

## **Appendix Q**

Description of Manatee Synoptic Surveys in Florida

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## SYNOPTIC SURVEYS

"Synoptic" means covering a large area. The synoptic surveys are winter aerial surveys that cover all of the manatees' wintering habitats in Florida and southeast Georgia. FWC coordinates the interagency team conducting each synoptic survey. These statewide interagency surveys are conducted after cold fronts pass through Florida, when the manatees aggregate at warm springs and thermal discharges from power plants and industrial plants. These surveys are useful in determining minimum estimates of manatee populations. Manatees are counted during the coldest winter weather (December through March) because they congregate near known warm-water sites, such as natural springs, power plants and deep canals, when temperatures drop. Counts are believed to be most accurate when it is cold, clear and windless because manatees move to the surface to warm in the sun, making them more visible.

Synoptic surveys are conducted by flying over coastal waters and by counting manatees from the ground at strategic locations. Two statewide manatee synoptic surveys were made during the months of January and February in 2000. Three were conducted in 1999 in January, February and March 1999 was the first year that manatee researchers at FWC were able to conduct three counts in one winter. A total of 50 flights were made for the three synoptic surveys in 1999.

In 1999 and 2000, teams totaling 41 observers searched for manatees in 26 areas on both coasts. Observers were staff from 15 State, Federal and County agencies, as well as research labs and universities. On Florida's east coast, counts are made from Brunswick, Georgia to the Florida Keys. On the west coast, counts extend from the Wakulla River to the Everglades. Teams of observers in 19 aircraft located and recorded manatees in the state's waters. Seven more ground teams counted manatees at power plants and waterways not visible from aircraft. Three of the aerial teams used helicopters.

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Synoptic aerial surveys of manatees, east and west coasts of Florida, 1991 to 2002.

Day(s)	Month/Yr	East	West	Total
23-24	Jan 1991	685	582	1,267
17-18	Feb 1991	813	652	1,465
17-18	Jan 1992	907	949	1,856
21-22	Jan 1995	665	778	1,443
06-07	Feb 1995	915	907	1,822
09-10	Jan 1996	1,223	1,051	2,274
18-19	Feb 1996	1,457	1,182	2,639
19-20	Jan 1997	900	1,329	2,229
00-13	Feb 1997	791	918	1,709
29-30	Jan 1998	1,112	910	2,023
06	Jan 1999	848	1,025	1,873
23	Feb 1999	905	1,129	2,034
06	Mar 1999	956	1,397	2,353
16-17	Jan 2000	621	1,009	1,630
26-27	Jan 2000	1,132	1,091	2,223
05-06	Jan 2001	1,520	1,756	3,276
01	Mar 2002	860	936	1,796
09	Jan 2003	1,695	1,166	2,861
21-22	Jan 2003	1,814	1,299	3,113
26-28	Jan 2003	1,705	1,324	3,029

The weather conditions during the manatee aerial survey counts have a large effect on how accurate the synoptic counts are. Counts can vary depending on whether it is warm or cold, sunny or cloudy, calm or windy. Sometimes the weather is better in one part of the state than elsewhere.

The total statewide number of manatees may be misleading since manatees in some regions may be doing well and experiencing an increase in population while manatee populations in other areas may have higher mortalities that reduce their numbers. Manatee counts can vary by hundreds within a single winter season and between years. This suggests that statewide synoptic surveys, as a research tool for assessing manatee populations, need to be improved.