



Frequently Asked Questions

Threats Analysis Report and Core Biological Model for Florida Manatees

1. What did the USGS do in this study?

The USGS conducted a threats analysis for the Florida manatee population by developing a population model, the Core Biological Model (CBM), which projects the Florida manatee population trend for 50 to 150 years. The CBM allows scientists to examine the severity of different threats under various scenarios to give decision-makers useful information for assessing the status of the Florida manatee population.

2. Why is this threats analysis important?

The CBM is a powerful and flexible scientific tool. It provides a way to assess and forecast not only the future status of the Florida manatee population, but also the relative roles that different threats play in determining the status of Florida manatees. The model integrates the known life-history parameters of the manatee and combines this information with projections of future threats, such as reduction in warm-water capacity because of power plant closures. The model accounts for multiple sources of variability, including environmental variation and uncertainty in parameter estimates, and can accommodate changes in management actions and population assessment metrics. The model is intended for use in assessments relevant to management decision-making, and can be readily adapted to provide results over different time frames and threat scenarios.

Additionally, USGS scientists believe this is the first time a quantitative assessment has been designed to analyze the “five factors” under the Endangered Species Act in an integrated manner.

3. What are the five factors under the Endangered Species Act?

1. The present or threatened destruction, modification, or curtailment of habitat and range.
2. Over-utilization for commercial, recreational, scientific, or educational purposes.
3. Disease or predation.
4. Inadequacy of existing regulatory mechanisms.
5. Other natural or man-made factors affecting its continued existence.

4. What are the overall results of the Threats Analysis report?

Based on the model results, there is an expectation that the statewide population will remain stable or increase slightly over the next 10-15 years, then decline as warm-water sources, especially industrial ones, are lost. Over the long term, the expectation is that the population will stabilize at a lower level. The probability of outright extinction is low, but the probability of a significant decline is high.

5. What are the most significant threats?

The two greatest threats are, in order, watercraft-related mortality and loss of warm-water winter habitat. Removal or reduction of watercraft-related mortality would raise the population growth rate, which would allow quicker recovery from chance harmful events. In contrast, mitigation of warm-water loss would raise the carrying capacity and allow the population to grow larger, which would protect the population from chance harmful events simply by virtue of its larger size.

6. Is the Core Biological Model designed to change?

Yes, the CBM is expected to evolve over time as better information becomes available about manatees and their habitat and as new assessment needs arise. USGS scientists anticipate that this core model will be updated and customized for future assessments.

7. Has the Core Biological Model been used previously?

Yes, the CBM was used by the State of Florida for their biological status review.

8. Has the Core Biological Model been updated since its previous use?

Yes, the CBM was updated and used for the USGS threats analysis report to the U.S. Fish and Wildlife Service. The update allowed scientists to project the Florida manatee population status over 50-150 years and to examine the role of different threats. USGS and its collaborators also updated manatee survival rates, estimated fractions of mortality due to various causes, developed models for the threats themselves, and designed methods to measure the impacts of the threats.

9. Are the reports describing the threats analysis and the core biological model available?

Yes. The threats analysis is described in USGS Open-File Report 2007-1086 (“A quantitative threats analysis for the Florida manatee (*Trichechus manatus latirostris*).” The core biological model is described in USGS Open-File Report 2007-1082 (“A core stochastic population projection model for Florida manatees (*Trichechus manatus latirostris*).” Both reports can be downloaded from <http://www.pwrc.usgs.gov/resshow/manatee/>.

10. What is the difference between the Florida Manatee and the West Indian Manatee?

The Florida manatee is a subspecies of the West Indian Manatee. The latter also includes Antillean manatees, a subspecies that inhabits the Caribbean.