



The Florida Manatee in the Suwannee River and Estuary: Past, Present, and Future

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Florida manatee:

Federal and State listed endangered marine mammal



Manatees require seagrass and freshwater vegetation for forage, freshwater for drinking, and warm water refugia to survive cold winters.

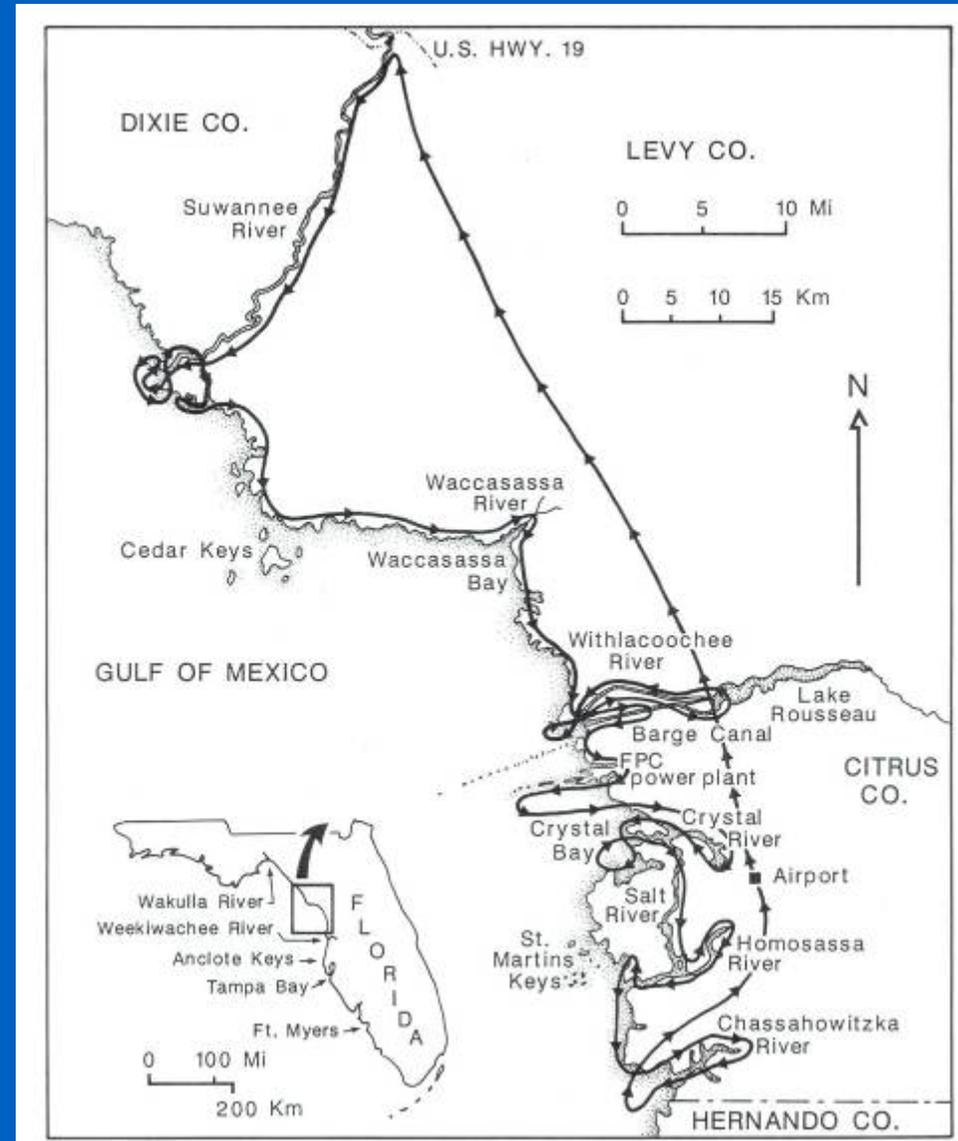


USGS Research

Aerial Surveys:

1978 – present

(USGS and CRNWR)



USGS Research

Aquatic Vegetation Surveys:

1974 – present

(USGS and CRNWR)



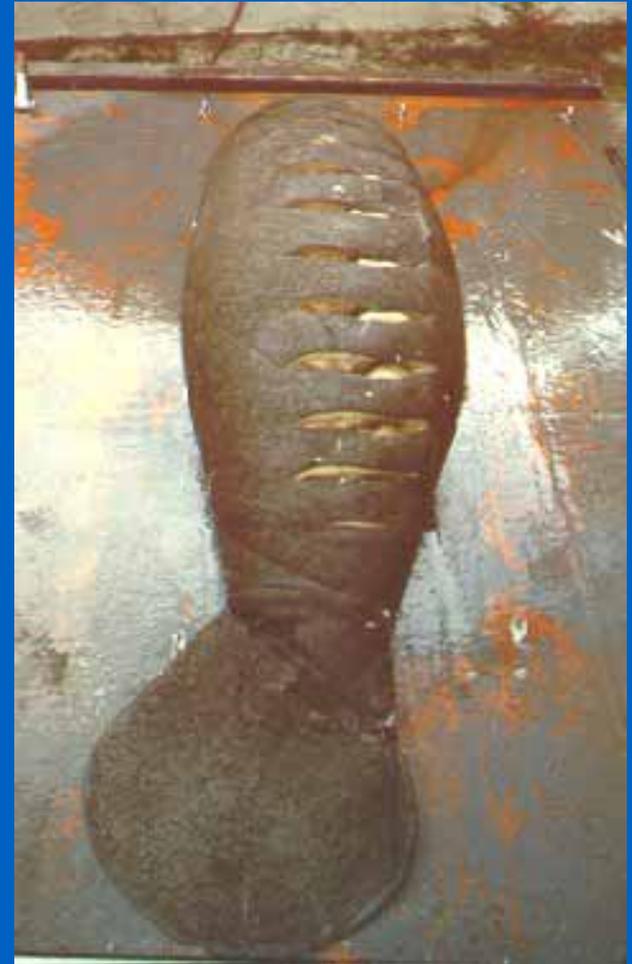
USGS Research

Carcass Salvage:

1974-1985 (USGS)

1985-present (FWC)

Total of 250 carcasses
collected in NW region
(12/1974 – 6/2004)



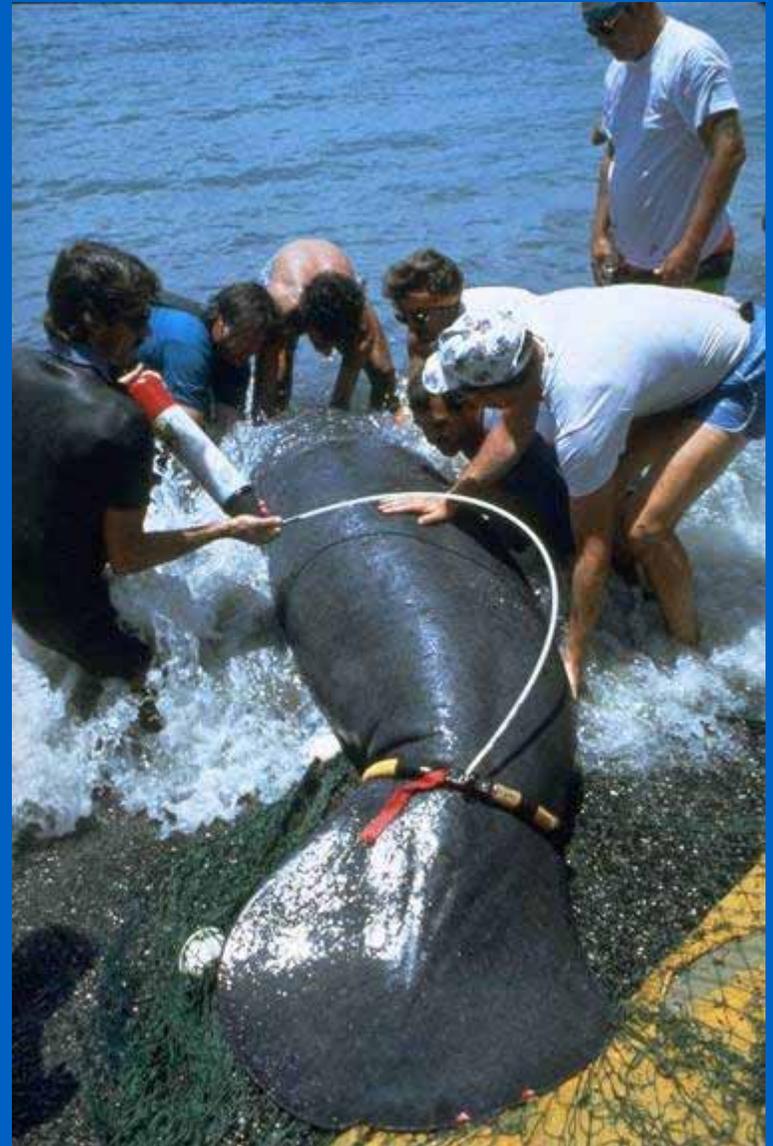
USGS Research

Radio Telemetry:

36 radio-tagged in NW region

1978-1985 (USGS) (N = 30)

1998-present (USGS, FWC, UF)
(N = 6)



USGS Research

Manatee Photo-identification:

1967 – present

419 manatees photographically documented in NW region to date;

21 of these manatees have been documented at Manatee Springs



Current USGS Research

- Monitor and estimate population parameters and status for the Northwest subpopulation
- Primary focus on photo-identification at the headwaters of the Crystal and Homosassa rivers, additional emphasis at Manatee Springs
- Supplement population research utilizing genetic analyses



Manatees as Indicators of Ecosystem Change & USGS Capabilities

The winter warm-water refuges and summer foraging areas used by manatees are dependent on important ecosystem processes in the Suwannee.

Long-term monitoring of manatees in the region will facilitate identifying and quantifying the effects of perturbations on manatee survival and reproduction.



We now can utilize population models to combine population and habitat data.

The Hurricane Example:

- Retrospective analysis of photo-identification data with capture-recapture statistical models.
- Identified an effect of extreme storms on adult survival rates.
- Natural experiment now in progress with the 2004 storms.

<u>Year</u>	<u>Storm</u>	<u>Survival</u>	<u>95% CI</u>
1985	Elena (3)	0.936	(0.864-0.971)
1993	Storm of the Century (3)	0.909	(0.837-0.951)
1995	Opal (4)	0.817	(0.735-0.878)
No storm years		0.972	(0.961-0.980)

Future Research

Need for Federal and State Resource Managers to assess the status of manatees under growing habitat concerns:

- (1) loss of winter warm-water refuges and
- (2) loss of foraging habitat

Solutions will require an ecosystem level approach that will necessitate the protection and enhancement of current habitats, identification of additional sites that might be developed for manatee use, and incorporate integrated research of biotic and abiotic processes.