansion criteria;	110
b. identification of recommended areas for water-related activities requiring high boat speeds, such as water skiing, boat races and certain types of commercial fishing;	-
c. a plan for marking navigation channels in currently unmarked waterways used by manatees.	-

d. new or expanded speed zones, refuges or sanctuaries for the regulation of boat speeds in critical manatee areas;	110
e. installation of manatee educational displays at all boating facilities;	125
f. development and dissemination of a pamphlet to county boaters describing manatee protection and boating safety speed zones in the area, and recommendations for boaters on how to avoid hitting manatees;	124
g. inclusion of manatee and marine habitat educational material in the county school board's elementary, middle school and high school curricula;	124
h. development of appropriate aquatic plant control methods in manatee areas;	-
i. identification of land acquisition projects to increase refuges, reserves and preserves for manatee protection; and	100
j. other actions as specified by the Department of Natural Resources.	208