

Reclassification of the West Indian Manatee from *Endangered* to *Threatened* is Mandatory Based on ABUNDANCE & SURVIVABILITY

SUMMARY

This comment addresses the continued growth of the West Indian Manatee population as a key indicator that the species is not *Endangered*. The most recent data presented by Langtimm and Runge predict a zero percent chance of extinction, a robust growth rate statewide, and negligible impact of anthropogenic threats – the reason the manatee was listed as endangered. Runge further maintains that if the most recent models were available in 2007, the same highly positive outcomes would have been reported. Other recent information confirms a significant undercount of manatees using traditional synoptic methods. In sum, there is no scientific or legal standard for continuing to list the manatee as endangered. Indeed, delisting is the most appropriate outcome.

INTRODUCTION

This comment is one of several prepared by Citizens For Florida's Waterways (CFFW) in support of reclassification of the West Indian Manatee. Each comment is written in a standalone manner and provides strong science based support of the reclassification. Most of the supporting science comes directly from the work performed and presented by the Florida Fish and Wildlife Conservation Commission (FWC) and the United States Fish and Wildlife Service (USFWS).

Both individually, but more conclusively in collection, these comments provide a strong case for reclassification of the manatee as *Recovered*. Make no mistake. We believe delisting is the only reasonable conclusion that can be drawn from the best available data. In addition, failure to do so presents unacceptable risk to the very local habitats and ecosystems that the manatee shares with thousands of other species, many of which truly deserve listing and protections afforded by the ESA.

CFFW is the oldest and largest Florida based advocacy organization for recreational boaters. CFFW's founding is rooted in opposition to arbitrary and questionable implementation of speed zones with significant impact to large areas where recreational boating activities had been a popular activity for families for several decades. Over the three decades of our existence, CFFW has represented educated, informed and sound science based counter-point for much of the unfounded and unscientific rhetoric of anti-boating organizations like the Save the Manatee Club.

CFFW is a charter member and consistent participant of the Manatee Forum. As such, we have been privileged to learn manatee science from the foremost experts with the latest available and best manatee science. We have listened to representatives of the state and federal management decision makers and numerous experts from outside government. It has always been our pledge to follow where the best science leads.

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Each comment deals with a specific topic:

- Habitat
 - Manatee habitat has expanded significantly because of human activity.
- ***Abundance & Survivability***
 - ***Manatee abundance is large and growing; abundance is under-reported.***
- Carrying Capacity and Optimum Sustainable Population
 - Manatees are at or near Optimum Sustainable Population
- Risk Management
 - Management policies based on the legal requirements of “endangered” or “threatened” status contradict proven Risk Management methods
- Potential Biological Removal/Authorized Take
 - Delisting the manatee would allow issuance of a take authorization that matches best science and data
- Rebuttal of the form letter opposing reclassification
 - Calls to retain endangered status are debunked

COMMENT

The decision to list or not list or the determination of the correct classification must be based on the best scientific assessment of the health of the species considering specific criteria defined in the Endangered Species Act. It must not be based on popular opinion, political pressure, or how various clubs or organizations and their membership have adopted a specific species as their focal cause.

Species classification as *Endangered* or *Threatened* is based on any one or combination of the following factors:

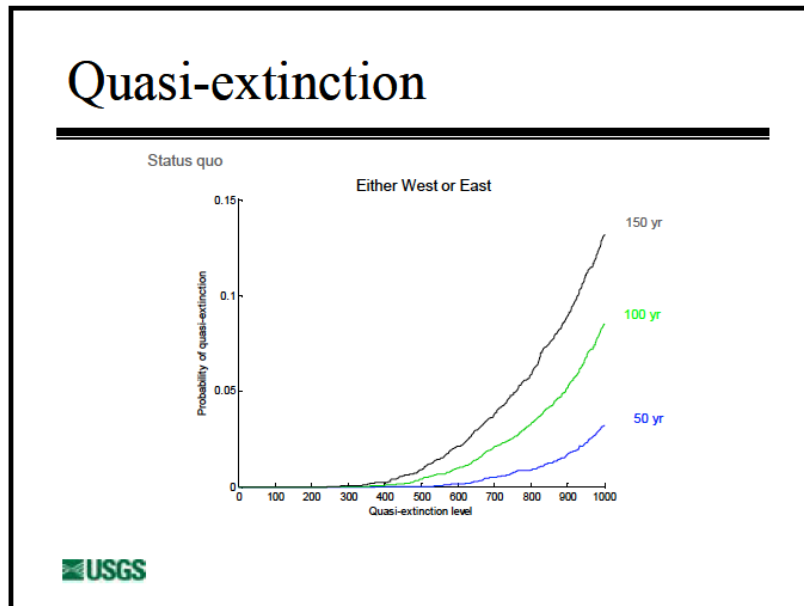
- 1) The present or threatened destruction, modification, or curtailment of its habitat or range;
- 2) Over utilization for commercial, recreational, scientific, or educational purposes;
- 3) Disease or predation;
- 4) The inadequacy of existing regulatory mechanisms; or
- 5) Other natural or manmade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

Ever increasing manatee abundance is inconsistent with each of the above criteria, and therefore, none of the above criteria are applicable to the West Indian Manatee. The best available science developed by the USFWS supports *Delisting* based on the fact that the species has *Recovered*. Reclassification from *Endangered* to *Threatened*, although the best available science indicates total *Recovery*, is movement in the proper direction.

Manatee Population Growth

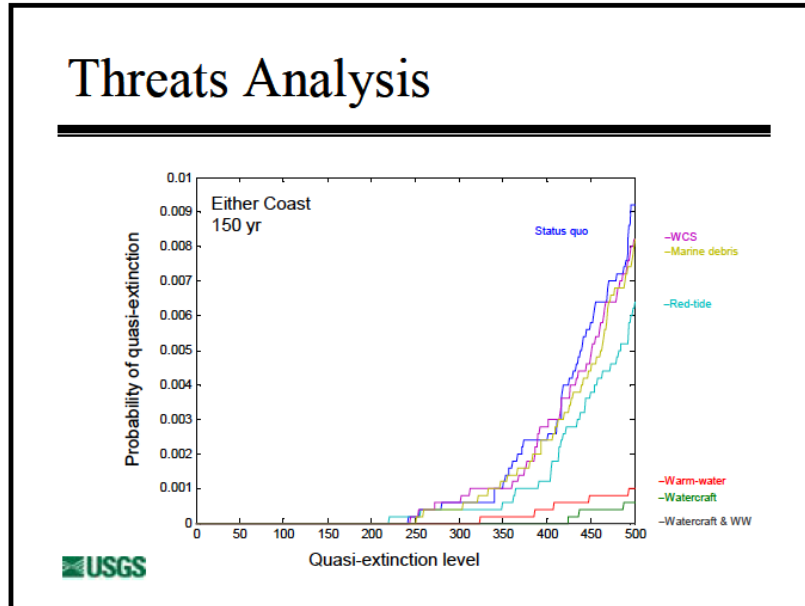
There are several factors that can be used to determine manatee abundance. Synoptic Surveys provide a minimum population count. Adult Survivability and Mortality Statistics have been combined with these minimum counts and analyzed by the most sophisticated population stock assessment, the Manatee Core Biological Model (MCBM), available to the USFWS for any species. The results of this assessment indicate that the population has the following characteristics:

- Population growth rate between 4% and 7%
- Adult survivability rates above 0.96
- Probability of NOT reaching “quasi extinction” of 99.9% over the next 100 years
- Probability of extinction - ZERO



Source: Manatee Threats Analysis, Michael C. Runge, USGS, presented to the Manatee Forum, May 2013

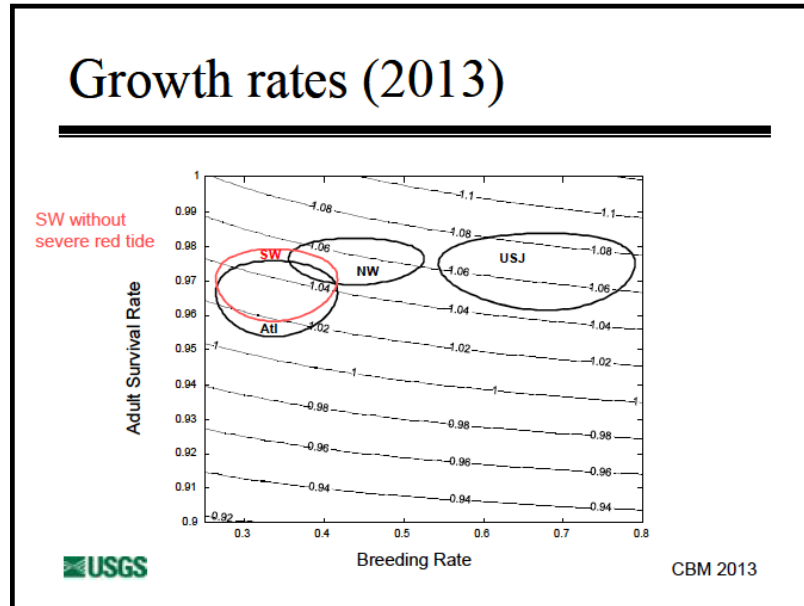
No single threat or combination of threats (including manmade and natural such as an annual significant red tide event) artificially added to the model produced any negative affects leading to a significant probabilistic threat of “quasi-extinction”. In fact elimination of these threats only slightly improved the probability of population growth over the next 150 years. These are NOT the characteristics of a population in decline and clearly not the characteristics of an *Endangered* or even *Threatened* species.



Source: Manatee Threats Analysis, Michael C. Runge, USGS, presented to the Manatee Forum, May 2013

Artificially subdividing this species into four regionally based subpopulations has been the only opportunity to reach any less positive assessment. These regions are the Atlantic, the Upper St. Johns, the Southwest and Northwest. These should not be considered distinct populations subject to evaluation under the Endangered Species Act. One cannot distinguish between specimens from one region or the other and the long-range migratory habits of these animals do not restrict them from moving from one region to another.

There is only one population to address and a single listing of the West Indian Manatee in the ESA to evaluate. But, even in this attempt that many perceive as a ploy by some to bend the rules in deference to political pressure from environmental NGOs, fails to support further classification of *Endangered*. Artificially manipulating the population assessment in this manner still produces positive results. Two of the four regions exhibit phenomenal population growth around 6-7%, while the Atlantic and Southwest still exhibit growth around 4% solely by reproduction (CFFW notes that Florida's human population grows at about 1%, almost entirely from immigration, not reproduction).



Source: Manatee Threats Analysis, Michael C. Runge, USGS, presented to the Manatee Forum, May 2013

So just how many manatees are there? We may never know the true number. In 1974 the estimate was 255. In 1976 the estimate was 738. No wonder the species found its way onto the ESA *Endangered* list. By 1985 the estimate was 1039 but argued to be as many as 1200. But were these counts accurate? We'll never know.

By 1991, criteria for synoptic surveys were developed and the first count was 1267. The most recent survey was conducted this January and performed by 20 observers who searched 21 areas on both coasts – hardly a significant sample of the Florida coastal areas. In fact, the majority of these vast areas remain unobserved and uncounted. Nevertheless, 4824 animals were counted.

Because the observed locations have remained fairly consistent over the period, one can test the assumption that the growth rate observed in the synoptic surveys is indicative of the overall population growth. This increase over the 23 years is equivalent to a 5.8% population growth rate, which is consistent with the Runge core biological model assessment and further supports the conclusion that the population is healthy and increasing and not in threat of significant decline and clearly not extinction.

As an indication of the inadequacy of the synoptic surveys to count the *total* manatee population, CFFW compared the typical FWC Brevard County synoptic count conducted in three primary locations (Cape Canaveral Energy Center (CCEC), the Berkeley Canal, and the Sebastian River/C-54 areas). The two most recent Brevard County counts were 640 (Jan/'11) and 633 (Jan/'14). The previous count in 2010 was the highest recorded in both Brevard and statewide.

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Year	Brevard	Total Count	Brevard % of Total
2010	1087	5077	21.4%
2011	640	4834	13.2%
2014	633	4824	13.1%
24 Year Totals	13410	73025	18.4%

Source: Excerpts from detailed Synoptic Surveys, 1991-2014. Provided to CFFW by FWC

Over the last 2 years, Florida Power and Light (FPL) has been conducting independent population counts specific to Brevard County under direction of the FWC. In the “Cape Canaveral Energy Center 2012-2013 Annual Biological Monitoring Report” bi-weekly manatee counts are provided for the period October 2012 through March 2013. 17 of these counts were “successful”. The average of all counts was 963. Two counts exceeded 1600 with a high count of 1719 and the 6 counts conducted in Feb/Mar averaged 1376 manatees.

FPL performed and reported counts of the same areas of Brevard County from November 2013 to March 2014 and provided the results in their annual report to FWC on July 30, 2014. These 9 counts were significantly higher than the previous year, averaging 1392 animals. Three of the counts exceeded 1700 animals with a high count of 1966 animals observed on Feb 18, 2014. Again, the Jan 2014 synoptic survey only indicated 633 animals in Brevard. What’s of more interest is that during the spring of 2013, Brevard experienced a significant unusual mortality event (UME), where 161 animals were classified as dying from an unknown cause – and still the number of animals observed was significantly more in 2014. In fact, there is a 45% increase in average count as compared to 2013

Survey No.	Survey Date	Surveyor	Start Time	End Time	Break (min)	Survey effort (hrs)	Total Manatees	Manatees/ Unit Effort (hrs)	Calf Proportion (%)	Daily Ave. Air Temp. °C	Daily Ave. Water Temp. °C
1	17-Oct-12	REYNOLDS	850	1512	99	4.7	447	94.8	6.0	23.7	27.0
2	2-Nov-12	REYNOLDS	851	1555	97	5.5	1632	299.4	3.6	19.4	21.7
3	4-Nov-12	REYNOLDS	936	1628	92	5.3	1292	242.3	6.1	21.2	22.1
4	13-Nov-12	PROVANCHA/GARREAU	906	1605	130	4.8	579	120.2	15.2	21.5	21.4
5	27-Nov-12	SCHIEDT/PROVANCHA	855	1553	101	5.0	662	133.7	5.7	20.8	19.7
6	5-Dec-12	REYNOLDS	845	1547	98	4.8	226	46.8	8.0	19.6	20.5
7	22-Dec-12	REYNOLDS	816	1403	53	4.9	605	123.5	5.0	10.9	20.2
8	8-Jan-13	REYIER	845	1445	71	4.8	454	94.3	10.8	21.7	20.1
9	15-Jan-13	PROVANCHA/GARREAU	900	1622	122	5.3	560	105.0	15.0	22.5	21.9
10	23-Jan-13	PROVANCHA/GARREAU	900	1630	106	5.6	729	130.2	11.8	14.7	19.6
11	29-Jan-13	REYNOLDS	901	1545	91	5.2	929	178.1	5.6	21.3	20.2
12	3-Feb-13	REYNOLDS	848	1510	47	5.6	1233	220.8	2.7	NA	NA
13	12-Feb-13	SCOLARDI	835	1544	109	5.3	1209	226.7	5.5	22.0	21.1
14	17-Feb-13	SCOLARDI	1015	1350	50	2.7	--	--	--	--	--
15	27-Feb-13	GARREAU/REYIER	856	1536	131	4.4	382	87.8	7.6	19.8	21.8
16	4-Mar-13	REYNOLDS	750	1444	55	6.0	1232	205.9	3.0	9.6	18.7
17	15-Mar-13	REYNOLDS	910	1448	57	4.7	1719	367.0	1.9	13.1	19.1
18	21-Mar-13	PROVANCHA/REYIER	841	1620	100	5.8	1372	237.9	6.5	16.3	20.2
19	28-Mar-13	PROVANCHA/GARREAU	852	1630	136	5.4	1492	278.0	7.5	13.0	19.3
			MEAN ± SD: 5.2 ± 0.7 963.1 ± 463.2 182.6 ± 86.6 7.0 ± 4.0								

Note: Survey #14 (17-February-13) was a Multiple Pass survey; therefore counts from this date are not comparable to the other counts and not included in the table. Survey #15 (27-February-13; highlighted yellow) was not a complete survey due to areas of Satellite Beach and Banana River being inaccessible; counts from this date are not included in the mean values.

source: 2012-13 FPL Report

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The FPL counts included 22 specific locations – 19 more than in the synoptic surveys and found on average an additional 700 and as many as 1300 more animals than the synoptic survey counts. This indicates the synoptic survey for Brevard County alone is probably missing as many manatees as are being counted. Extrapolation is risky but based on the minimum number of sites that are actually being counted statewide, one must conclude that the actual size of the manatee population is considerably larger than the number counted in the synoptic surveys.

Survey No.	Survey Date	Surveyor	Start Time	End Time	Break (min)	Survey effort (hrs)	Total Manatees	Manatees/ Unit Effort (hrs)	Calf Proportion (%)	Daily Ave. Air Temp. °C	Daily Ave. Water Temp. °C	
1	17-Nov-13	SCOLARDI	1002	1702	86	5.6	983	176.6	5.9	22.7	21.2	
2	3-Dec-13	REYNOLDS	840	1433	46	5.1	1789	349.6	3.1	18.5	19.4	
3	18-Dec-13	SCOLARDI	855	1538	49	5.9	1590	269.5	2.6	15.9	17.2	
4	12-Jan-13	SCOLARDI	900	1500	54	5.1	1072	210.2	3.5	18.3	18.3	
5	24-Jan-14	SCOLARDI	855	1145	0	2.8	--	--	--	11.0	12.2	
6	2-Feb-14	REYNOLDS	950	1443	40	4.4	1320	301.1	2.3	22.0	18.9	
7	11-Feb-14	REYNOLDS	834	1408	49	4.8	1046	220.2	5.2	17.7	18.9	
8	18-Feb-14	SCOLARDI	837	1523	50	5.9	1966	331.3	5.6	18.8	17.9	
9	3-Mar-14	SCOLARDI	823	1550	48	6.7	1795	267.9	8.5	21.9	21.1	
10	23-Mar-14	SCOLARDI	931	1605	60	5.6	968	173.9	6.3	22.4	23.2	
MEAN ± SD:							5.4 ± 0.7	1,392.1 ± 397.3	255.6 ± 64.5	4.8 ± 2.0		

Note: Survey #5 (24-January-14) was a synoptic survey; therefore counts from this date are not comparable to the other counts and not included in the table.

source: 2013-14 FPL Report

Using the 24 year synoptic surveys as an indication of the percentage of the total population that is counted in Brevard, and using an average of the last two years of FPL counts one can extrapolate in two ways:

By applying the synoptic percentage to the FPL average

$$1111 \text{ (FPL 2yr Avg)} = 18.4 \% \times \text{(Extrapolated Total Population)}$$

$$\text{Extrapolated Total Population} = \mathbf{6,041 \text{ Total Manatees}}$$

OR

By applying the ratio of FPL vs synoptic observed

$$1111 \text{ (FPL 2yr Brevard Avg)} / 636 \text{ (2yr Synop Brevard Avg)}$$

=

$$\text{(Extrapolated Total Population)} / 4829 \text{ (2yr Tot Synop Avg)}$$

$$\text{Extrapolated Total Population} = \mathbf{8,435 \text{ Total Manatees}}$$

Further evidence of the size of the manatee population can be discerned from the population vs. mortality numbers. While accurately counting the live population is extremely difficult, counting those that have perished is much more accurate due to the size of the animal and the fact the carcasses float to the surface where they are easily observed.

Over the same period (1991 – 2014) during which the synoptic surveys indicate a 5% population growth rate, mortality has exhibited a similar growth rate of around 5%. This indicates that the mortality numbers, although significantly higher over time, have been consistent with the observed population growth. This explains how the population has been observed to increase even as the number of deaths has reached what some groups indicate is an alarming value.

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Using the Manatee Core Biological Model (MCBM) developed by Mike Runge of USGS, CFFW “reverse engineered” the MCBM to use mortality to estimate total manatee abundance. We shared the model with Chris Fonnesbeck, Assistant Professor of Biostatistics, Vanderbilt University specializing in Computational Statistics, Biometrics and Epidemiology, who commented that the model was, indeed, accurate; if anything, it would tend to undercount manatees slightly, due to “slippage” in carcass recovery. The result of the reverse engineering, which was conducted seven years ago (2007) was an adult manatee population of 4,500, and several hundred juveniles, for a total estimated population of approximately 5,300 manatees. It is no surprise to us that 5,300 animals in 2007 would have expanded into the “extrapolated” population explained above (6,041 – 8,435).

The fact that the synoptic counts continue to grow in light of historically high mortality, even when several years total mortality is naively expressed by some as a percentage of a single synoptic count, is further indication that the synoptic survey counts are grossly inadequate and that the actual manatee population is probably closer to 6,000 - 9,000 and increasing at 5%. We should expect the population to double over the next 14 years. Thus, if weather conditions are favorable, one should expect the January 2015 synoptic survey result to exceed 5200 animals.

Other Factors Driving Classification of *Endangered* or *Threatened*

Factor: Over utilization for commercial, recreational, scientific, or educational purposes - The population is under no threat of over utilization for commercial, recreational, scientific or educational purposes. These activities are illegal under protections afforded by the Marine Mammal Protection Act (MMPA).

Factor: Disease or predation - The species has no predators throughout its habitat and the only impact by disease is from periodic occurrences of red tide or less significant events. These events, although alarming when only considering the number of animals affected, have not negatively impacted the continued growth of the population.

In addition to a lack of predatory concerns and limited impacts from disease, extended cold temperatures have historically affected large numbers of animals on a periodic basis. Again, the resiliency of the overall population to absorb each and all of these impacts and continue to grow at approximately 5% has been demonstrated for over 40 years of observation and data collection.

Factor: The inadequacy of existing regulatory mechanisms - There are two sets of regulatory mechanisms and manmade factors that have been implemented to affect the continued existence of the species. First is the waiver of the Federal Clean Water Act of 1974 as it applies to the thermal outflows from the collective power plant cooling systems around the state and throughout the habitat. The warm water

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outflows were permitted as manatee sanctuaries, described as critical to the survival of the species and regulated to prohibit/limit human activities.

The historic view of the outflows has been positive for manatee population expansion. They artificially diminish the annual impacts of cold water. The future of these outflows may yet prove to be of detriment to the ecosystem, as thermal effluent was one of the key concerns leading to passage of the 1974 Act — not so much from the primary effect of the warm water, but the unintended consequence of a secondary impact from the artificially induced ever-increasing year-round resident manatee population. Nevertheless, these outflows continue to be permitted through regulation and must be considered as evidence of the adequacy of existing regulation.

The second set of regulatory actions that provide evidence of the adequacy of existing regulatory mechanisms is the implementation of extensive aquatic zones where human activity has been regulated in deference to the manatee. These include additional areas set aside as manatee sanctuaries where human activity is either prohibited or limited and the collective set of manatee protection zones throughout the manatee habitat and range, where motorized vessel operations have been regulated with the intent to protect manatees from potential injury or death. The effectiveness of these zones has never been proven, but the fact that the zones exist throughout the state with a single specific purpose to offer manatee protection is further evidence of the adequacy of existing regulation.

Factor: Other natural or manmade factors affecting its continued existence -Since the species has exhibited a 40-year history of population growth and resilience to all threats, there are no natural or manmade factors that can be cited that could affect the species continued existence. Moreover, one can only reasonably expect the population to increase to the limits of the collective carrying capacity of the habitat.