



MARINE MAMMAL COMMISSION

2 September 2014

Mr. Jay Herrington, Field Supervisor
North Florida Ecological Services Field Office
U.S. Fish and Wildlife Service
7915 Baymeadows Way, Suite 200
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Dear Mr. Herrington:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the Fish and Wildlife Service's (FWS) notice requesting comments on a petition to reclassify the West Indian manatees from endangered to threatened under the Endangered Species Act (ESA; 79 Fed. Reg. 37706). The Commission offers the following comments and recommendations.

Background

In December 2012, FWS received a petition from the Pacific Legal Foundation on behalf of Save Crystal River, Inc., requesting that the West Indian manatee, including both the Florida and Antillean subspecies, be reclassified from endangered to threatened under the ESA. In support of the request, the petition cites the results of FWS's five-year status review of West Indian manatees completed in 2007 recommending that the species be down-listed to threatened. It also cites results of a Florida manatee biological review conducted by the Florida Fish and Wildlife Conservation Commission (FWC) in 2006 stating that the probability of manatee extinction in Florida is low over the next 100 years and recommending that the species be listed as threatened under state law based on criteria that were in effect at that time. However, revised listing criteria adopted by the State since 2006 now preclude such a reclassification until such time as the species is reclassified under the ESA.

Finally, the petition cites a 21 September 2011 letter from the Marine Mammal Commission to the FWS providing results of a review of manatee conservation issues at the Commission's 2011 annual meeting. The Commission's letter noted that Florida manatees had made significant progress towards recovery and that down-listing the species may be warranted. Although not mentioned in the petition, the Commission's letter also noted that further analysis of the species and its threats was needed to make a decision on changing the species' listing status and recommended that the FWS "...incorporate into any reclassification proposal an assessment of the effects of the high cold-stress mortality that occurred in 2010 and 2011," and that it also consider the effects of climate change and the adequacy of plans to address effects of eventual power plant closures on manatee mortality and abundance.

On a related matter, on 1 July 2014 the FWS and the National Marine Fisheries Service (NMFS) announced a new policy for guiding listing decisions (79 Fed. Reg. 37578). That policy calls for listing a species (the definition of which includes a subspecies or Distinct Population Segment (DPS) of a vertebrate species) as endangered or threatened throughout all portions of its range if

FWS determines that it merits listing as endangered or threatened in any “significant portion” of its range. The new policy defines a “significant” portion of a species’ (or population’s) range as any portion whose contribution to the viability of the listed species (or population) throughout its entire range is so important that, without that portion, it would be in danger of either extinction in the case of a listed endangered species, or of becoming endangered in the foreseeable future in the case of a listed threatened species.

Recognizing subspecies and identifying Distinct Population Segments

When the West Indian manatee was first listed as endangered in 1967, its status throughout most of its range was poorly known. Since then, much new information on the species’ biology, distribution, and abundance has been obtained from many areas, particularly in Florida, Puerto Rico, and parts of the Yucatán Peninsula. In addition, analyses of genetic, morphological, photographic, tagging, and other data have identified various more or less discrete groups of animals. Two subspecies of West Indian manatees are now recognized: a Florida subspecies centered in the southeastern United States and an Antillean subspecies centered in the Caribbean region and northern South America (Domning and Hayek 1986). Moreover, photo-identification and tagging data indicate that there is almost no movement of animals between the east and west coasts of Florida (Deutsch et al. 2003), suggesting a high degree of demographic separation between the manatees in those two areas.

The West Indian manatee, like several other species, was originally listed as endangered throughout its range. We now have information indicating, or at least suggesting, that it is composed of multiple DPSs. The Commission believes that before proceeding with a decision to change the listing status of the West Indian manatee, FWS needs to consider the implications of the above-mentioned new policy. If FWS determines that the West Indian manatee as a species is endangered or threatened throughout its range or within a significant portion of its range, then retaining the current range-wide listing for the species would be appropriate. Likewise, if either of the two subspecies is determined to be endangered or threatened throughout its range or within a significant portion of its range, then listing that subspecies throughout its entire range would be warranted. Given the current listing of the species as endangered throughout its range, the Commission believes that there needs to be a sound basis for changing the listing status of the species as a whole or of any sub-unit, including any DPS.

Next, FWS should assess the DPS structure within the species or subspecies. It is possible that if separate DPSs are recognized, some would no longer meet the criteria for listing as endangered and would merit consideration for classification as threatened or delisting. Any DPS that no longer qualifies as endangered should be listed separately as threatened or removed from the list, as appropriate. If separate DPSs of manatees are listed differently under the ESA, FWS will need to provide clear descriptions of their ranges or other means of differentiating between the various populations. In addition, before delisting any DPS, FWS should consider whether continued protection under the ESA is advisable under section 4(e) because of a similarity of appearance with listed animals. The Commission believes that a finer-scale approach to listing West Indian manatees could help focus limited research and management resources on those portions of the species’ range and on those populations facing the highest risks and most serious threats.

Therefore, the Commission recommends that the FWS, as part of its response to this petition, (1) conduct an analysis of the current listing status of the West Indian manatee under its significant portion of a species' range policy and (2) review available genetic, photo-identification, tagging, and other relevant data to identify any DPSs and assess each one independently to determine if it should remain listed as endangered, be listed as threatened, or be delisted entirely. At a minimum, the Commission believes that the FWS should give strong consideration to listing the Florida manatee and the Antillean manatee as separate subspecies. Validity of the two subspecies is supported by morphometric (Domning and Hayek 1986), genetic (García-Rodríguez et al. 1998; Vianna et al. 2006; Hunter et al. 2010, 2012), and movement (Lefebvre et al. 2001; Quintana-Rizzo and Reynolds 2007) data.

Evaluating effects of the increasing severity and intensity of manatee die-offs

As noted in its 11 September 2011 letter, the Commission believes that the Florida manatee made considerable progress towards recovery between the 1980s and 2010 as a result of management actions taken by the FWS and FWC. The Commission is concerned, however, that exceptionally high levels of documented Florida manatee mortality since the last five-year status review in 2006, and particularly since 2009, could mark a significant setback for the species' recovery. Based on FWC manatee carcass salvage records between 2009 and 2013, at least 2,905 deaths have occurred (average = 580 deaths per year). In all but one of those years, the death toll exceeded the previous annual record of 420 in 2006, and in two of those years the totals approached or equaled twice the 2006 number. Statewide counts of live manatees in January 2014 resulted in a minimum estimated number of 4,824 Florida manatees. Given the subspecies' low intrinsic rate of increase (6.2 percent per year), the high number of recent deaths, and the reported minimum population estimates, it is possible that the number of Florida manatees has declined substantially over the past five years.

The increasing frequency and severity of unusual die-off events caused by cold stress and red tides over the last five years is of great concern. Die-off events caused by severe cold occurred in 2010 and 2011; the first of these caused over 450 known and suspected manatee deaths (Barlas et al. 2011). Major red-tide events occurred in southwestern Florida in 2012 and 2013, with the latter event alone causing over 550 known and suspected manatee deaths. A third major die-off occurred in 2011, associated with an algal bloom in the Indian River. These events appear to be part of a disturbing trend since the 1980s of more frequent and more severe manatee die-offs that may be at least partially related to climate change-related environmental events. FWS relies on a stage-based biological model of manatee population dynamics to evaluate current and future manatee population trends (Runge et al. 2004), which includes modules that incorporate the effects of die-offs. To evaluate the significance of recent manatee die-offs and their apparently increasing frequency, the Commission recommends that FWS complete a review of manatee die-offs over the past five years and use the Runge et al. (2004) model to assess the effects of these unprecedented levels of Florida manatee mortality on manatee population sizes and growth rates. In addition, the Commission recommends that FWS examine all past Florida manatee mortality events and their causes, estimate trends in the occurrence of such events, and project their effects on population size over time. Such analyses should be undertaken before any decisions are made on reclassifying West Indian manatees.

Evaluating the adequacy of measures to mitigate the effects of power plant closures

Down-listing or delisting decisions require an assessment of foreseeable threats. The Commission is concerned about the foreseeable effects of power plant closures (and the associated loss of warm-water refugia) and the adequacy of management measures to mitigate those effects and to ensure that the West Indian manatee, if down-listed or delisted, would not soon become endangered again. The *Federal Register* notice cites unpublished data from statewide winter manatee surveys conducted by the FWC and FWS that indicate two-thirds of all Florida manatees use warm-water refuges created by power plant outfalls to survive cold periods in winter. This information is now available in a published paper (Laist et al. 2013), which would be a more appropriate reference to cite. Laist et al. (2013) found that 63.2 percent of all Florida manatees counted during the January 2010 survey, which was conducted during exceptionally cold conditions, were observed at power plants. Those authors also found that 83 percent of all manatees counted in the East Coast subpopulation—which may include nearly half of all Florida manatees—were counted at power plants.

The dependence of manatees on power plants in winter has steadily increased since power plants used by manatees were first built more than 60 years ago (Laist et al. 2013). The use of power plants has now skewed the distribution of manatees towards areas where natural warm-water refuges are absent or scarce (Laist et al. 2013). Whereas some of those power plants are nearing the end of their planned operational lives (Laist and Reynolds 2005a), others have recently been repowered, extending their expected operational lives for perhaps 35 years. If all or most plants are retired within the next 40 or so years, and the warm-water outfalls used by most manatees are eliminated, a substantially increasing proportion of the manatee population may die of cold stress due to an inability to find alternative warm-water sources (Laist and Reynolds 2005b). The Commission considers this to be a foreseeable development that, if not adequately addressed before the power plants close, could reduce manatee abundance to levels that, in combination with other threats, such as vessel strikes and increasingly frequent red-tide events, could justify the species' continued listing as endangered.

Manatee access to and use of natural warm-water habitats have been severely limited by development (Laist and Reynolds 2005a) and many management actions will be needed to restore or supplement those habitats to provide assurance that a robust manatee population will be able to survive winter cold periods in Florida after power plants are retired. Among the actions that could or should be taken are:

- removing dams, locks, and other structures blocking manatee access to natural springs;
- dredging spring runs that have become silted-in by land runoff and now impede manatee access to warm-water discharges;
- controlling recreational use of springs that displaces manatees;
- establishing minimum spring flow levels and preventing groundwater pumping for agricultural and domestic use that could reduce flow rates below that needed to support manatees;
- experimenting with the possible establishment of new refugia by tapping warm saltwater aquifers;
- experimenting with the reintroduction of manatees to springs that are underused or no longer used by manatees;
- creating new passive thermal basins in southern Florida;

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- acquiring and protecting springs that are currently privately owned; and
- monitoring manatee use of springs and other warm-water refugia.

Given the amount of time needed to investigate and address such actions, and for manatees to learn to use new sites, the Commission believes it will likely take decades to develop networks of warm-water refugia adequate to support a robust manatee population in the absence of power plants.

The FWS and FWC have begun taking steps to address some of these needs. For example, the Commission understands that the two agencies are currently completing a warm-water refuge management plan initially drafted several years ago by a Warm-Water Task Force. The draft plan identified most, if not all, of the above restoration activities. The FWS and FWC have examined the use of a structured decision-making process to help identify specific warm-water restoration activities for each of the four regional subpopulations of Florida manatees. In addition, the two agencies have made efforts to acquire land around some springs, dredge spring runs, and remove small rock weirs blocking manatee access to spring discharges. These steps are laudable; however, available funding to expand and carry forward such work over the long term is far from assured.

The Commission believes that substantial further action will be necessary over the coming decades to ensure that manatees have access to adequate alternative warm-water refuges and such action cannot be postponed until power companies announce plant closures. Therefore, the Commission recommends that, as part of any reclassification analysis, the FWS assess the effects of eventual power plant closures on the long-term viability of the Florida manatee population, as well as the adequacy of assurances that the work required to enhance and protect natural warm-water refuges will be carried out in the coming decades.

In light of the above points, the Commission further recommends that the FWS respond to the petitioners noting that, while FWS staff recommended in 2007 that the West Indian manatee be down-listed from endangered to threatened, recent mortality events and other factors that have arisen since then require reanalysis of that recommendation before any change in listing status is considered.

I trust these comments and recommendations are helpful. If you or your staff have questions, please call.

Sincerely,



Rebecca J. Lent, Ph.D.
Executive Director

References

- Barlas, M.E., C.J. Deutsch, M. de Wit, and L.J. Geiger-Ward (eds.) 2011. Florida manatee cold – stress related unusual mortality event, January-April 2010. Final Report. FWC/FWRI file F-2852-10-11-F. Florida Fish and Wildlife Research Institute, St. Petersburg, Florida, 125 pages.
- Deutsch C.J., J.P. Reid, R.K. Bonde, D.E. Easton, H.I. Kochman, and T.J. O'Shea. 2003. Seasonal movements, migratory behavior, and site fidelity of West Indian manatees along the Atlantic Coast of the United States. *Wildlife Monographs* 151:1-77. Available at <http://www.jstor.org/stable/3830830>.
- Domning, D.P., and L-A. C. Hayek. 1986. Interspecific and intraspecific morphological variation in manatees (Sirenia: Trichechus). *Marine Mammal Science* 2(2):87-144.
- García-Rodríguez, A. I., B.W. Bowen, D. Domning, A.A. Mignucci-Giannoni, M. Marmontel., R.A. Montoya-Ospina, B. Morales-Vela, M. Ruding, R.K. Bonde, and P.M. McGuire. 1998. Phylogeography of the West Indian Manatee (*Trichechus manatus*): how many populations and how many taxa? *Molecular Ecology* 7:1137-1149.
- Hunter M., N.E. Auil-Gomez, K.P. Tucker, R.K. Bonde, J. Powell, and P.M McGuire. 2010. Low genetic variation and evidence of limited dispersal in the regionally important Belize manatee. *Animal Conservation* 13:592–602.
- Hunter, M.E., A.A. Mignucci-Giannoni, K.P. Tucker, T.L. King, R.K. Bonde, B.A. Gray, and P.M. McGuire. 2012. Puerto Rico and Florida manatees represent genetically distinct groups. *Conservation Genetics* 13(6):1623-1635.
- Laist, D.W., and J.E. Reynolds, III. 2005a. Influence of power plants and other warm water refuges on Florida manatees. *Marine Mammal Science* 21:739-764.
- Laist, D.W., and J.E. Reynolds, III. 2005b. Florida manatees, warm-water refuges, and an uncertain future. *Coastal Management* 33:279-295.
- Laist, D.W., C. Taylor, and J.E. Reynolds, III. 2013. Winter habitat preferences for Florida manatees and vulnerability to cold. *PLoS ONE* 8(3):e58978, doi.10.1371/journal.pone.0058978, 11 pages.
- Lefebvre, L.W., M. Marmontel, J.P. Reid, G.B. Rathbun, and D.P. Domning. 2001. Status and biogeography of the West Indian manatee. Pages 425–474 in: C.A. Woods and F.E. Sergile (eds.), *Biogeography of the West Indies: patterns and perspectives*, 2nd edition. CRC Press, Boca Raton, Florida.
- Quintana-Rizzo, E., and J.R. Reynolds, III. 2007. Regional management plan for the West Indian manatee (*Trichechus manatus*). Caribbean Environment Programme, United Nations Environment Programme, CEP Technical Report, Kingston, Jamaica. .
- Runge, M.C, C.A. Langtimm, and W.I. Kendall. 2004. A stage-based model of manatee population dynamics. *Marine Mammal Science* 20:326-385.
- Vianna , J.A., R.K. Bonde, J.P. Caballero, J.P. Giraldo, R.P. Lima, A. Clark, M. Marmontel, B. Morales-Vela, M. J. de Sousa, L. Parr, M.A. Rodríguez-López, A.A Mignucci-Giannoni, J.A. Powell, and F.R. Santos. 2006. Phylogeography, phylogeny, and hybridization in trichechid sirenians: implications for manatee conservation. *Molecular Ecology* 15:433-447.