

DEPARTMENT OF THE INTERIOR**Fish and Wildlife Service****50 CFR Part 17**

[Docket No. FWS-R4-ES-2015-0178;
FXES1113090000-178-FF09E42000]

RIN 1018-AY84

Endangered and Threatened Wildlife and Plants; Reclassification of the West Indian Manatee From Endangered to Threatened

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), reclassify the West Indian manatee (*Trichechus manatus*) from endangered to threatened under the authority of the Endangered Species Act of 1973, as amended (Act). The endangered designation no longer correctly reflects the current status of the West Indian manatee. This action is based on the best available scientific and commercial information, which indicates that the West Indian manatee no longer meets the definition of endangered under the Act. When this rule becomes effective, the West Indian manatee, including its two subspecies, will remain protected as a threatened species under the Act and the existing critical habitat designation in Florida will remain in effect.

DATES: This rule is effective May 5, 2017.

ADDRESSES: This final rule, as well as comments and materials received in response to the proposed rule, are available on the Internet at <http://www.regulations.gov> at Docket No. FWS-R4-ES-2015-0178. Comments and materials we received, as well as supporting documentation used in preparation of this rule, are available for public inspection at <http://www.regulations.gov> and by appointment, during normal business hours at: U.S. Fish and Wildlife Service, North Florida Ecological Services Office, or Caribbean Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

FOR FURTHER INFORMATION CONTACT: Jay Herrington, Field Supervisor, North Florida Ecological Services Office, by telephone at 904-731-3191, or by facsimile at 904-731-3045; or at the following address: 7915 Baymeadows Way, Suite 200, Jacksonville, FL 32256; Edwin Muñiz, Field Supervisor, Caribbean Ecological Services Field Office, by telephone at 787-851-7297, or by facsimile at 787-851-7441; or at

the following address: Road 301, Km. 5.1, P.O. Box 491, Boquerón, PR 00622. If you use a telecommunications device for the deaf (TDD), please call the Federal Relay Service (FRS) at 800-877-8339, 24 hours a day, 7 days a week.

SUPPLEMENTARY INFORMATION:**Executive Summary****Why We Need To Publish a Rule**

- In April 2007, we completed a 5-year status review, which included a recommendation to reclassify the West Indian manatee from endangered to threatened.

- In December 2012, we received a petition submitted by the Pacific Legal Foundation, on behalf of Save Crystal River, Inc., requesting that the West Indian manatee and subspecies thereof be reclassified from its current status as endangered to threatened, based primarily on the analysis and recommendation contained in our April 2007 5-year review.

- On July 2, 2014, we published a 90-day finding that the petition presented substantial information indicating that reclassifying the West Indian manatee may be warranted (79 FR 37706). On January 8, 2016, we published a proposed rule to reclassify the West Indian manatee as threatened, which also constituted our 12-month petition finding that the action requested is warranted (81 FR 1000).

The Basis for Our Action

- Based on our status review, threats analysis, and evaluation of conservation measures, we conclude that the West Indian manatee no longer meets the Act's definition of endangered and should be reclassified to threatened, that is, a species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

- Our review of the best scientific and commercial information available indicates that some threats to the manatee still remain while others have been reduced or no longer occur. Examples of remaining threats that will make this species likely to become endangered in the foreseeable future include habitat loss, degradation, and fragmentation; watercraft collisions; loss of winter warm-water habitat; and poaching.

- Recovery efforts to control these threats in range countries are under way in many areas but have not yet begun in others. Further implementation of recovery actions is needed to bring the West Indian manatee to full recovery by reducing or removing threats to the point where this species is no longer

likely to become endangered in the foreseeable future throughout all or a significant portion of its range.

Previous Federal Actions

The Florida manatee (*Trichechus manatus latirostris*), a subspecies of the West Indian manatee (*Trichechus manatus*), was listed as endangered in 1967 (32 FR 4001) under the Endangered Species Preservation Act of 1966 (Pub. L. 89-669; 80 Stat. 926). After adoption of the Endangered Species Conservation Act of 1969 (Pub. L. 91-135; 83 Stat. 275), the listing was amended in 1970 to expand the Florida manatee listing to include the West Indian manatee throughout its range, including in the Caribbean Sea and northern South America. This amendment added the Antillean manatee (*Trichechus manatus manatus*) to the listing (35 FR 18319, December 2, 1970). Species listed under the Endangered Species Conservation Act, including the West Indian manatee, were subsequently grandfathered into the List of Endangered and Threatened Wildlife under the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*), and the West Indian manatee remains listed as an endangered species under the Act. We originally issued a recovery plan for the West Indian manatee in 1980, which included both Florida and Antillean manatees. We completed a recovery plan for the Florida subspecies in 1989, revised it in 1996, and completed another in 2001 (USFWS 2001). In 1986, we completed a recovery plan for the Puerto Rico population of the Antillean manatee (USFWS 1986).

On January 8, 2016, we published in the **Federal Register** a combined 12-month finding on the petition to downlist the West Indian manatee and a proposed rule to reclassify the West Indian manatee as threatened (81 FR 1000). Please refer to the proposed rule for a detailed description of prior Federal actions concerning this species. On January 13, 2016 (81 FR 1597), we made a minor correction to this proposed regulation; the date closing the comment period was corrected to read April 7, 2016. The Service also contacted appropriate range countries, Federal and State agencies, scientific experts and organizations, tribes, and other interested parties and invited them to comment on the proposal. Between January 28, 2016, and February 9, 2016, we published legal notices in major newspapers in the West Indian manatee range including Texas, Louisiana, Mississippi, Alabama, Georgia, South Carolina, North Carolina, Virginia, and Puerto Rico and legal notices in 10 major newspapers in

Florida. We also held a public hearing on February 20, 2016, at the Buena Vista Palace Conference Center in Orlando, Florida.

Background

Please refer to the combined 12-month finding and proposed rule to reclassify the West Indian manatee (81 FR 1000, January 8, 2016) for more information on the species' distribution, taxonomy, description, lifespan, mating, and reproduction. We made no changes to these sections and do not include them in our final rule.

Taxonomy and Species Description

The West Indian manatee, *Trichechus manatus*, is one of three living species of the genus *Trichechus* (Rice 1998, p. 129). The West Indian manatee includes two recognized subspecies, the Antillean manatee, *Trichechus manatus manatus*, and the Florida manatee, *Trichechus manatus latirostris* (Rice 1998, p. 129). Each subspecies has distinctive morphological features and occurs in discrete areas with rare

overlap between ranges (Hatt 1934, p. 538; Domning and Hayek 1986, p. 136; and Alvarez-Alemán *et al.* 2010, p. 148). Recent genetic studies substantiate the uniqueness of the Florida subspecies, as its genetic characteristics have been compared with other populations from the Antillean subspecies found in Puerto Rico and Belize (Hunter *et al.* 2010, p. 599; Hunter *et al.* 2012, p. 1631).

Population Size

Within the southeastern United States, Martin *et al.* (2015 entire) provide an abundance estimate for the Florida subspecies of 6,350 manatees (with a 95 percent CI (confidence interval) between 5,310 and 7,390). Outside the southeastern United States, available non-statistical population estimates are based on data of highly variable quality and should be considered only as crude approximations (Table 1). These estimates suggest that there may be as many as 6,782 Antillean manatees in the Greater Antilles, Mexico, Central

America, and South America (Table 1). This information reflects the broad distribution of the species and suggests a relatively medium to large range-wide population estimate. A sum of all the available estimates totals 13,142 manatees for the species throughout its range; the sum of estimated minimum population sizes is 8,396 manatees (See Table 1; UNEP 2010, p. 11; Marsh *et al.* 2011, p. 385; Castelblanco-Martínez *et al.* 2012, p. 132; Self-Sullivan and Mignucci 2012, p. 40; Martin *et al.* 2015, entire). Total estimates for manatees outside the southeastern United States and Puerto Rico alone range between approximately 3,000 and 6,700 individuals, including adults, subadults, and calves, of which fewer than 2,500 are estimated to be reproductively mature animals (Self-Sullivan and Mignucci-Giannoni 2012, p. 40). Castelblanco-Martínez *et al.* (2012, p. 132) adapted the UNEP (2010, p. 11) numbers and used an estimated initial size of 6,700 individuals in their population viability analysis (PVA) model for the Antillean subspecies.

TABLE 1—RANGE COUNTRIES WHERE WEST INDIAN MANATEES ARE FOUND: TRENDS, NON-STATISTICAL POPULATION ESTIMATES, MINIMUM POPULATION SIZE, AND NATIONAL LISTING STATUS

[Abbreviations: U—Unknown; D—Declining; S—Stable; I—Increasing (adapted from UNEP 2010, p. 11 and Castelblanco-Martínez *et al.* 2012, p. 132, Martin *et al.* 2015, p. 44, unless otherwise cited).]

| Country | Trend ¹ | Non-statistical population estimate ² | Minimum population size | National listing status ³ |
|---|--------------------|--|-------------------------|---|
| Greater Antilles (1,382) | | | | |
| 1A. ⁴ U.S. (Puerto Rico) | S | ⁵ 532 (mean) | 342 | Endangered (PRDNER 2004). |
| 2. Cuba | U/D | 500 | Unknown | Endangered (Álvarez-Alemán 2012). |
| 3. Haiti | U | 100 | 8 | No Information |
| 4. Dominican Republic | D | 200 | 30 | Critically Endangered (MMARNRD 2011). |
| 5. Jamaica | U/D | 50 | <50 | No Information. |
| Mexico, Central America (3,600) | | | | |
| 6. Mexico | U | 1,500 | 1,000 | Endangered. |
| 7. Belize | U/D | 1,000 | 700 | Endangered. |
| 8. Guatemala | U | 150 | 53 ± 44 | Critically Endangered (CONAP 2009). |
| 9. Honduras | S/D | 100 | 11 | No Information. |
| 10. Costa Rica | D | 200 | 31 | Endangered. |
| 11. Panama | U | 150 | 10 | No Information. |
| 12. Nicaragua | D | 500 | 71 | No Information. |
| South America (1,800) | | | | |
| 13. Colombia | U/D | 500 | 100 | Critically Endangered (Rodríguez-Mahecha <i>et al.</i> 2006). |
| 14. Venezuela | D | 200 | 200 | Critically Endangered (Ojasti and Lacabana 2008). |
| 15. Suriname | D | 100 | 100 | No Information. |
| 16. French Guiana | S/D | 100 | 100 | No Information. |
| 17. Guyana | D | 100 | 100 | No Information. |
| 18. Trinidad and Tobago | D | 100 | 25 | Endangered (MCT 2002). |
| 19. Brazil | S/D | 700 | 155 | Critically Endangered (Barbosa <i>et al.</i> 2008). |
| North America (6,360) | | | | |
| 20. The Bahamas | I | 10 | Unknown | No Information. |
| 21B. ⁴ U.S. (Southeast) | S/I | 6,350 | 5,310 | Endangered (FAC 68A–27.0031). |

TABLE 1—RANGE COUNTRIES WHERE WEST INDIAN MANATEES ARE FOUND: TRENDS, NON-STATISTICAL POPULATION ESTIMATES, MINIMUM POPULATION SIZE, AND NATIONAL LISTING STATUS—Continued

[Abbreviations: U—Unknown; D—Declining; S—Stable; I—Increasing (adapted from UNEP 2010, p. 11 and Castelblanco-Martínez *et al.* 2012, p. 132, Martin *et al.* 2015, p. 44, unless otherwise cited).]

| Country | Trend ¹ | Non-statistical population estimate ² | Minimum population size | National listing status ³ |
|----------------------------|--------------------|--|-------------------------|--------------------------------------|
| Total Estimated Population | | | 8,396–13,142 | |

¹ Trends and estimates described in Table 1 for manatee populations outside the United States are, in large part, based on the personal opinions of local experts and are not based on quantified analyses of trends in country population counts or demographics. Such data from these countries are limited or absent, making most of these assessments conjectural (UNEP 2010, p. xiv).

² Except as noted.

³ Range country status definitions vary by country.

⁴ Note that Locations 1A and 21B refer to manatee populations in the United States (in Puerto Rico and the southeastern United States, respectively).

⁵ Based on adjusted aerial survey counts (Pollock *et al.* 2013, p. 8).

The Martin *et al.* (2015) study referenced above is the first quantified estimate of abundance for the Florida manatee in the southeastern United States. This estimate relied upon innovative survey techniques and multiple sources of information to estimate a Florida manatee population of 6,350 animals (Martin *et al.* 2015, p. 44). In Puerto Rico, the Service also updated aerial survey methods to account for detection probability, which provides an improved population estimate (Pollock *et al.* 2013, entire). From 2010 to 2014, a total of six island-wide aerial surveys have been completed with this new method (Atkins 2010–2014). These have resulted in the most robust counts available for the population, with an average direct minimum population count of 149 individuals (standard deviation (SD) 31). Calf numbers have also been documented with an average minimum direct calf count of 14 (SD 5) or approximately 10 percent of the direct minimum population count. A record high of 23 calves was counted in the December 2013 survey. The October 2010 survey count analysis resulted in an adjusted mean estimated population size of 532 individuals, with a 95 percent equal area confidence interval (CI) of 342–802 manatees (Pollock *et al.* 2013, p. 8).

In Florida, to count numbers of manatees, FWC conducts a series of statewide aerial and ground surveys of warm-water sites known to be visited by manatees during cold-weather extremes. These surveys are conducted from one to three times each winter, depending on weather conditions (FWC FWRI Manatee aerial surveys, 2016, unpubl. data). While the number of manatees detected during these surveys has increased over the years, in and of themselves these surveys are not considered to be reliable indicators of population trends, given concerns about

detection probabilities. However, it is likely that a significant amount of the increase does reflect an actual increase in population size when this count is considered in the context of other positive demographic indicators, including the recently updated growth and survival rates (Runge *et al.* 2015, p. 19).

In February 2015, researchers counted 6,063 manatees during a statewide survey, and researchers in February 2016 counted 6,250 manatees (FWC FWRI Manatee aerial surveys 2016, unpubl. data).

Population Trends

In 2008, the International Union for the Conservation of Nature (IUCN) identified the West Indian manatee as a “Vulnerable” species throughout its range based on an estimate of less than 10,000 mature individuals (Deutsch *et al.* 2008, <http://www.iucnredlist.org/details/22103/0>). The population was expected to decline at a rate of 10 percent over the course of three generations (*i.e.*, 60 years; 1 generation = circa 20 years) due to habitat loss and other anthropogenic factors (Deutsch *et al.* 2008, online). However, each of the subspecies (Antillean and Florida) by themselves was considered to be endangered and declining due to a variety of threats identified in the IUCN classification criteria (Deutsch *et al.* 2008, online). As we have noted above, our estimate of the total West Indian manatee population currently ranges between 8,396 and 13,142 (Table 1).

To the extent that they can be measured with the best available data, the West Indian manatee population trend and status vary regionally (Table 1). In the southeastern United States, the manatee population has grown, based on updated adult survival rate estimates and estimated growth rates (Runge *et al.* 2015, p. 19). The Antillean manatee population in Puerto Rico is believed to

be stable since our 2007 status review (USFWS 2007). Historical and anecdotal accounts outside the southeastern United States and Puerto Rico suggest that manatees were once more common, leading scientists to hypothesize that significant declines have occurred (Lefebvre *et al.* 2001, p. 425; UNEP 2010, p. 11; Self-Sullivan and Mignucci-Giannoni 2012, p. 37). In areas where populations may be declining, the magnitude of decline is difficult to assess, given the qualitative nature of these accounts (see footnote Table 1). It is not known if these observations represent an actual decline or merely reflect differences in expert opinion over time.

In the Castelblanco-Martínez *et al.* (2012, pp. 129–143) PVA model for the metapopulation of the Antillean manatee the authors divided the metapopulation into six subpopulations identified by geographic features, local genetic structure, ranging behavior, and habitat use (Greater Antilles, Gulf of Mexico, Mesoamerica, Colombia, Venezuela, Brazil; refer to Figure 1 and Table 1 in Castelblanco-Martínez *et al.* 2012). Using an initial metapopulation size of 6,700 Antillean manatees, with low human pressure and a relatively low frequency of stochastic events, their baseline PVA model describes a metapopulation with positive growth. The authors explain that the model is limited due to a lack of certainty with regard to the estimated size of the population; it does not take into account trends in local populations, and it assumes that all threats have an equal effect on the different subpopulations.

As stated in Castelblanco-Martínez *et al.* (2012, p. 138), “human impacts and habitat fragmentation were the main factors that drastically caused changes in the simulated extinction process of the population.” For example, some of the combined human-related mortality and habitat fragmentation model runs

reached extinction within 100 years (Fig. 5 and Table 7 in Castelblanco-Martínez *et al.* 2012, pp. 139–140). The four worst predictions presented a mean time to extinction between 41.5 and 104 years, by assuming a human-related mortality of 5 percent or higher and in combination with values of transient survival probabilities of between 10 percent, 30 percent, and 50 percent (habitat fragmentation). Besides these four worst predictions, the other predictions’ mean time to extinction are all above 200 years (from 208.9 to >500), thus higher than what is considered the foreseeable future (50 years; see Summary of Factors Affecting the Species section) for the West Indian manatee.

These four worst model predictions are currently considered unlikely for the Antillean manatee metapopulations. For example, Castelblanco-Martínez *et al.* (2012, p. 135) discuss their assumption of using a 1 percent human-related mortality for their base model by citing available information on anthropogenic causes of mortality for the Antillean manatee (Castelblanco-Martínez *et al.* 2012, p. 135). These anthropogenic

causes include hunting, entanglement, and collisions with boats, and in general are considered relatively uncommon according to the few reports available considering the broad range of the Antillean manatee metapopulation (Castelblanco-Martínez *et al.* 2012, p. 135). Thus a 5 percent or higher human-related mortality in these four worst predictions is currently considered unlikely. They also note (Castelblanco-Martínez *et al.* 2012, p. 141) that the resulting baseline model growth rate is reasonable because mortality is currently considered to be low when compared to the Florida subspecies, which can withstand massive mortalities associated with cold stress and red tide episodes.

In addition, low survival probabilities of transient manatees (habitat fragmentation) of 50 percent or lower are also considered unlikely since migration rates were assumed low, and given that manatees have a resilient immune system and seem resistant to diseases and traumatic injuries as explained by Castelblanco-Martínez *et al.* (2012, pp. 132–133). We recognize that additional information is needed to

better assess how human-related and habitat threats affect actual and model growth rates.

In the southeastern United States, new population growth rates for Florida’s Atlantic Coast, Upper St. Johns River, Northwest, and Southwest Regions describe growth in each region through winter seasons 2011–2012, 2010–2011, 2009–2010, and 2008–2009, respectively (Langtimm presentation, 2016). Regional adult survival rate estimates (see Table 2) were also updated through the same periods and are higher and more precise for all regions since the last estimates were provided (Langtimm presentation, 2016; Runge *et al.* 2015, p. 7; USFWS 2007, p. 65). The updates capture some but not all of the recent die-off events (severe cold events of 2009–2010 and 2010–2011, and the 2012–present Indian River Lagoon (IRL) die-off event). These rates include data collected through 2014–2015. However, rates for periods beyond those identified in Table 2 cannot be calculated because of an end of time series bias inherent in the analyses.

TABLE 2—UPDATED FLORIDA MANATEE ADULT SURVIVAL RATES
[Langtimm, presentation, 2016.]

| Region | Mean | Standard error | Time period |
|-----------------------------|-------|----------------|-------------|
| Northwest | 0.978 | .003 | 1982–2009 |
| Southwest | 0.978 | .004 | 1997–2012 |
| Atlantic Coast | 0.972 | .004 | 1987–2010 |
| Upper St. Johns River | 0.979 | .004 | 1987–2010 |

A USGS-led status and threats analysis for the Florida manatee was updated in 2016 (Runge presentation, 2016). This effort considers the demographic effects of the major threats to Florida manatees and evaluates how those demographic effects influence the risk of extinction using the manatee Core Biological Model. Although the adult survival rate is less than one in all regions, growth rates have been demonstrably greater than one (positive growth) over the recent past (1983–2007) (Langtimm presentation, 2016).

The analysis forecasts the status of the manatee population under different threat scenarios using the Manatee Core Biological Model. Data from the Manatee Carcass Salvage Program (FWC FWRI Manatee Carcass Salvage Program 2016, unpubl. data) were used to estimate fractions of mortality due to each of six known threats: Watercraft, water control structures, marine debris, cold, red tide, and others (Runge presentation, 2016).

The model expressed the contribution of each threat as it affects manatee persistence, by removing them, one at a time, and comparing the results to the “status quo” scenario. The “status quo” represents the population status in the continued presence of all of the threats, including the threat of the potential loss of warm water in the future due to power plant closures and the loss of springs and/or reduction in spring flows.

Under the status quo scenario, the statewide manatee population is expected to increase slowly, nearly doubling over 50 years, and then stabilize as the population reaches statewide carrying capacity. Under this scenario, the model predicts that it is unlikely (< 2.5 percent chance) that the statewide population will fall below 4,000 total individuals over the next 100 years, assuming current threats remain constant indefinitely (Runge *et al.* 2015, p. 13).

Recovery

Section 4(f) of the Act directs us to develop and implement recovery plans for the conservation and survival of listed species, unless we find that such a plan will not promote conservation of the species. Although the West Indian manatee is listed throughout its range, Service recovery planning efforts for the West Indian manatee focused mostly on those portions of the species’ range within U.S. jurisdiction. We published an initial recovery plan for the West Indian manatee in 1980 (USFWS 1980) and subsequently published recovery plans at the subspecies level for manatees found within the United States. At present, approved plans include the Recovery Plan for the Puerto Rican Population of the Antillean Manatee (USFWS 1986); the Florida Manatee Recovery Plan, Third Revision (USFWS 2001); and the South Florida Multi-Species Recovery Plan (USFWS 1999).

Section 4(f) of the Act directs that, to the maximum extent practicable, we incorporate into each recovery plan: (1) Site-specific management actions that may be necessary to achieve the plan's goals for conservation and survival of the species; (2) objective, measurable criteria, which when met would result in a determination, in accordance with the provisions of section 4 of the Act, that the species be removed from the list; and (3) estimates of the time required and cost to carry out the plan.

Revisions to the Lists of Endangered and Threatened Wildlife and Plants (List) (adding, removing, or reclassifying a species) must reflect determinations made in accordance with section 4(a)(1) and 4(b). Section 4(a)(1) requires that the Secretary determine whether a species is threatened or endangered (or not) because of one or more of five threat factors. Therefore, recovery criteria must indicate when a species is no longer threatened or endangered because of any of these five factors. In other words, objective, measurable criteria contained in recovery plans (recovery criteria) must indicate when an analysis of the five factors under section 4(a)(1) would result in a determination that a species is no longer an endangered or threatened species. Section 4(b) requires that the determination made under section 4(a)(1) be based on the best available science.

Thus, while recovery plans are intended to provide guidance to the Service, States, and other partners on methods of minimizing threats to listed species and on criteria that may be used to determine when recovery is achieved, they are not regulatory documents and cannot substitute for the determinations and promulgation of regulations required under section 4(a)(1). Determinations to remove from or reclassify a species on the List made under section 4(a)(1) must be based on the best scientific and commercial data available at the time of the determination, regardless of whether that information differs from the recovery plan.

In the course of implementing conservation actions for a species, new information is often gained that requires recovery efforts to be modified accordingly. There are many paths to accomplishing recovery of a species, and recovery may be achieved without all criteria being fully met. For example, one or more criteria may have been exceeded while other criteria may not have been accomplished, yet the Service may judge that, overall, the threats have been minimized sufficiently, and the species is robust enough, to reclassify

the species from endangered to threatened or perhaps even delist the species. In other cases, recovery opportunities may have been recognized that were not known at the time the recovery plan was finalized. These opportunities may be used instead of methods identified in the recovery plan.

Likewise, information on the species may be available that was not known at the time the recovery plan was finalized. The new information may change the extent that criteria need to be met for recognizing recovery of the species. Overall, recovery of species is a dynamic process requiring adaptive management, planning, implementing, and evaluating the degree of recovery of a species that may, or may not, fully follow the guidance provided in a recovery plan.

The following discussion provides a review of recovery planning and implementation for the West Indian manatee, as well as an analysis of the recovery criteria and goals as they relate to evaluating the status of the species.

Recovery Actions

Recovery and conservation actions for the West Indian manatee are described in the "UNEP Caribbean Environment[al] Program's Regional Management Plan for the West Indian Manatee" (UNEP 2010, entire) and in national conservation plans for countries outside the United States. Within the United States, the Service's Recovery Plan for the Puerto Rico Population of the West Indian (Antillean) Manatee (USFWS 1986, entire), the South Florida Multi-Species Recovery Plan (USFWS 1999, entire), and the Florida Manatee Recovery Plan (USFWS 2001, entire) identify recovery and conservation actions for the species. Actions common to all plans include minimizing manatee mortality and injury, protecting manatee habitats, and monitoring manatee populations and habitat.

UNEP Caribbean Environment[al] Program's Regional Management Plan for the West Indian Manatee, National Conservation Plans (Outside the United States)

The UNEP plan, published in 2010, identifies short- and long-term conservation and research measures that should be implemented to conserve the West Indian manatee. This plan also includes an overview of West Indian manatees within their range countries, including descriptions of regional and national conservation measures and research programs that have been implemented. Given the general lack of information about manatees in most

range countries, the plan recommends that needed research and the development of common methodologies be prioritized in concert with coordinated manatee and manatee habitat protection efforts (UNEP 2010, entire).

Within the species' range, foundations for coordinated conservation and research activities are developing, and a number of governments have designated manatee protection areas and have developed or are developing conservation plans (UNEP 2010, p. xiv). National legislation exists for manatees in all range countries, and many countries have ratified their participation in international conventions and protocols that protect manatees and their habitat (UNEP 2010, p. xv). At www.regulations.gov, see Supplemental Documents 1 and 3 in Docket No. FWS-R4-ES-2015-0178. Belize, Colombia, Costa Rica, Guatemala, Mexico, the United States, Puerto Rico, and Trinidad have developed country-specific manatee recovery plans (UNEP 2010, p. 92).

Efforts to conserve manatees outside the United States vary significantly from country to country. Some countries, including but not limited to Mexico, Belize, Brazil, and Cuba, are engaged in efforts to assess current status and distribution of manatees. Many countries, including Belize and Brazil, provide protections for manatees and their habitat. For example, the manatee in Belize is listed as endangered under Belize's Wildlife Protection Act of 1981. Belize protects manatees from overexploitation, and its recovery plan implements recovery actions similar to those identified in the Service's Florida and Puerto Rico recovery plans. Efforts to protect manatees include education and outreach efforts, and countries are promoting cooperation and information exchanges through venues such as the recent Cartagena Convention meetings (UNEP 2014, entire). A successful cooperative initiative identified at the meetings includes the implementation of manatee bycatch surveys in the Dominican Republic, Belize, Colombia, and Mexico (Kiszka 2014, entire). We are encouraged by the progress that is being made in several portions of the Antillean manatee's range in protecting this mammal and the growing enthusiasm behind implementing recovery to better protect this important species. In the future, we would like to reach out and coordinate with these countries with their efforts to further conserve manatees.

Recovery Plan for the Puerto Rico Population of the West Indian (Antillean) Manatee

We approved the Recovery Plan for the Puerto Rico population of the West Indian (Antillean) manatee on December 24, 1986 (USFWS 1986, entire). Although this plan is considered out of date (USFWS 2007, p. 26), we present the progress we have made under the identified tasks. The 1986 plan included three major objectives: (1) To identify, assess, and reduce human-related mortalities, especially those related to gill-net entanglement; (2) to identify and minimize alteration, degradation, and destruction of important manatee habitats; and (3) to develop criteria and biological information necessary to determine whether and when to reclassify from endangered to threatened the Puerto Rico population (USFWS 1986, p. 12). The Recovery Plan also includes a step-down outline that identifies two primary recovery actions for: (1) Population management and (2) habitat protection. Since the release of the 1986 Recovery Plan for the Puerto Rico population of the West Indian (Antillean) manatee, initiated recovery actions have provided substantial new knowledge about the species' ecology and threats. Some of these efforts apply to multiple tasks and are helping to update conservation information and tools that are applied towards adaptive management and education. Here we report on the current status of these actions.

Recovery Task (1): Population management. Recovery actions under this task include: Reduce human-caused mortality; determine manatee movement patterns and trends in abundance and distribution; assess contaminant concentrations in manatees; determine quantitative recovery criteria; and develop manatee protection plans for areas of specific importance.

Recovery Task (2): Habitat protection. Recovery actions under this task include: Radio-tag manatees to determine habitat utilization; determine and map distribution of seagrass beds and sources of fresh water; and monitor important habitat components and ensure protection.

A carcass salvage program was first implemented in the late 1970s and continues today. Mignucci-Giannoni *et al.* (2000, p. 189) provided an analysis of stranding data and identified sources of human-caused mortality. This summarization of data points indicates a shift in the nature of threats since the release of the 1986 Recovery Plan, which listed poaching, direct capture, and entanglement as the most

significant threats to manatees. Watercraft collision is now considered the greatest threat to manatees in Puerto Rican waters (Mignucci *et al.* 2000, p. 189; Drew *et al.* 2012, p. 26). Currently, carcass salvage efforts are led by the Puerto Rico Department of Natural and Environmental Resources (PRDNER) with support from the Puerto Rico Manatee Conservation Center (PRMCC) (the former Caribbean Stranding Network or CSN) and the Puerto Rico Zoo. There has not been a record of poaching since 1995 as a result of increased public awareness of the protected status of the manatee. The successful rehabilitation and release of the captive manatee "Moises" in 1994, a manatee calf stranded after the mother had been killed by poachers, served to incite a change of cultural values and increase awareness about threats to manatees (Marsh and Lefebvre 1994, p. 157).

Documented entanglement in fishing nets rarely occurs. However, in 2014, three adult manatees were entangled in large fishing nets; one of them was an adult female that died (PRDNER 2015, unpubl. data). Significant exposure was given to this case through the local and social media. Current PRDNER fishing regulations still allow the use of beach seine nets with certain prohibitions that need to be carefully monitored. Fisheries-related entanglements and debris ingestion are rarely documented but may occur and cause take of manatees (take includes harassment, hunting, capturing, killing, or attempting to harass, hunt, capture, or kill). In August 2014 and September 2016, an adult female was confirmed to have both flippers severely entangled in monofilament line. Attempts to capture the female manatee from the shore were unsuccessful. Agencies, community groups, and nongovernmental organizations in Puerto Rico consistently educate the public about improper waste disposal that can affect manatees.

In 2012, the Service completed a cooperative agreement with researchers from North Carolina State University (NCSU) to identify potential Manatee Protection Areas (MPAs) and address some of the core recommendations made by the most recent West Indian manatee 5-year review, such as the establishment of MPAs (USFWS 2007, p. 37). This collaboration led to the identification of several potential MPAs and serves to update the body of knowledge pertaining to key ecological resources used by manatees (*i.e.*, seagrass, shelter, freshwater) and the current status of threats to the Antillean manatee (Drew *et al.* 2012, pp. 1, 33–

34). MPAs serve to prevent the take of one or more manatees (USFWS 1979). The MPA selection criteria considered key manatee resources (*i.e.*, seagrass, shelter, freshwater), manatee aerial surveys, and areas where take can be minimized. After expert elicitation and a thorough literature review, available data were spatially analyzed and described to reflect manatee use and habitat preference.

Federal MPAs have not been designated in Puerto Rico, and the PRDNER does not have a specific manatee area regulation like the State of Florida's Manatee Sanctuary Act of 1978 (FMSA), which allows for management and enforcement of boat speed restrictions and operations in areas where manatees are concentrated (F.A.C. 2016). Still, the PRDNER has the authority to establish boat speed regulatory areas marked with buoys wherever deemed necessary. For example, in 2014, the USFWS, PRDNER, and Reefscaping, Inc. finalized the installation of 100 manatee speed regulatory buoys throughout known important manatee use areas, and the PRDNER has a plan to install more buoys. In addition, the Navigation and Aquatic Safety Law for the Commonwealth of Puerto Rico (Law 430) was implemented in 2000 (PRDNER 2000). This law restricts boat speeds to 5 miles per hour within 150 feet (45 meters) from the coastline unless otherwise posted. However, the effectiveness of this law and State manatee speed regulatory buoys have not been appropriately assessed, and enforcement is limited (see Factor D).

In Puerto Rico, island-wide manatee aerial surveys have been conducted since the late 1970s. These aerial surveys provide the basis for island-wide distribution patterns and help to determine minimum population direct counts in some areas or throughout the island. Not all surveys were equal in terms of the area covered and time of year in which they were done. These direct counts identify a number of animals observed at the time of the survey and suggest that there are at least a specified number of manatees in the population. The Service recognizes that these counts do not accurately represent the total number of manatees in the population. Weather, other environmental factors (*e.g.*, water clarity), observer bias, and aerial survey space restrictions influence count conditions and affect detection probability and final count, thus likely the true number of individuals is underestimated. Furthermore, as in the Florida manatee aerial surveys, survey methods preclude any analysis of

precision and variability in the counts, and do not allow for the estimation of the apparent detection probability. In spite of the high variability between and within surveys, the data can be used to specify a minimum population direct count within a time period (one island-wide survey).

The most consistent surveys were conducted between 1984 and 2002 (USFWS CESFO Manatee Aerial Surveys 2015, unpubl. data). However, methods used provided only a direct count and did not allow for a more reliable estimate of population size with detection probabilities (Pollock *et al.*, 2013, p. 2). Hence, estimates of population size are likely biased low, and inferences from trend analyses are unreliable. The Service again partnered with researchers from NCSU to conduct a review of aerial survey protocols and implement a sampling protocol that allows the estimation of a detection probability (Pollock *et al.*, 2013, pp. 2–4). In 2010, the Service partnered with Atkins (private consultant) to implement the new sampling protocol in order to provide more reliable population estimates. As explained in the Population Size section, a total of six island-wide aerial surveys were flown between 2010 and 2014 using the new methods (Atkins 2010–2014). We now have the most robust counts for Puerto Rico's Antillean manatee population. (Please refer to the Population Size section for additional information.)

Recovery actions are also implemented during technical assistance and project reviews. Any action or project with a Federal nexus (*e.g.*, Federal funds, permits, or actions) requires a consultation with the Service under section 7 of the Act. During the consultation process, the Service identifies conservation measures to avoid and minimize possible effects of proposed actions or projects. We review numerous projects each year pertaining to the manatee, such as dredging, dock and marina construction, coastal development, marine events (*i.e.*, high-speed boat races), and underwater and beach unexploded ordnance, among others. The Service has developed Antillean manatee conservation measures guidelines specific to Puerto Rico. For example, we have worked with the U.S. Coast Guard to develop and implement standard permit conditions for boat races, such as observer protocols.

South Florida Multi-Species Recovery Plan, West Indian Manatee

The South Florida Multi-Species Recovery Plan, West Indian Manatee

element, was adopted on August 18, 1999, by the Service (USFWS 1999, entire). This ecosystem-based recovery plan is intended to recover listed species and to restore and maintain the biodiversity of native plants and animals in South Florida. The plan is not intended to replace existing recovery plans but rather to enhance recovery efforts (USFWS 1999, p. 3). Inasmuch as manatees are a component of South Florida ecosystems, this plan included species information and recovery tasks from the then-current Florida manatee recovery plan, which was the Service's 1996 Florida Manatee Recovery Plan (USFWS 1996, entire). Because the 1996 Florida Manatee Recovery Plan was revised in 2001, the South Florida Multi-Species Recovery Plan, West Indian Manatee element became obsolete. However, the 2001 Florida Manatee Recovery Plan includes tasks that address manatee conservation throughout this subspecies' range, including in South Florida.

Manatee recovery activities addressed in the south Florida region include a Comprehensive Everglades Restoration Plan (CERP) Task Force that addresses CERP tasks related to manatee conservation, an Interagency Task Force for Water Control Structures that minimizes manatee deaths associated with water control structures, and efforts to protect the manatees' south Florida winter habitat (FWC 2007, pp. 63, 196).

The CERP Task Force developed guidelines for manatee protection during CERP-related construction activities. The guidelines address culvert and water control structure installation, potential thermal effects of Aquifer Storage and Recovery wells, potential manatee entrapment in canal networks, and in-water construction effects. The Task Force evaluated proposed changes to existing canal systems and the construction of new structures planned for CERP implementation and recommended measures to minimize effects on manatees. The measures have been implemented and are in effect (FWC 2007, p. 196).

Water control structures are mostly found in south Florida and are a predominant means for controlling flooding in the region. Water control structures primarily include flood gates and navigation locks that allow vessel passage through dams and impoundments, such as those associated with Lake Okeechobee. Manatees travel through these structures and are occasionally killed in gate crushings and impingements. Manatee protection devices have been installed on most

structures known to have killed manatees, and the number of deaths has been reduced (FWC 2007, p. 63). For the period 1998–2008, the average annual number of structure-related deaths was 6.5 deaths. This number was reduced to 4.2 deaths per year from 2009–2014 (FWC 2007, pp. 194–195; FWC FWRI Manatee Carcass Salvage Database 2016, unpubl. data).

Important warm-water wintering sites for manatees in south Florida include power plant discharges, springs, and passive warm-water sites (sites characterized by warm-water inversions and other features). State and Federal rules have been adopted for all power plant discharges in south Florida that limit public access during the winter (FWC 2007, pp. 235–238; USFWS 2007, pp. 71–79). Coincidentally, a majority of the significant power plants used by wintering manatees have been repowered and have projected lifespans of about 40 years (Laist *et al.*, 2013, p. 10). The loss of a passive warm-water site due to restoration activities, the Port of the Islands warm-water basin, is being addressed through the construction of an alternate warm-water site downstream of the original site (Dryden 2015, pers. comm.).

Florida Manatee Recovery Plan

We published the current Florida Manatee Recovery Plan on October 30, 2001 (USFWS 2001). This recovery plan includes four principal objectives: (1) Minimize causes of manatee disturbance, harassment, injury, and mortality; (2) determine and monitor the status of manatee populations; (3) protect, identify, evaluate, and monitor manatee habitats; and (4) facilitate manatee recovery through public awareness and education. To help achieve these objectives, the plan identifies 118 recovery implementation tasks. Important tasks include those that address the reduction of watercraft collisions and the loss of warm-water habitat.

Recovery Objective 1. Minimize causes of manatee disturbance, harassment, injury, and mortality. Tasks identified under this objective include: (1) Conducting reviews of permitted activities; (2) minimizing collisions between manatees and watercraft; (3) enforcing manatee protection regulations; (4) assessing and minimizing mortality caused by large vessels; (5) eliminating water control structure deaths; (6) minimizing fisheries and marine debris entanglements; (7) rescuing and rehabilitating distressed manatees; and (8) implementing strategies to minimize manatee harassment.

Task 1. Conduct reviews of permitted activities. The Service conducts reviews of coastal construction permit applications to minimize impacts to manatees and their habitat; reviews high-speed marine event permit applications to minimize the effect of concentrated, high-speed watercraft events on manatees; and reviews National Pollution Elimination Discharge Elimination System (NPDES) permits to ensure that existing, significant discharges do not adversely affect manatees and ensure that no new attractant discharges are created.

The State of Florida requires counties to develop manatee protection plans (MPPs). These are county-wide plans for the development of boat facilities (docks, piers, dry-storage areas, marinas, and boat ramps) that specify preferred locations for boat facility development based on an evaluation of natural resources, manatee protection needs, and recreation and economic demands. MPPs are reviewed by FWC and the Service and, when deemed adequate, are used to evaluate boat access projects. When proposed projects are consistent with MPPs, permitting agencies authorize the construction of facilities in waters used by manatees. Currently, all of the original 13 counties required to have MPPs have plans, as well as Clay, Levy, and Flagler counties. Charlotte County is also preparing an MPP.

The Service developed programmatic consultation procedures and permit conditions for new and expanding watercraft facilities (e.g., docks, boat ramps, and marinas) as well as for dredging and other in-water activities through an effect determination key with the U.S. Army Corps of Engineers and State of Florida (the "Manatee Key") (recently revised in 2013). The Manatee Key ensures that watercraft facility locations are consistent with MPP boat facility siting criteria and are built consistent with MPP construction conditions. The Service concluded that these procedures constitute appropriate and responsible steps to avoid and minimize adverse effects to the species and contribute to recovery of the species.

The Service has worked with the U.S. Coast Guard and State agencies to develop and implement standard permit conditions for high-speed marine event permits. These conditions require that events take place at locations and times when few manatees can be found at event locations and require event observer programs. Observer programs place observers in locations in and around event sites; these observers

watch for manatees and shut events down when manatees enter event sites.

The Florida Department of Environmental Protection (FDEP) issues and renews NPDES permits for power plants, desalination plants, wastewater treatment plants, and other dischargers that affect manatees. The FWC, the Service, and others review these actions. These reviews ensure that discharges identified as beneficial to manatees continue to operate in a way that does not adversely affect manatees and seek to modify or eliminate those discharges that adversely affect manatees. In particular, these reviews prevent the creation of new sources of warm water and drinking water, known manatee attractants.

Task 2. Minimize collisions between manatees and watercraft. See discussion of watercraft collisions under Factor E, below. Ongoing efforts to minimize collisions between manatees and watercraft include the adoption of manatee protection areas that require boat operators to slow down or avoid sensitive manatee use areas. By requiring boats to slow down, manatees are better able to evade oncoming boats and boat operators are better able to see manatees and prevent collisions. Protected areas minimize the take of manatees by harassment in manatee wintering areas, resting areas, feeding areas, travel corridors, and other important manatee use sites. Manatee protection areas have been adopted in 26 Florida counties by the State of Florida, local communities, and the Service. Manatee protection areas were first adopted in the late 1970s, and additional areas continue to be adopted, as needed. For example, FWC recently adopted new protection areas in western Pinellas County (68C-22.016).

Task 3. Enforce manatee protection regulations. Service and State efforts to reduce the number of watercraft collisions with manatees rely on enforced, well-defined, and designated MPAs. Integral to these efforts are an adequate number of law enforcement officers to patrol and enforce these areas. Federal, State, and local law enforcement officers enforce these measures; Federal officers can enforce State regulations, and State officers can enforce Federal regulations. Officers can only enforce areas that are properly marked by well-maintained signs and buoys. Maintenance of these markers requires significant, continuing funding to ensure the presence of enforceable protection areas.

It is difficult to ascertain the adequacy of enforcement efforts. Data concerning dedicated officer hours on the water and numbers of citations written are

confounding. For example, many dedicated officer hours on the water address diverse missions, and it is not possible to identify how many of these hours are devoted to manatee enforcement and how many hours are dedicated to other missions. Boater compliance assessments provide another measure to assess adequacy. Boater compliance varies by waterway, with some waterways experiencing 85 percent compliance rates and others as little as 14 percent (Gorzelay 2013, p. 63). Average boater compliance throughout Florida is 54 percent (Shapiro 2001, p. iii). An enforcement presence generally ensures a higher compliance rate (Gorzelay 2013, p. 34).

Task 4. Eliminate water control structure deaths. As discussed below, entrapment and crushing in water control structures was first recognized as a threat to manatees in the 1970s (Odell and Reynolds 1979, entire), and measures were immediately implemented to address manatee mortality. While initial measures were mostly ineffective, recent advances in protection/detection technology have nearly eliminated this threat to Florida manatees. In 2014, the 5-year average for manatee deaths at structures and locks was 4.2 manatee deaths per year as compared to 6.5 manatee deaths per year during the preceding 20 years (FWC FWRI Manatee Carcass Salvage Database, 2016, unpubl. data).

Task 5. Minimize fisheries and marine debris entanglements. Fishing gear, including both gear in use and discarded gear (i.e., crab traps and monofilament fishing line), are a continuing problem for manatees. To reduce this threat, a manatee rescue program disentangles manatees, derelict-crab-trap removal programs and monofilament recycling programs remove gear from the water, and extensive education and outreach efforts increase awareness and promote sound gear disposal activities. See Factor E for additional information. Because of continued and ongoing fishing into the foreseeable future, it is unlikely that this threat will be eliminated.

Task 6. Rescue and rehabilitate distressed manatees. Distressed manatees are rescued throughout the southeastern United States. Rescuers include the State of Florida, other range States, and numerous private organizations. Each year these rescuers assist dozens of manatees that present with a variety of stresses. Significant causes of distress include watercraft collisions, fishing gear entanglements, calf abandonment, and exposure to cold and red tide brevetoxins. Many animals are treated and released in the field, and

others with significant needs are taken to one of three critical care facilities for medical treatment. A majority of manatees rescued through this program are successfully released back into the wild (USFWS Captive Manatee Database, 2016, unpubl. data).

Task 7. Implement strategies to minimize manatee harassment. See discussion of harassment under Factor B, below. Federal and State regulations prohibiting harm and harassment (including provisioning) are in effect and enforced (see Supplemental Document 2 in Docket No. FWS–R4–ES–2015–0178). Extensive outreach efforts encourage proper viewing practices and include the efforts of the Service, tour guides, and others and include various outreach materials. In areas with large aggregations of manatees, the Service and FWC have designated manatee sanctuaries and no-entry areas where waterborne activities known to take manatees are prohibited. When commercial manatee viewing activities occur on National Wildlife Refuges, businesses are required to obtain permits that restrict their activities to prevent harassment from occurring.

Recovery Objective 2. Determine and monitor the status of manatee populations. Tasks identified under this objective include: (1) Conducting status reviews; (2) determining life-history parameters, population structure, distribution patterns, and population trends; (3) evaluating and monitoring causes of mortality and injury; and (4) defining factors that affect health, well-being, physiology, and ecology. Research projects that support this objective include aerial surveys, a carcass salvage program, a photo-identification program, telemetry studies and others.

Recovery Objective 3. Protect, identify, evaluate, and monitor manatee habitats. Tasks identified under this objective include: (1) Protecting, identifying, evaluating, and monitoring existing natural and industrial warm-water refuges and investigate alternatives; (2) establishing, acquiring, managing, and monitoring regional protected-area networks and manatee habitat; (3) ensuring that minimum flows and levels are established for surface waters to protect resources of importance to manatees; and (4) assessing the need to revise critical habitat. Important habitats for the Florida manatee include winter sources of warm water, forage, drinking water, travel (or migratory) corridors, and sheltered areas for resting and calving. The most significant of these include winter warm-water and winter foraging

areas. Florida manatees are at the northern limit of the species' range and require stable, long-term sources of warm water during cold weather and adjacent forage to persist through winter periods. Historically, manatees relied on the warm, temperate waters of south Florida and on natural warm-water springs scattered throughout their range as buffers to the lethal effects of cold winter temperatures. Absent warm water, prolonged exposure to cold water temperatures results in debilitation and/or death due to "cold stress syndrome" (Bossart *et al.*, 2004, p. 435; Rommel *et al.*, 2002, p. 4). Several areas in this recovery effort summary (such as in Objective 1 above) show efforts that we are taking to protect these sites and continue to implement recovery for the West Indian manatee.

Recovery Objective 4. Facilitate manatee recovery through public awareness and education. Tasks include: (1) Developing, evaluating, and updating public education and outreach programs and materials; (2) coordinating the development of manatee awareness programs and materials to support recovery; and (3) developing consistent manatee viewing and approach guidelines, utilizing the rescue, rehabilitation, and release program to educate the public.

Manatee conservation relies on significant education and outreach efforts. While the Service and State of Florida engage in these efforts, many diverse stakeholders also participate in these activities. Counties, municipalities, boating organizations, manatee advocacy groups, environmental organizations, and others produce and distribute outreach materials through a variety of media. An active manatee rescue and rehabilitation program displays manatees that are being rehabilitated and promotes conservation through display and educational programs.

Significant education and outreach efforts include Crystal River National Wildlife Refuge's (NWR) manatee kiosks, located at all water access facilities in Kings Bay, Florida, and adjoining waters. The kiosk panels provide the public with information about manatees and guidance addressing manatee viewing activities. The kiosks are supported by Refuge-linked web media that provide additional information about manatee harassment and user activities (Vicente 2015, pers. comm.). SeaWorld Orlando, through its permitted display of rehabilitating manatees, reaches out to unprecedented numbers of visitors. The display addresses the park's rescue and rehabilitation program and informs the

public about threats to manatees and what the public can do to reduce the number of manatees affected by human activities (SeaWorld Parks and Entertainment, 2016; see: <http://seaworld.org/en/animal-info/animal-infobooks/manatee>).

Recovery Plan for the Puerto Rican Population of the West Indian (Antillean Manatee)

The 1986 Recovery Plan does not establish quantitative recovery criteria to describe a sustainable population of manatees in Puerto Rico. It does, however, direct the Service to determine and satisfy the recovery criteria that are based on mortality and abundance trends and a minimum population size and ensure that adequate habitat protection and anti-poaching measures are implemented (USFWS 1986, Executive Summary). The Recovery Plan also specifies that delisting should occur when the population is large enough to maintain sufficient genetic variation to enable it to evolve and respond to natural changes and stochastic or catastrophic events. As previously explained, the Service has made substantial progress implementing a number of recovery actions, and some other actions are in progress.

In the absence of historical data (previous to the late 1970s) that identifies a clear goal for population size, and population parameters such as adult survival rates, which have the highest potential effect on growth rate (Marsh *et al.* 2011, p. 255), it is not possible to stipulate with precision the population size and vital rates that should characterize a recovered, self-sustaining population of manatees in Puerto Rico. Hunter *et al.* (2012, p. 1631) describes low genetic diversity for the Puerto Rico population of Antillean manatees, and cites other authors that suggest at least 50 genetically effective breeders (~500 individuals) are needed to prevent inbreeding depression for short-term population survival, while other researchers suggest population levels in the upper hundreds to thousands in order to maintain evolutionary potential. The average estimate of 532 for the manatee population in Puerto Rico, ranging from a minimum of 342 to a maximum of 802 individuals (Pollock *et al.* 2013, p. 8), is just within the numbers of a viable population mentioned by Hunter *et al.* (2012, p. 1631). The Service considers the Puerto Rico Antillean manatee population as stable, as it did in the previous status assessment (USFWS 2007, p. 33). Past and current aerial surveys also serve to demonstrate that the island-wide size and distribution of

the Puerto Rico manatee population does not seem to have changed. In the 45 years that have passed since the species was listed, it can be said that, according to the population numbers and maintenance of the population's island-wide distribution, the Puerto Rico manatee population has shown resilient attributes for long-term persistence in spite of past and present natural and anthropogenic threats.

Major tasks for recovery include reduction of human-caused mortality, habitat protection, identification and control of any contaminant problems, and research into manatee behavior and requirements to direct future management (USFWS 1986, Executive Summary). The Service has already identified important manatee habitat and will continue to use and pursue new strategies towards manatee habitat protection together with the PRDNER. Planned research in the near future will focus on manatee health assessments to gain baseline information into potential contaminant problems and disease.

Florida Manatee Recovery Plan

The Florida Manatee Recovery Plan (USFWS 2001, entire) identifies criteria for downlisting the Florida subspecies from endangered to threatened and

criteria for removing the subspecies from the List of Endangered and Threatened Wildlife. Both downlisting and delisting criteria include Listing/ Recovery Factor criteria and demographic criteria. Criteria can be found in Supplemental Document 1 in Docket No. FWS-R4-ES-2015-0178.

A 2004 review of the demographic criteria noted that these criteria are largely redundant and that (1) no manatee population can grow at a fixed rate indefinitely as limiting resources will eventually prevent the population from continuing to grow at that rate and the population will ultimately reach stability; (2) the reproductive criterion is difficult to estimate and the modeling results are difficult to interpret; and (3) demographic recovery criteria should be linked to statistically rigorous field data, as well as to the specific population models that are intended for their evaluation. See previous review of demographic data in Florida Manatee Recovery Plan Objective 3. Absent demographic criteria for the Florida manatee, we rely on more recent demographic analyses and a threats analysis of the five listing factors to support our reclassification, instead of the existing recovery criteria.

Downlisting Criteria Listing/Recovery Criterion A

1. Identify minimum flow levels for important springs used by wintering manatees.

Minimum spring discharge rates that consider estimated flow rates necessary to protect water supply and support overwintering manatees have been identified for some springs used by manatees. Minimum flows were established at Blue Spring, Fanning Spring, Manatee Spring, the Weeki Wachee River system and Weeki Wachee Springs, Homosassa Springs, and Chassahowitzka Spring. Florida water management districts have scheduled, or are in the process of scheduling, minimum flow requirements for the remaining springs (see Table 3). These regulations will ensure that adequate flows are met to support manatees. To date, minimum flows have been adopted for six springs, and efforts are under way to develop flows for two additional springs, including the Crystal River springs complex. The status of efforts to establish minimum flows for eight remaining springs are unknown.

TABLE 3—PROJECTED TIMEFRAMES FOR ESTABLISHING SPRING MINIMUM FLOWS
[From water management districts]

| Spring | Adopted/year proposed for adoption | Notes |
|--|------------------------------------|--------------------------|
| EAST COAST, FLORIDA | | |
| Upper St. Johns River Region: | | |
| Blue Spring (Volusia County) | ADOPTED. | |
| Silver Glen Springs (Marion County) | UNKNOWN | To be initiated in 2017. |
| DeLeon Springs (Volusia County) | UNKNOWN | Initiated in 2016. |
| Salt Springs (Marion County) | UNKNOWN. | |
| Silver Springs (Marion County) * | UNKNOWN | To be initiated in 2017. |
| Atlantic Region: | | |
| No springs present | N/A. | |
| WEST COAST, FLORIDA | | |
| Northwest Region: | | |
| Crystal River System and Kings Bay Springs (Citrus County) | 2017. | |
| Homosassa River Springs (Citrus County) | ADOPTED | Revision due 2019. |
| Weeki Wachee/Mud/Jenkins Creek Springs (Hernando County) | ADOPTED. | |
| Manatee/Fanning Springs (Dixie County) | ADOPTED. | |
| Wakulla/St. Mark's Complex (Wakulla County) | 2021. | |
| Ichetucknee Springs Group (Columbia County) | UNKNOWN | Initiated in 2013. |
| Chassahowitzka River Springs (Citrus County) | ADOPTED | Revision due 2019. |
| Rainbow Spring (Marion County) * | UNKNOWN. | |
| Southwest Region: | | |
| Warm Mineral Springs (Sarasota County) | UNKNOWN. | |
| Spring Bayou/Tarpon Springs (Pasco County) | UNKNOWN. | |
| Sulphur Springs (Hillsborough County) | ADOPTED. | |

* At present, largely inaccessible to manatees.

2. Protect a network of warm-water refuges as manatee sanctuaries, refuges, or safe havens.

A network of warm-water sanctuaries/no-entry areas and refuges exists throughout much of the Florida manatee's range. Along the Atlantic Coast, all four of the primary power plant discharges have been designated as manatee protection areas and many lesser warm-water sites, such as the Coral Gables Waterway, are protected as well. In the St. Johns River region, Blue Springs is in public ownership, and the spring and run are protected. The four primary west Florida power plants are designated as sanctuaries/no-entry areas, and significant warm-water springs in Citrus County are designated as sanctuaries. Efforts are ongoing to improve conditions and management of southwest Florida's Warm Mineral Springs. See Supplemental Document 2 in Docket No. FWS-R4-ES-2015-0178.

3. Identify foraging sites associated with the network of warm-water sites for protection (see Criteria 4 below).

4. Identify for protection a network of migratory corridors, feeding areas, and calving and nursing areas.

Extensive research, including aerial surveys and field studies of tagged manatees, has identified many of the foraging sites associated with the Florida manatee's warm-water network, as well as migratory corridors, resting areas, and calving and nursery areas. In many of these areas, manatee protection area measures are in place to protect manatees from watercraft collisions. State and Federal laws afford some protection against habitat loss in these areas (see Factor D discussion below). For example, the Clean Water Act ensures that discharges into waterways used by manatees are not detrimental to grass beds and other habitat features used by manatees.

Downlisting Criteria, Listing/Recovery Criterion B

1. Address harassment at wintering and other sites to achieve compliance with the Marine Mammal Protection Act (MMPA) and the Endangered Species Act and as a conservation benefit to the species.

To address harassment at wintering and other sites, the Service and State have designated manatee sanctuaries and no-entry areas to keep people out of sensitive wintering sites. Federal, State, and local law enforcement officers enforce these restrictions and address any violations that occur outside of the protected areas.

Kings Bay, located in Crystal River, Florida, is a world-renowned destination for manatee viewing

activities. Commercial viewing activities began in the early 1970s, and today's activities generate millions of dollars in income to the region. Harassment associated with this activity has been addressed through the purchase of properties of sensitive manatee habitat, the designation of manatee sanctuaries and protected areas, the creation and operation of the Crystal River NWR in 1983, extensive outreach activities, and enforcement of regulations prohibiting manatee harassment. The Service adopted the Kings Bay Manatee Refuge rule in 2012 (77 FR 15617; March 16, 2012) to expand existing sanctuary boundaries, better address manatee harassment occurring off refuge property, and minimize watercraft-related deaths in Kings Bay. The rule identifies specific prohibitions that can be enforced through the issuance of citations (USFWS 2012). Crystal River NWR recently adopted measures to help prevent any harassment in Three Sisters Springs and is considering further measures as the situation requires.

Downlisting Criteria, Listing/Recovery Criterion C

At the time the recovery plan was developed, there was no data indicating that disease and predation was a limiting factor, thus no reclassification (downlisting) criteria for this threat was deemed necessary and, consequently, no delisting criteria were established.

Downlisting Criteria, Listing/Recovery Criterion D

Specific actions are needed to ensure the adequacy of existing regulatory mechanisms as addressed below.

1. Establish minimum flows consistent with Listing/Recovery Criterion A.

See discussion under Listing/Recovery Criterion A, above.

2. Protect important manatee habitats.

Important manatee habitats have been identified and protected through a variety of means. Manatee habitat is protected through land acquisition and various Federal and State laws. Important acquisitions include Blue Spring in Volusia County and the Main Spring, Three Sisters Springs, and Homosassa Springs in Citrus County. Land managers for these sites manage habitat to benefit manatees. To ensure that these habitats and habitat in public waterways are protected, regulatory agencies such as the Army Corps of Engineers, the Florida Department of Environmental Protection (FDEP), State water management districts, and others review permit applications for activities that could adversely modify or destroy habitat and require permittees to avoid

or minimize impacts. Discharges and runoff that could affect habitat are addressed through the Clean Water Act's NPDES permitting program, administered by FDEP with oversight from the Environmental Protection Agency (EPA).

3. Reduce or remove unauthorized take.

To address harassment at wintering and other sites, the Service and State have designated manatee sanctuaries and no-entry areas where manatees rest and shelter from the cold free from human disturbance. Federal, State, and local law enforcement officers enforce these restrictions and address any violations that occur outside of the protected areas.

Downlisting Criteria, Listing/Recovery Criterion E

1. Create and enforce manatee safe havens and/or Federal manatee refuges.

To date, the Service and State have created more than 50 manatee protection areas, and protection area measures are enforced by the Service, U.S. Coast Guard, FWC, and local law enforcement officers. The Service's Office of Law Enforcement has dedicated manatee law enforcement officers in Florida to address manatee enforcement issues. Service National Wildlife Refuges have refuge law enforcement officers who enforce on and off refuge manatee regulations as time and resources allow.

2. Retrofit one half of all water control structures with devices to prevent manatee mortality.

Water control structures are flood gates that control water movement and navigation locks that allow vessel passages through dams and impoundments, such as those associated with Lake Okechobee. Manatees travel through these structures and are occasionally killed when structures are closed or opened. Manatee protection devices installed on these structures prevent manatee deaths. See discussion in "South Florida Multi-Species Recovery Plan, West Indian Manatee."

To date, all but one water control structure has been retrofitted with manatee protection devices. Efforts are ongoing to complete installation at the remaining site. This action has significantly reduced the impacts of control structure related manatee injury and death; such injuries or deaths are now relatively rare.

3. Draft guidelines to reduce or remove threats of injury or mortality from fishery entanglements and entrapment in storm water pipes and structures.

Some measures have been developed to reduce or remove threats of injury or mortality from fishery entanglements, and steps are being taken to minimize entrapments in storm water pipes and structures. Measures to address fishery entanglements include monofilament recycling programs and derelict crab trap removals; these two programs address primary sources of manatee entanglement. Storm water pipes and structures large enough for manatees to enter are designed to include features that prohibit manatee access. Existing structures are re-fitted with bars or grates to keep manatees out. In the event of entanglements or entrapments, the manatee rescue program intervenes. There are very few serious injuries or deaths each year due to these causes. Guidelines to minimize gear-related entanglements associated with netting activities have been developed. Similarly, guidance has been developed to reduce entrapment in storm water pipes and structures. See Factor E for additional information.

Remaining tasks to address the recovery of the Florida manatees include:

- Continue to address pending changes in the manatees' warm-water network (develop and implement strategies).
- Support the adoption of minimum flow regulations for remaining important springs used by manatees.
 - Protect and maintain important manatee habitat.
 - Continue to maintain, adopt, and enforce manatee protection areas as appropriate (continue to fund law enforcement activities and manatee protection area marker maintenance).
 - Continue to address instances of manatee harassment.
 - Continue to review and address warm- and freshwater discharges and boat facility projects that affect manatees.
 - Maintain and install manatee protection devices on existing and new water-control structures.
 - Continue manatee rescue and rehabilitation efforts, including efforts to minimize the effect of manatee entanglements and entrapments.
 - Continue to monitor manatee population status and trends.
 - Continue manatee education and outreach efforts.

The Florida manatee population, estimated at about 6,350 manatees, is characterized by good adult survival rate estimates and positive breeding rates. The recently updated threats analysis continues to identify losses due to watercraft and projected losses of

winter warm-water habitat as the greatest threats to this subspecies (Runge *et al.*, 2015). The designation, marking, and enforcement of manatee protection areas in areas where manatees are at risk of watercraft collision, in addition to outreach efforts focused on minimizing this threat, addresses this concern. Numerous efforts have been made and are ongoing to protect and enhance natural warm-water sites used by wintering manatees. Addressing the pending loss of warm-water habitat from power plant discharges remains a priority activity needed to achieve recovery.

Summary of Comments

In the proposed rule published on January 8, 2016 (81 FR 1000), we requested that all interested parties submit written comments on the proposal by April 8, 2015. On January 13, 2016, the date closing the comment period was corrected to read April 7, 2016 (81 FR 1597). We also held a public hearing on February 20, 2016, at the Buena Vista Palace Conference Center in Orlando, Florida. The Service also contacted appropriate Federal and State agencies, scientific experts and organizations, tribes, and other interested parties and invited them to comment on the proposal.

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited independent expert opinion from 10 knowledgeable individuals with scientific and conservation expertise that included familiarity with the two subspecies of the West Indian manatee and their habitat, biological needs, and threats. We received responses from four of the peer reviewers. We reviewed all comments we received from the peer reviewers for substantive issues and new information regarding the status of the West Indian manatee. None of the peer reviewers who responded agreed with the proposal to reclassify the manatee as threatened (see Peer Reviewer comment section below for more details).

Section 4(b)(5)(A)(ii) of the Act states that the Secretary must give actual notice of a proposed regulation under section 4(a) to the State agency in each State in which the species is believed to occur, and invite the comments of such agency. Section 4(i) of the Act states, "the Secretary shall submit to the State agency a written justification for his failure to adopt regulations consistent with the agency's comments or petition." The Service submitted the proposed regulation to the two State and territorial agencies where most West Indian manatees in the United States

occur: Florida and Puerto Rico. We also sent the proposed regulation to the States in the remainder of the manatee's range, including Texas, Louisiana, Mississippi, Alabama, Georgia, South Carolina, North Carolina, and Virginia. We received written comments from the Florida Fish and Wildlife Conservation Commission (FWC). We did not receive official comments from the Puerto Rico Department of Natural and Environmental Resources (PRDNER). One of the peer reviewers is also a biologist in the PRDNER Marine Mammal Stranding Program. The other States did not respond to our request. The FWC agreed with our determination as it relates to the Florida subspecies. The PRDNER peer reviewer did not offer support for this determination as it relates to the Antillean subspecies and provided comments.

We requested comments from tribes found within the range of the Florida manatee and received responses from the Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida. The Seminole Tribe had no comments on the proposed rule. The Miccosukee Tribe stated that it disagreed with the proposed rule. Specifically, the Miccosukee Tribe stated that it was concerned about the long-term survival of the species due to its cultural significance and that threats to the manatees' habitat (including warm-water habitat and loss of sea grass) must be mitigated before the species can be responsibly downlisted.

In an effort to encourage international comments, we advised species experts and governmental representatives in other countries within the species' range about the Service's status review and requested that they send information about Antillean manatees. The Service made this contact through emails sent to species experts identified in UNEP's Regional Management Plan for the West Indian manatee (2010, Appendix III). We also advised attendees at the December 8–13, 2014 Cartagena Convention that the Service was evaluating the status of the West Indian manatee and was requesting additional information to assist in its review. In addition, during the Seventh International Sirenian Symposium in December 2015, the Service announced that the 12-month finding would be published in January 2016. The Symposium included a significant number of international manatee experts, researchers, and managers, including those with expertise in West Indian manatees. We received very few responses from these sources regarding manatees outside the United States.

In all, we received 3,799 public comments, including petitions signed by 75,276 individuals. The petitions did not include substantive comments, but simply included statements to the effect that those signing them did not support the Service's proposed reclassification of the West Indian manatee. We identified 59 substantive comments, from all sources, to which we respond below.

State, Federal, Tribal, International, and Peer Reviewer Comments

(1) *Comment:* Both the FWC and Miccosukee Tribe shared their concerns that there is still work to be done to ensure that the conservation gains we have made to help make this determination are maintained. In particular, one important task is restoring and protecting a sustainable network of warm-water habitat for the Florida subspecies.

Response: For the southeastern United States, we identified the lack of protection or security of warm-water habitat as one of the two remaining principal threats in the proposed rule (reference 81 FR 1000 and 81 FR 1016) for the West Indian manatee. We look forward to the progress we can make with our conservation partners to ensure we preserve sustainable spring flows and good water quality for key warm-water sites that manatees depend on in Florida. We support restoration efforts and planning that is under way to make more springs accessible to manatees and protect habitat for the long term.

(2) *Comment:* FWC expressed support for the manatee protections that are currently in place and shared that they are important factors that have brought us to this point. They stated that maintaining these existing protection measures and other key recovery actions will be essential in sustaining manatees and moving them closer to recovery.

Response: We agree. The Service is working diligently with long-time partners including the FWC, local and city governments, and law enforcement at many levels to continue to reduce the few remaining threats to the Florida subspecies such as watercraft collisions or boat strikes. The substantial reduction in watercraft collisions and boat strikes will be critical to the recovery of the manatee. When this final rule becomes effective, all protective measures such as manatee protection areas, manatee sanctuaries, and no wake and speed limit zones will remain in place.

(3) *Comment:* The Marine Mammal Commission (MMC) commented that, because Florida and Antillean manatees constitute genetically and

morphologically distinct subspecies, they merit independent consideration for purposes of listing decisions under the Act. They also noted that improvement in the status of the Florida subspecies and reduction in the threats it faces should have no bearing on a listing decision for the Antillean subspecies.

Response: The 12-month finding and proposed rule addressed the petition we received requesting that the West Indian manatee be reclassified from endangered to threatened under the Act. The petition received was for the listed entity, which is the West Indian manatee. As such we conducted an assessment of the status of the species as a whole. Therefore, our proposed rule and the analysis of status and threats addressed the entire listed entity. The assessment found that the species as a whole warrants listing as threatened. The Service will continue to monitor the status of the species, including the status of both subspecies.

(4) *Comment:* The MMC maintained that, in order to support the proposed action to reclassify the species from endangered to threatened, FWS needs to show that the taxon's status at the time of the original listing was in error given new information, that the taxon's abundance has increased to the point where it no longer is in danger of extinction, or that, even if the taxon's population size has not grown appreciably, the threats to its existence have been abated to the point where they no longer present a risk of extinction. The Service's analyses need to focus on why the status of the species, as a whole, has improved to the point, and/or that threats have been reduced to the point, where it no longer is in danger of extinction throughout all or a significant portion of its range.

Response: The factors for listing, delisting, or reclassifying species are described at 50 CFR 424.11. Based on the Service's analysis of the best available scientific and commercial data, the West Indian manatee has a relatively medium to large range-wide population with continuing threats that are being addressed to varying degrees. Although the species is not presently considered in danger of extinction (endangered), the population size, uncertainties and failure to address identified threats (including poaching, watercraft collisions, habitat loss and fragmentation, the loss of the Florida manatees' warm-water habitat, and others) make this species likely to become endangered in the foreseeable future (threatened), which we have determined is 50 years (see Summary of Factors Affecting the Species section).

The best available scientific and commercial data support our finding.

(5) *Comment:* The MMC reiterated its earlier recommendations that FWS (1) complete a review of the unprecedented manatee cold stress and red tide-related die-offs in recent years (*i.e.*, 2009–2013), (2) estimate past trends in the frequency of such die-offs and project those estimates into the future, and (3) assess the effects of anticipated power plant closures on the long-term viability of Florida manatees and the likelihood that natural warm-water refuges will be sufficient to support existing levels of manatees as refuges currently provided by power plants are lost.

Response: The Service relies on the Manatee Core Biological Model (CBM) (Runge *et al.* 2015) and other sources of information to evaluate the effect of the 2009–2013 die-off events, as well as to estimate the effect of similar occurrences in the future. The Service received a CBM update on September 28, 2016, wherein the modelers asserted that the Florida manatee population could withstand events similar to those of 2009–2013. The modelers planned to further evaluate the effect of future multiple events of varying magnitude. During the update, the modelers described a post- power plant discharge future whereby Florida manatees would persist, assuming measures were in place to protect natural and non-human dependent sources of winter warm water.

Peer Reviewer Comments

(6) *Comment:* A peer reviewer expressed concern about Castelblanco-Martínez *et al.*'s (2012) model assumption that the Antillean manatee population is a metapopulation. The peer reviewer stated that this assumption was invalid.

Response: The metapopulation assumption is supported by information that suggests that, while both genetic and geographical barriers exist within the West Indian manatee's range, there is genetic admixture and long-distance travel, even between the Florida and Antillean subspecies' range (García-Rodríguez *et al.* 1998, Vianna *et al.* 2006, Hunter *et al.* 2010, Nourisson *et al.* 2011). Thus, it is logical to assume a certain degree of interaction between some of the six subpopulations as described by Castelblanco-Martínez *et al.* (2012, p. 131). The Service recognizes that some interactions seem unlikely, and this assumption is captured by the model; for example, interactions between the Greater Antilles subpopulation (1) and the Brazil subpopulation (6) are unlikely to occur, in which case Castelblanco-

Martínez *et al.* (2012) assigned the lowest migration rate (1 percent).

In addition, Castelblanco-Martínez *et al.* (2012, p. 132) did not assume inbreeding depression based on the available information on the sporadic long-distance movements of manatees between some subpopulations. Furthermore, although there may be inbreeding accumulation in some populations, in Belize, there are no indications of decreased fitness (Hunter *et al.* 2010, p. 598); and, to our knowledge, in the rest of the range of the West Indian manatee, fitness is not decreased. Thus, whether or not the metapopulation assumption is invalid, our final rule decision would not be different. The metapopulation model is only one of several parameters we evaluated for the status review and this listing determination.

(7) *Comment:* A peer reviewer pointed out Hanski and Gilpin's (1991) observation that some metapopulations characterized by historical, continuous, spatial distribution are no longer functioning as metapopulations because of habitat fragmentation that causes the limited dispersal of individuals such that localized populations become extinct. The peer reviewer stated that this is what has happened to the Antillean manatee. The peer reviewer stated that, in the past, the manatee was present in the Lesser Antilles (Lefebvre *et al.* 2001) where it was driven to extinction and that the manatee has not re-established itself there because individuals no longer disperse into this region.

Response: The Service relied on Castelblanco-Martínez *et al.*'s (2012) model for the metapopulation of Antillean manatees as part of its best available information used to assess the status of the subspecies (see Comment 6). Although there are records that manatees did occur in the Lesser Antilles in historical times, manatees are generally considered to have been rare in that region and were potentially wanderers that moved among the islands of the Lesser Antilles (Lefebvre *et al.* (2001, p. 460).

(8) *Comment:* A peer reviewer observed that a PVA has not been conducted for both of the subspecies, or for the species throughout its range. A preliminary PVA conducted for the Antillean manatee indicated that the population is far from stable (Arriaga *et al.*, in Gómez *et al.*, 2012, entire.).

Response: The Service appreciates the Gómez *et al.* (2012) reference (unpublished report) and, after reviewing the new information, we maintain the model is consistent with our analysis that there is a small chance

that the Antillean manatee could become extinct in the next 50 years (foreseeable future). For example, the Gómez *et al.* (2012, pp. 75–76) model results show that the extinction risk in 100 years was only equal or greater than 10 percent when the manatee population sizes were 50 individuals or less, with a combination of some of the highest adult mortality and habitat loss values. We clarify that in the proposed rule we did not describe the Antillean manatee population as stable, but rather as declining throughout most of its range, based on the available information. As human populations within the species' range continue to grow (Marsh *et al.* 2012, p. 321) so too will resultant increases in human-related threats to manatees and the West Indian manatee population. Remaining and increasing human-related threats that, if not addressed, will likely lead the species towards being endangered in the foreseeable future include habitat loss, degradation, and fragmentation; watercraft collisions; poaching; and others. We will continue to monitor the status of human-related threats and the Florida subspecies.

(9) *Comment:* A peer reviewer stated that, based on recent studies in the Tabasco area of Mexico and in the rivers and lagoons of Chiapas and Campeche in the Gulf of Mexico, manatee counts are lower than previously thought. Accordingly, the Mexican manatee population could be lower than earlier estimates that relied on expert opinion and anecdotal information.

Response: We appreciate the additional information. In our proposed rule, we cited population estimates from UNEP (2010, p. 11), Castelblanco-Martínez *et al.* (2012, p. 132) and Martin *et al.* (2015, p. 44) and estimated the population for Mexico at 1,500 animals. The commenter stated that the population in Mexico was between 1,000 and 2,000 animals. This estimate is consistent with the referenced material and is noted in Table 1.

(10) *Comment:* A peer reviewer wrote that it is unfortunate that downlisting is being considered now for the West Indian manatee in Puerto Rico. The peer reviewer stated that “there are legal reasons for doing so, but ecologically and biogeographically, it does not make sense. The situations for the Antillean manatee and the Florida manatee are almost inverses of each other. Florida is the home base for *T.m. latirostris*, and there are sufficient data for population modeling to show that the population has grown. Puerto Rico is certainly not the home base for *T.m. manatus*, and the expert opinions and guesstimates from biologists in other countries

indicate that in the entire range of *T.m. manatus*, there might be as many manatees as there are in Florida. The discussion about *T.m. manatus* mortality on 81 FR 1004 seems oddly biased, as it leaves out deliberate and incidental take in nets, a major source of mortality in many countries outside of the U.S. and PR, as well as other sources of mortality. Perhaps this is a text organization problem, as there is more discussion about mortality on 81 FR 1007. There is great uncertainty about the status of *T.m. manatus* throughout its range.”

Response: The Service was petitioned to evaluate the status of the West Indian manatee across its entire range and not only the Antillean subspecies or the Puerto Rico population. We did not intend to imply in our proposed rule that the Puerto Rico population is the home base for the Antillean manatee population. The Puerto Rico population is, however, one of the populations for which more current and reliable information is available and one of the few populations within the species' range that is thought to be at least stable and for which threats such as poaching no longer occur. In addition, fisheries-related take of manatees in Puerto Rico is considered a minimal threat, given there are only four documented manatee fisheries-related deaths in 34 years (PRDNER unpubl data). In making our determination, the Service identified the different threats and challenges that affect each subspecies (Florida and Antillean). In addition, we also recognized that there is more uncertainty, with the Antillean manatee population numbers (Table 1) and threats, than with the Florida manatee population. Mortality is discussed in greater detail under the Summary of Factors Affecting the Species section of the proposed and this final rule. We specifically discussed mortality caused by nets under the *Fishing gear* section of Factor E.

(11) *Comment:* A peer reviewer stated that the basis for the proposed rule is the population estimate for the Florida manatee (6,350) and for the Antillean manatee in Puerto Rico (532). From those numbers, without a thorough PVA being conducted for the Antillean manatee in Puerto Rico, a conclusion is made that the numbers reflect a low percentage of this animal becoming extinct in the next 50 years. Again, the conclusion is being driven by the status and information of the Florida manatee. The information included for the Antillean manatee is only for those in Puerto Rico and lacks information for all other range countries. The estimate of 532 individuals for the manatee

population in Puerto Rico is an adjusted mean, which was recently calculated based on 2010 data. That number has a 95 percent equal area confidence interval (CI) of 342–802. Based on manatee sightings and the lack of knowledge by people living on our coasts regarding manatee presence, it is likely that the manatee population in Puerto Rico is on the low range of that CI. Having only 342 individuals, and considering threats, habitat degradation, illnesses, habitat displacement, and so on, this subspecies had a high percentage of going extinct in the next 50 years or at least ceasing to be viable.

Response: In making our determination, we evaluated and presented the best available information on the status and threats of the West Indian manatee across its entire range and not just the Florida and Puerto Rico populations. This information indicates that West Indian manatees are distributed across its entire range (see Table 1) and several of these populations are relatively large and have proven they can withstand stochastic events, such as extreme localized cold events. Based on two published population models (Castelblanco-Martínez *et al.* 2012; Runge *et al.* 2015) and a threats analysis, we concluded that there is a small chance that the West Indian manatee (not the Puerto Rico Antillean manatee population) could become extinct in the next 50 years and this species would retain its general distribution on the landscape. As such, the West Indian manatee (range wide) is not in danger of extinction (endangered), but rather, the species range-wide is likely to become endangered in the foreseeable future (50 years) (threatened). The peer reviewer also submitted an unpublished population model for the Antillean manatee (Arriaga *et al.*, in Gómez *et al.*, 2012, entire) that is consistent with our determination (see Comment 8). The commenter provides no additional information as to why the Puerto Rico population is likely to go extinct or cease to be viable within the next 50 years.

(12) *Comment:* A peer reviewer commented that the discussion on Puerto Rico's habitat threat focuses on the sea grass areas as the main manatee habitat. Although the proposed rule acknowledges that the data collected by PRDNER indicate that sea grasses are being severely impacted by anthropogenic actions, which leads to a decrease in sea grass density and habitat fragmentation, the information leads to the conclusion that sea grass is not a limiting factor, even when it is unknown how much sea grass is needed

to sustain a large manatee population. In addition, the discussion does not take into account that the scant research conducted until now regarding manatee feeding habitat in Puerto Rico suggests that the Antillean manatee might be a more specialized sea grass grazer than the Florida manatee (Lefebvre *et al.*, 2000). This characteristic might be true for the Antillean manatee throughout its range.

Response: The Service specified that, although the immediacy and magnitude of the degradation and loss of manatee habitat varies across the species' range, available manatee foraging habitat does not seem to be a limiting factor for the West Indian manatee, including Puerto Rico (Lefebvre *et al.* 2001, entire; Orth *et al.* 2006, p. 994; UNEP 2010, entire; Drew *et al.* 2012, p. 13). In addition, the commenter did not provide additional information that indicates that a seagrass or foraging area limitation or specialization is decreasing manatee fitness or causing manatee mortalities in Puerto Rico. The Service will continue to monitor research regarding manatee foraging behavior and potential effects of degraded foraging habitat on the manatee population.

(13) *Comment:* A peer reviewer noted that poaching is a major threat throughout most of the countries within the range of the Antillean manatee. This is a threat that could bring the species to extinction and was actually responsible for causing the extinction of populations in some countries. Poaching is a clear and present threat for the Antillean manatee and should not be discounted just because the Service is confident that initiatives being pursued will have a positive outcome. Furthermore, while foreign governments have instituted regulations to address poaching, it is widely acknowledged that some countries have few resources to enforce regulations and that these countries are unlikely to minimize this threat anytime soon.

Response: The Service has not discounted the threat of poaching and referenced Marsh *et al.* (2011, p. 265) to conclude that poaching is a major threat to the manatee population outside of the southeastern United States (which includes Puerto Rico). Some information suggests that manatees became extinct in a few islands in the Lesser Antilles, likely due to hunting. However, records documenting historical manatee presence suggest that they were rare in the region and were potentially wanderers that moved among the islands of the Lesser Antilles (Lefebvre *et al.*, 2001, p. 460). Currently, we believe that even though poaching may still occur in some regions, it no

longer occurs in a few regions, and has been reduced in others (UNEP 2010, entire; Marsh *et al.* 2011, p. 386). However, the Service recognizes that some of the small and declining populations of the Antillean manatee subspecies are most likely not able to sustain continued illegal poaching. The Service will continue to gather information on the poaching threat to West Indian manatees and will reach out to these countries to assist them with their efforts to address this and other threats as resources permit.

(14) *Comment:* A peer reviewer said that the proposed rule stated that the inadequacy of existing regulatory mechanisms is a moderate threat to the West Indian manatee. The reviewer further stated that, "from that analysis, [if] we take out the considerations that apply only to the Florida manatee, where many measures are in place, we could conclude this is a significant threat. As mentioned throughout these comments, the lack of implementation, enforcement and oversight make many of the conservation strategies inefficient or fruitless. Downlisting the species may not have an impact in the Florida manatee, but it will in the Antillean manatee. Ruling and conservation measures, that are not currently strong enough because of lack of enforcement, will be more lenient."

Response: In evaluating this factor, the Service specified that, although numerous regulatory mechanisms are in effect, challenges in the enforcement of these regulatory mechanisms exist. Based on the overall comments received regarding this factor, regulations to protect manatees may not be as effective elsewhere as they are within the United States and Puerto Rico. Thus, the Service recognizes that the lack of or inability to enforce regulatory mechanisms can have negative consequences for the West Indian manatee. However, because the manatee is listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), there are protections that will remain in place following downlisting under the Act. See Factor D, Inadequacy of Existing Regulatory Mechanisms. An Appendix I listing includes species threatened with extinction whose trade is permitted only under exceptional circumstances, which generally precludes commercial trade. The import of specimens (both live and dead, as well as parts and products) of an Appendix I species generally requires the issuance of both an import and export permit under CITES. Import permits are issued only if findings are made that the import would be for

purposes that are not detrimental to the survival of the species in the wild and that the specimen was lawfully acquired (including under foreign domestic law). Protections under the Act will remain in effect.

(15) *Comment:* One peer reviewer stated that Deutsch *et al.*'s (2008) suggestion, that numbers of Antillean manatees were likely to decline by 10 percent over the next three generations (~60 years), more generally reflects expert opinion than do the results of the Castelblanco-Martínez *et al.* (2012) analysis.

Response: The Service referenced Deutsch *et al.* (2008) in the first paragraph of the Population Trends section of the proposed rule and this final rule. We clarify that the expected 10 percent rate of decline was specified for the West Indian manatee, listed by IUCN as Vulnerable, and not the Antillean manatee, listed by IUCN as Endangered. In addition, no further information was provided by the commenter as to why Deutsch *et al.* (2008) more generally reflects expert opinion than do the results of Castelblanco-Martínez *et al.*'s (2012) analysis. The Service recognizes that the available information suggests the Antillean manatee may be declining throughout most of its range. However, considering the best available information on the present status of the West Indian manatee and the factors that may threaten it, the Service maintains the species does not meet the definition of an endangered species. Please refer to the section entitled *Summary of Factors Affecting the Species*.

Public Comments

Comments on Topics That Apply to Population Models

(16) *Comment:* We received several comments on our use of the Antillean manatee model presented in the Castelblanco-Martínez *et al.* (2012) publication. Commenters included the author and co-authors, who sent a letter to clarify in part that their article addressed a potential growing trend only in the Antillean manatee subspecies and not the Florida manatee subspecies. They also stated that the results of the model were misinterpreted in the proposed rule and highlighted information in their paper to support their claims. The authors identified model projections that would lead to the extinction of the Antillean manatee population under different levels of risk, including specific increases in human-related mortality and/or habitat fragmentation (Models 2, 3, 5, 6, 8 and

9). They also mentioned that their model did not take into account the effects of climate change that could definitively have an important impact on population viability by increasing the frequency and intensity of stochastic events.

Response: We clarify that we used the Castelblanco-Martínez *et al.* (2012) model only in our evaluation of the Antillean manatee subspecies, and used the Runge *et al.* (2015) model to evaluate the Florida manatee subspecies. We used other best available information, in addition to the models, in the proposed and this final rule for the West Indian manatee. We acknowledge that Castelblanco-Martínez and co-authors presented several scenarios for the Antillean manatee population and note that these were accounted for in our assessment. The Service considered all scenarios and models as well as known threats when making our determination that this species is now threatened throughout all or a significant portion its range (rather than endangered). Please refer to the beginning of the Summary of Factors Affecting the Species section, which describes the difference between endangered and threatened species. We also added further discussion of the model under the Population Trends section.

Finally, the Service believes that the effects of climate change were considered in the model which used hurricane frequency data (catastrophic events) (Castelblanco-Martínez *et al.* 2012, p. 136). The authors explain that the modeled "variation in the intensity and frequency of hurricanes did not lead to any important changes in the population growth curves" for the Antillean manatee population (Castelblanco-Martínez *et al.* 2012, p. 138). For additional information on potential effects due to climate change on the West Indian manatee, please refer to the discussion in Factor E section.

(17) *Comment:* The FWS proposed rule contradicts the Castelblanco *et al.* (2012) PVA conclusion that the Antillean manatee population is experiencing positive growth, as the FWS cites a number of sources of expert and local opinions to state that in most of the countries Antillean manatee populations are declining.

Response: In our rule, we discuss all available information that indicates either positive growth rates or population declines. Both the Service and Castelblanco-Martínez *et al.* (2012) cite sources that state that the Antillean manatee population appears to be declining throughout most of its range. We included these sources in our

review of the species' population biology and also relied on models, including Castelblanco-Martínez *et al.* (2012), to evaluate the effect of known threats on this population. Castelblanco-Martínez *et al.* (2012) used this information in their model runs and discussion of various population scenarios and concluded that the Antillean manatee population is experiencing positive growth, using their model parameters, which the Service considered in this rule. (Refer to the Population Trends section for greater detail on this model). For example, it assumes that all threats have an equal effect on the different subpopulations. Our threats assessment considered the best available scientific and commercial information, including published models, scientific papers, reports, and other reliable information. Please refer to Comments 8 and 11 and the Population Trends section for further discussion on Castelblanco-Martínez *et al.* (2012).

(18) *Comment:* The analysis by Runge *et al.* (2015) provides results that are credible only if one makes certain questionable assumptions (*e.g.*, threats will not increase, etc.). The commenter believes that the proposed extinction probabilities may be inappropriately optimistic and that the model results should be considered with caution and recognized only as the best-case scenario.

Response: The Manatee CBM integrates an understanding of current and foreseeable threats in a common risk analysis framework. It projects a risk of extinction under the status quo (current scenario) and can address questions such as, "If a threat is reduced by 50 percent, how much would the extinction risk be expected to decline?" The model provides a tool for assessing growing and changing threats (Runge *et al.*, 2015, p. 2). The Service believes that model results are a fair depiction of the current state of knowledge that appropriately incorporates and articulates uncertainty. The Service considered CBM-derived probabilities of extinction for the Florida manatee in the context of many additional sources of information in its evaluation of the status of this subspecies and the species at large.

(19) *Comment:* The proposed rule and CBM did not take into account the cold weather, Indian River Lagoon, and red tide die-off events that occurred between 2010 and 2013.

Response: The proposed rule took into account the die-off events in its review of population trends. See proposed rule of January 8, 2016, at 81 FR 1005. However, the CBM, which

evaluates the effect of various threats on the Florida manatee population, did not evaluate these events because 2010–2013 adult survival rate estimates needed for the model runs were not available when this rule was written. Please see discussion in the proposed rule, *Population Trends*.

(20) *Comment:* The Service relied on Runge *et al.*'s (2015) CBM to evaluate extinction probabilities. The validity of model results depends on the completeness and quality of data for critical parameters, as well as up-to-date information. The commenter stated that he does not believe that the data used by Runge *et al.* (2015) are always the best available and is concerned that the model did not consider sublethal effects. In particular, the commenter noted the CBM did not use adult survival rate estimate data for the 2010–2013 die-off years. Because of this, the commenter expressed a belief that certain projected outcomes may be unrealistic and inappropriately optimistic.

Response: Data used by Runge *et al.* (2015) were the best, most complete data available through December 2012. Data used for this analysis included data collected more recently (manatee photo-identification data used to calculate adult survival rate estimates). However, adult survival rates for periods beyond this date could not be calculated because of an end of time series bias inherent in the analyses. The authors described strengths and weaknesses associated with the data; adult survival rates used in the model runs were current through winter 2008–2009 and more recent rates were not available due to inherent backlogs associated with processing data. The CBM does include a number of sublethal effects. For example, sublethal effects are captured in the mark-recapture estimates of survival and some sublethal effects on reproduction, such as that which occurs during red-tide years, are also captured.

(21) *Comment:* CBM assumptions about the carrying capacity of warm-water refugia should be re-assessed using a more applied process than expert opinion.

Response: Model assumptions regarding the carrying-capacity of warm-water sites considered expert valuations of numbers of manatees that could survive variably severe winters. Considerations included the spatial extent of thermal refuges, the availability of food resources in proximity to those refuges, and the behavior of manatees, including their tolerance for human disturbance. The Service believes that, absent a quantitative valuation of warm-water

habitat, the use of expert opinion provides a reasonable assessment of carrying-capacity for this review. With this said, there is still considerable uncertainty about warm-water capacity, including its magnitude and the mechanism by which it affects manatee population dynamics. We will continue to monitor the status of the manatee and its habitat.

(22) *Comment:* One commenter expressed the opinion that Runge *et al.*'s (2015) model does not consider an extensive seagrass die-off in Brevard County, which is arguably the most important habitat for manatees in the world. The Miccosukee Tribe expressed a similar concern about the effect of the loss of seagrass on manatees.

Response: While Runge *et al.* (2015, p. 1) does not factor in this loss of seagrass directly, it noted this occurrence and considered it and the coincidental loss of manatees in Brevard County. The model forecasts the Florida manatee population under different threat scenarios and addresses environmental, demographic, and catastrophic stochasticity. In short, catastrophic losses such as the loss of seagrass in Brevard County are broadly considered in model projections which suggest that the population can withstand such events.

Comments on Topics That Apply to Antillean Manatees

(23) *Comment:* Uncertainty of [population] estimates for the Antillean manatee, acknowledged by the Service to be conjectural, are highly unreliable and do not comport with the statutory requirement for listing decisions to be based on the best available scientific information. The FWS also does not explain why it did not select a lower, more conservative population estimate or at least cite a range of possible population estimates for the Antillean manatee.

Response: The Service identified the range of possible population sizes in the *Population Size* section of the proposed and the final rule. In this final rule, we have also edited Table 1 to include the minimum population estimates for the West Indian manatee across its entire range based on the best available information and recognizing the uncertainties in the data. Our estimate of the total West Indian manatee population currently ranges between 8,396 and 13,142 (Table 1). Population size, while an important component regarding a species' status, is not the only factor that should be assessed when evaluating a species' survival. Factors such as mortality, resilience to withstand stochastic events, genetic

diversity throughout the range, potential reduced fitness and extensive distribution of populations across its range (refer to Table 1), among others, must also be considered. Another approach is to utilize existing data to conduct stochastic population modeling and extinction risk assessment, such as those conducted by Castelblanco-Martínez *et al.* (2012) and Runge *et al.* (2015). For example, for the Antillean manatee population, the Castelblanco-Martínez *et al.* (2012) model did not show any significant response to variations in the assumed initial population sizes, using 1,675 as the lowest initial population size value and 6,700 as a reasonable value for their baseline model (Castelblanco-Martínez *et al.* 2012, p. 137). The Castelblanco-Martínez *et al.* (2012) approach represents the best science and provides sound estimates of the Antillean manatee numbers.

(24) *Comment:* Some commenters, including the Miccosukee Tribe said that it is unclear why the FWS feels justified to downlist the Antillean manatee since the agency's own 12-month finding cites that "population trends are declining or unknown in 84 percent of the countries where manatees are found."

Response: A species can be declining and not necessarily be endangered. In making our determination, the Service concluded that the West Indian manatee is not currently endangered but is likely to become endangered in the foreseeable future (threatened). On the basis of our analysis, we find that many threats (habitat loss and fragmentation, watercraft collisions, loss of the Florida manatees' winter warm water habitat, and others) have been reduced but continue to exist; these threats are expected to persist and may escalate in the future. New and ongoing conservation efforts will be needed to prevent the species from becoming endangered in the foreseeable future. Since most of the Antillean manatee population is thought to have a declining or unknown trend, existing or new potential threats, if not addressed, may lead the species towards being endangered in the foreseeable future. This is consistent with the Act's definition of a threatened species. Please refer to the Summary of Factors Affecting the Species, which describes the difference between endangered and threatened species.

(25) *Comment:* The FWS fails to evaluate the status of the population in the rest of the Caribbean (outside of Puerto Rico) and fails to adequately evaluate the five statutory criteria with respect to the entire range of the species,

as threats to these populations are increasing and enforcement for the Antillean manatee is lacking.

Response: The Service evaluated the status of the West Indian manatee across its entire range based on the best available information. The Service recognized that the immediacy and the magnitude of threats vary across the West Indian manatees' range. The commenter did not provide additional information as to how the threats of the species are increasing and enforcement is lacking beyond that already considered in our analysis. Please refer to the Summary of Factors Affecting the Species section for the analysis that examines all five factors currently affecting or that are likely to affect the West Indian manatee.

(26) *Comment:* The FWS repeatedly determines that individual threats or the sum of threats under each listing factor only pose a moderate threat to the Antillean subspecies outside the United States, but frequently and frankly acknowledges that it lacks credible data on which to base these judgments.

Response: The Service is required to make decisions under the Act based solely on the best scientific and commercial information available. The Service must examine how and to what extent threats impact the species such that it meets the definition of threatened or endangered. In this case, the threats assessment was completed for the West Indian manatee across its range. Our assessment included a five-factor analysis and review of demographic parameters. In some cases, data were less than conclusive and we made rational and explicit inferences based on our best professional judgment that reflected the extent of our uncertainty and consequences of being incorrect.

(27) *Comment:* At the lower population estimate of 700 individuals in Belize, the 2015 mortality represents a 5.7 percent mortality of that population, which is already higher than the 5 percent that population modelling indicates to be sustainable (Castelblanco-Martinez *et al.* 2012). With the opening of another cruise ship port in November 2016, with all its land-based tours scheduled to be accessed by boat through another high-density manatee area, conservation planning based on best available data indicates the potential for significant increased additional mortality (Walker *et al.* 2015).

Response: The Service appreciates the new information received from Belize, which is addressed in this final rule. Increases in boating traffic in high density manatee areas may increase watercraft-related mortality as noted in

Florida (Laist and Shaw 2006, p. 473) The Service recognizes that Belize represents one of the largest Antillean manatee populations, and we are concerned about the increased manatee mortality here. However, the Service was petitioned to evaluate the status of the West Indian manatee across its entire range. We will continue to evaluate how the Service can coordinate manatee conservation occurring in Belize and in the rest of the West Indian manatee's range.

(28) *Comment:* The proposed downlisting is contrary to the appraisal of Belize's National Manatee Working Group (NMWG), which has determined that, although the current population is rated as FAIR (Belize National Manatee Recovery Plan, Ortega-Argueta, in prep.), the current level of mortality is unsustainable, and that the population will crash with a continuation of this mortality rate. The NMWG is working with the Government of Belize to identify and implement actions to reduce the mortality rate. The proposed downlisting could significantly hinder these actions, impacting the funding and leverage available to Forest Department and its partners to address threats to Belize's manatee population and implement direct conservation actions, and thereby increase the risk to Belize's population of Antillean manatees, and thereby the global population.

Response: The FAIR rating of the current Belize Antillean manatee population is consistent with the Service's definition and interpretation of a threatened species, a species that is likely to become endangered in the foreseeable future and is not currently endangered, even with the documented increasing threats. The Service would also like to coordinate with the National Manatee Working Group and the Government of Belize towards developing conservation strategies to reduce the current mortality rate. However, as stated in Comment 27 above, this rulemaking evaluates the status of the West Indian manatee throughout its entire range.

(29) *Comment:* The downlisting of the West Indian manatee is based on the successful population growth and stability seen in Florida, but largely ignores the remaining threats in Central and South America, for which the Service admits that it lacks quantitative information.

Response: In making our determination, the Service evaluated the best available information for the West Indian manatee, including population estimates and threats across the species' range. The Service recognizes that the

immediacy and the magnitude of threats vary across the West Indian manatee's range. The commenter did not provide additional information on threats for the species beyond that already considered in our analysis. Please refer to the Summary of Factors Affecting the Species section for the analysis that examines all factors currently affecting or that are likely to affect the West Indian manatee in the future.

(30) *Comment:* Internationally, there is a lack of data outlining the type and level of threats in most range countries of the Antillean manatee. Making assumptions that threats have been managed in the Antillean subspecies' range is reckless.

Response: In our rule, we provided several references that indicate that a number of threats still remain throughout the species' range and others are being managed. However, we acknowledge that work still needs to be done and that ongoing efforts to recover the species could be improved. Please refer to the Summary of Factors Affecting the Species section for the analysis that examines all factors currently affecting or that are likely to affect the West Indian manatee.

(31) *Comment:* Several commenters believe that conservation efforts outside the United States are failing to promote the protection and growth of the Antillean manatee population. Furthermore, commenters believe that a downlisting by the Service could have a significant impact on the ability of countries outside the U.S. to implement recovery, implement protection measures, affect funding opportunities, and affect progress currently being made to maintain and strengthen the West Indian manatee population. One commenter noted that these countries rely on the full weight of the Act to justify expenditures, raise funds, and compel governments to protect and conserve this species.

Response: The change in status under the Act from endangered to threatened should not have an appreciable effect on manatee protections in foreign countries. This rule formally recognizes that this species is no longer presently in danger of extinction. The manatee would still be fully protected under the Act. The regulatory protections provided pursuant to section 9 and section 7 of the Act remain in place. Furthermore, this regulation does not affect the protections that the West Indian manatee is afforded under the MMPA and CITES. We applaud foreign governments like Belize, which has protected the manatee for over 30 years and is increasing conservation programs for this animal. We encourage all efforts

by any government agency to remove or reduce threats to the West Indian manatee, and the Service is amenable to working together towards achieving these goals (see **FOR FURTHER INFORMATION CONTACT**). The Service will continue to monitor the status of the species, and continue to work in partnership with other range countries when and where possible. Additionally, we note that the Service's Division of International Conservation works with partners worldwide to conserve fish, wildlife, plants, and their habitats (including the manatee and its habitat), and maintain the integrity of ecological processes beyond our borders, for present and future generations.

(32) *Comment*: It does not appear the Service undertook a comprehensive review of the data nor made contact with conservationists and governments in all of the range Antillean manatee states and it is not clear if the Service conducted a literature search for non-English documents and conservation plans and reviewed such documents.

Response: In connection with the proposed rule, in addition to contacting appropriate Federal and State agencies, Tribes and tribal organizations, scientific organizations, and peer reviewers to request comments on the proposed rule, the Service also contacted governments of the West Indian manatee range countries. Furthermore, in opening the rule to public comment, the Service requested that all interested parties submit factual reports, information, and comments that might contribute to development of a final determination for the West Indian manatee. Out of all the documents received by the Service, only a handful was in Spanish. These were evaluated at the Caribbean Ecological Services Field Office in Puerto Rico, where all of the employees are bilingual (*i.e.* proficient in both English and Spanish). The Service obtained information regarding the status of manatees in other ways. One source of information was the directory of people working with manatees within the UNEP (2010, Appendix III) document. We used the email addresses on that list to notify individuals about the petition and status review of the West Indian manatee and to request information on the status and threats of the species. We also reached out to attendees at the December 8–13, 2014, Cartagena Convention in which participants were advised that the Service was evaluating the status of the West Indian manatee and was requesting additional information to assist in its review. In addition, in December 2015, during the VII International Sirenian Symposium, the

Service announced that the 12-month finding would be published in January 2016, and encouraged symposium participants to review and send comments accordingly. That Symposium gathered a significant number of manatee experts, researchers, and managers. The Service also sent a number of peer review requests on the proposed rule to manatee experts within the range of the Antillean manatee.

(33) *Comment*: This decision will negatively affect the current status of manatee populations in the region. The Antillean subspecies was declared “Endangered” due to reduction in numbers and habitat loss along the range. This critical status persists, according to several researchers, because of the paucity of effective conservation actions throughout its range and the current and projected future anthropogenic threats. There is no evidence of any improvement in the status of these populations and in fact, the lack of enough scientific information is jeopardizing its conservation in many countries. Please notice that the vulnerability of this group was proved already with the extirpation of the manatee populations from the Lesser Antilles.

Response: The Service was petitioned to evaluate the status of the West Indian manatee across its entire range. It, not only the Antillean subspecies, is the listed entity. In making our determination, we concluded that the West Indian manatee is not currently endangered, but rather likely to become an endangered species within the foreseeable future throughout all of its range. The level of protection afforded by the Act will remain the same. See also our response to Comment 11 for more information.

(34) *Comment*: The genetic diversity of the Antillean subspecies compels a finding that it should not be reclassified. Low genetic diversity indicates that the population is vulnerable to irreversible impacts due to environmental stochastic events, which are going to be very frequent in the face of climate change.

Response: The Service considered genetics and the effects of climate change in making our determination. Available information specifies that the genetic diversity of manatee populations in Belize and Mexico is slightly higher than in Florida and slightly lower in Puerto Rico (Hunter *et al.* 2012). Manatee populations in general, not only the Antillean, are characterized by low levels of genetic diversity (Hunter *et al.*, 2012). Furthermore, there is no information that shows a decreased fitness in Belize (Hunter *et al.*, 2010, p. 598) and, to our knowledge, in the rest

of the range of the West Indian manatee population due to low genetic diversity. The commenter did not provide new information beyond what was considered in our proposed rule.

(35) *Comment*: [The Antillean manatee] is globally endangered, based on a predicted decline of more than 20 percent over the next two generations.

Response: This statement is from the species' IUCN listing information (Deutsch *et al.*, 2008), which we referenced in both the proposed and final rules. The Service referenced Deutsch *et al.*, (2008) in the *Population Trends* section of the proposed rule. The Service evaluated the status and threats for the West Indian manatee across its entire range. The IUCN classifies the West Indian manatee, the species addressed in this rule, as Vulnerable. Species classifications under the Endangered Species Act and Red List are not equivalent; data standards, criteria used to evaluate species, and treatment of uncertainty are not the same, nor is the legal effect. Unlike the Endangered Species Act, the Red List is not a statute and is not a legally binding or regulatory instrument. It does not include legally binding requirements, prohibitions, or guidance for the protection of threatened, critically endangered, endangered, or vulnerable taxa (IUCN 2012). Rather, it provides taxonomic, conservation status, and distribution information on species. The Red List is based on a system of categories and criteria designed to determine the relative risk of extinction (<http://www.iucnredlist.org/about/introduction>), classifying species in one of nine categories, as determined via quantitative criteria, including population size reductions, range reductions, small population size, and quantitative extinction risk. Further, based on the petition, the Service evaluated the status and threats for the West Indian manatee across its entire range and not only for the Antillean manatee. The Act requires the Service to determine if a species is an endangered or threatened species because of any of the section 4(a)(1) factors (16 U.S.C. 1533(a)(1)), based on the best available scientific and commercial data, which may include a qualitative threats analysis.

Comments on Topics That Apply to Florida Manatees

(36) *Comment*: Many commenters, including the Miccosukee Tribe, stated that the Service should not reclassify the Florida subspecies of the West Indian manatee without a proven, viable plan that addresses the loss of warm-water refuges at power plants.

Response: The Service is reclassifying the West Indian manatee, including both subspecies, to threatened. This does not mean that all threats have been addressed. For more information on efforts to address the loss of warm-water refuges, please see Recovery Actions in the proposed rule (<https://www.fws.gov/policy/library/2016/2015-32645.pdf>). For additional information, see Factor A and E sections in our threats analysis.

(37) *Comment:* The Service did not evaluate the Florida manatee in the context of the recovery benchmark criteria identified in the 2001 Florida Manatee Recovery Plan. The Service should not reclassify the Florida subspecies of the West Indian manatee without an updated recovery plan and recovery benchmark criteria unless and until measurable criteria are established and satisfied based on the five listing factors.

Response: The Service makes a decision to reclassify (delist or downlist) a species after review of all of the five listing factors in section 4 of the Act. We conducted this analysis in the context of recovery criteria identified in the 2001 Florida Manatee Recovery Plan. We did not, however, evaluate the manatee in the context of the Recovery Plan's population benchmark criteria for reasons set forth in the Recovery section of the preamble to this rule, namely that the benchmark criteria were found to be deficient and unusable. Note that the Service is not required to have current recovery plans and criteria when it evaluates the status of a species. Overall, recovery of species is a dynamic process requiring adaptive management, planning, implementing, and evaluating the degree of recovery of a species that may, or may not, fully follow the guidance provided in a recovery plan.

(38) *Comment:* The Service is relying on the State of Florida's synoptic survey counts to support its proposal to reclassify the West Indian manatee. These counts are biased, use bad counting procedures, and have very little scientific value. The Service must base its analysis on future threats and the actual health of the population and not these counts.

Response: We acknowledge that there are methodological issues (detection probabilities) inherent in the State's counts. Martin *et al.*, (2015, p. 44), in their estimate of abundance for the Florida manatee, address these issues by accounting for spatial variation in distribution and imperfect detection. We used the best available information to assess the counts, other demographic indicators, and the health of the population and considered threats in

our analysis. Additionally, it is possible that the counts, when taken in the context of other demographic indicators (such as the estimated population growth rates), may reflect an actual increase in the population size (Runge *et al.*, 2015, p. 19).

(39) *Comment:* The Service has not adequately addressed expected coal plant closures that will leave manatees at risk of future significant population declines.

Response: The majority of Florida manatees rely on natural gas fired plants for warmth during the winter. Two coal-fired plants with discharges used by wintering manatees exist. The impact that future regulatory actions may have on these two sites is unknown. Should the plants be affected, the Service will work with the power plant industry and regulatory agencies to alleviate any potential adverse effects that could occur.

(40) *Comment:* The proposed rule states that all regulatory mechanisms will remain in place and will continue to provide legal protections to the species throughout its range should the manatees' status change from endangered to threatened. In Florida, elected government officials have taken steps to remove manatee protection zones. While they have not been successful, they will continue to try to remove them.

Response: Our review considers the inadequacy of all regulatory mechanisms, including the State of Florida's regulatory measures. We based our review on best available information available to us at the time of the review. We are aware of efforts that were subsequently made to remove manatee protection zones. However, these efforts were not successful. Because watercraft collisions are one of two of the most significant threats to Florida manatees, we are committed to working with State and local officials to ensure that effective manatee protection zones and other regulatory mechanisms remain in place to provide adequate protection.

The Service has an agreement with the State of Florida under section 6 of the Act, which provides that any State law or regulation regarding the taking of an endangered species or threatened species may be more restrictive than the exemptions or permits provided for in this Act or in any regulation that implements the Act but not less restrictive than the prohibitions so defined. We are confident that the State of Florida, with whom we have partnered for many years on the conservation of this and other species, will ensure that these regulations will remain in place.

(41) *Comment:* Even though some habitat features important to Florida manatees may have improved over time (e.g., restoration of some warm-water springs), the Service's assumptions or conclusions that habitat needed for manatees is safe and assured is unrealistic and is not based on the best available scientific data.

Response: We indicated in our proposed rule that efforts are being made to enhance and conserve important manatee habitat (including winter warm-water habitat, foraging areas, travel corridors, etc.) and noted that much work still needs to be done before the species can be removed from the List of Endangered and Threatened Species. Please see the Recovery Actions section of the preamble to this rule for more information.

(42) *Comment:* The Service disbanded its Florida Manatee Recovery Implementation Team and Warm Water Task Force. How does the Service intend to address continuing conservation needs, including the need to address the catastrophic future loss of critical, warm-water habitat?

Response: The Service plans to revise the Florida Manatee Recovery Plan and will convene a recovery team to facilitate that process. The Plan will identify conservation needs and the actions needed to address them. The loss of warm-water habitat will be addressed in the revised plan. The Service is working with FWC, the power industry, and others to address conservation needs, including the future loss of warm-water habitat.

(43) *Comment:* State of Florida statutes require Water Management Districts to set minimum flows at rates that protect the most sensitive species. The Districts have set flows in the past to protect endangered manatees. If manatees are no longer endangered, what will happen to important manatee springs like Three Sisters Springs where minimum flows have not been set?

Response: When this rule becomes effective, the West Indian manatee will remain protected under the Act as a threatened species. The Act's provisions will continue to be implemented to remove threats to this species. For example, the Service will continue to work with the FWC, the Water Management Districts, and others to ensure that minimum flows set for important manatee springs are adequate to protect wintering manatees. See Runge *et al.*, (2015, pp. 6–7) and the Recovery Actions section of this document for further information.

(44) *Comment:* One commenter noted that manatee enforcement in Florida is at an "all-time low." Another

commenter observed that the number of manatees struck by watercraft and killed or rescued is at an “all-time high.” Commenters stated that the watercraft collision threat has not been controlled.

Response: Threats, including the threat of watercraft collisions, are being addressed in Florida. While record numbers of watercraft-related manatee deaths and rescues were reported in 2016, there is nothing to suggest that this is evidence of an increasing trend. Key demographic indicators characterize a growing manatee population even in the face of continuing mortality of this type. See Runge *et al.*, (2015, pp. 9–11) and Recovery Actions for further information.

(45) *Comment:* The Service signed an agreement in 2012 with the U.S. Army Corps of Engineers that provides the Service with the ability to allow illegal incidental take through consultation on the Corps permitting process. The take of manatees cannot be authorized and is detrimental to recovery efforts.

Response: The 2012 agreement with the Corps does not authorize the take of Florida manatees. The agreement requires that the Corps include in its permits conditions that, when followed, ensure that manatees are not taken by project-related construction activities. This requirement expedites the permitting process and provides predictability for permit applicants. Should the incidental take of one or more manatees occur as a result of a permitting action where the Service has concurred with an effects determination, the specific activity shall cease until the Corps and the Service jointly and cooperatively investigate the circumstances and make every effort to remedy the issue through avoidance, minimization, and/or other compensatory measures.

(46) *Comment:* If the Service is going to address the loss of power plant warm-water discharges, it must identify a funding source to cover the costs that will be incurred. This has not been done.

Response: The Service continues to work with and reach out to its manatee recovery partners to address the pending loss of warm water at Florida’s power plants. The Service recently recommended that the Florida Department of Environmental Protection revise NPDES permits to include a funding mechanism to address the transition of manatees from power plants to other suitable areas.

(47) *Comment:* Manatee harassment by visitors to Crystal River continues to take place. More enforcement and criteria-based closure requirements are

needed to protect manatees from harassment.

Response: The Service continues to refine measures to prevent manatee harassment by visitors to Crystal River and elsewhere. Criteria have been developed for potential closures at Three Sisters Springs. Additionally, the Kings Bay Manatee Refuge Rule provides for the closure of springs used by wintering manatees, as well as the expansion of sanctuary boundaries to accommodate increasing numbers of manatees. For more information, see the Kings Bay Manatee Refuge Rule (77 FR 15617, March 16, 2012) and the Draft Environmental Assessment, Three Sisters Springs Unit of Crystal River NWR (USFWS CRNWR 2015).

(48) *Comment:* Manatee habitat restoration efforts are taking place in Florida and some of these efforts are harassing manatees and indirectly causing harm to the environment. Communities engaged in restoration efforts must be required to use best management practices and comply with State and Federal regulations.

Response: The Service has not identified habitat restoration efforts as a threat to the long-term survival of the Florida manatee. We have, however, identified habitat loss and fragmentation as one of the most significant threats to manatees, and efforts to restore habitat are an important means to address this threat. In the United States, entities engaged in habitat restoration efforts must comply with all State and Federal permitting regulations, including permit conditions that prevent manatee harassment and protect water quality and the environment.

(49) *Comment:* Natural spring areas essential for the manatee’s survival are threatened by numerous factors including diminishing spring flows, deteriorating water quality, and increasing human activities in and around spring areas.

Response: We acknowledge that these are concerns and have addressed them in our rule. See the Recovery Actions section of the preamble for further information.

(50) *Comment:* The Service should conduct an environmental impact study before any decision is made.

Response: We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), need not be prepared in connection with regulations pursuant to section 4(a) of the Endangered Species Act. We published a notice outlining our reasons

for this determination in the **Federal Register** (48 FR 49244).

Comments on Topics That Apply to All Manatees

(51) *Comment:* The Act provides that a species may be determined to be “endangered” due to “other natural or manmade factors affecting its continued existence.” In addition to loss of habitat, disease, algal blooms, and watercraft fatalities, the West Indian manatee is also affected by land development activities, including, without limitation, the construction of artificial canal systems, dredging and filling, elimination of aquatic vegetation, construction of structures that can trap or crush manatees, and the placement of bulkheads below the ordinary high waterline. Moreover, fishing gear and contaminants present ongoing, yet in some cases, “poorly understood” risks to the West Indian manatee population. Until a plan is developed to protect the West Indian manatee from effects of land development and other risks to the West Indian manatee are more fully understood, the Atlantic Scientific Review Group recommends maintaining the current endangered status of the species.

Response: Plans have been developed and are in place to protect manatees from these activities. The Service has developed recovery plans for the Florida and Puerto Rico manatee populations and the United Nations Environment Programme has a conservation plan for the West Indian manatee. Both plans address these and other threats. In the United States, the Service evaluates land development projects that may impact the species under the consultation process set forth in Section 7 of the Act. For further information on Section 7, please refer to Recovery Actions and Available Conservation Measures in the preamble to this final rule.

(52) *Comment:* What happens to Potential Biological Removal (PBR) if the manatee is downlisted? How will a higher PBR affect your Section 7 consultation process for coastal development?

Response: PBR, as defined under the MMPA, means “the maximum number of animals, not including natural mortalities that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population.” The PBR level is the product of the minimum population estimate of the stock, one-half the maximum theoretical or estimated net productivity rate of the stock at a small population size, and a recovery factor of between 0.1 and 1.0.

This rule does not change how PBR is defined under the MMPA. Nevertheless, as a result of this rule, in PBR calculations for both Florida and Antillean stocks we expect to use a recovery factor for threatened species instead of the recovery factor for endangered species. The Service's use of PBR is limited to addressing takes associated with commercial fishing activities. However, known mortalities and serious injuries associated with these activities are nominal and should not be affected by this change. Further, because PBR is not used to address coastal development activities, there will be no effect on the Service's consultation process for these activities.

(53) *Comment:* A downlisting will lead to a reduction in the availability of funds and will make it more difficult to obtain funding needed to address the loss of warm-water habitat, enforcement, important research, and other conservation needs. FWS acknowledges that under the FMSA "adequate funding could be problematic if downlisting occurs." In fact, an assumption of adequate funding underpins all of the assumptions in the model that relate to anthropogenic impacts. FWS states that "as long as funding remains available, recovery actions would continue to be implemented, regulations enforced, and additional measures adopted as needs arise." Loss of funding would adversely affect development, implementation, and enforcement of management actions and plans.

Response: We acknowledge that loss of funding could be a concern; which is, in part, why the species meets the definition of a threatened species under the Act.

(54) *Comment:* One commenter noted that the Service has failed to propose critical habitat concurrently with its proposal to downlist the manatee across its range. When the FWS makes a listing determination (including downlisting), the Act requires the FWS to either designate critical habitat for the manatee or determine that such a designation is not prudent or determinable (16 U.S.C. 1533(a)(3)(A)(i)). Another commenter stated that the Service should assess the incremental economic impact of existing and proposed designations on critical habitat. The Miccosukee Tribe expressed concern that manatees and their habitat are at risk from increasing development without protections to critical habitat provided by the Act.

Response: Critical habitat has been designated for the West Indian manatee (41 FR 41914, September 24, 1976; corrected at 42 FR 47840, September 22, 1977; codified at 50 CFR 17.95(a)). The

Act at 16 U.S.C. 1533(a)(3)(B) provides that the Service may, from time to time thereafter, revise the critical habitat designation, and that it must make findings on a petition to revise critical habitat submitted under the Administrative Procedure Act. *See* 16 U.S.C. 1533(b)(3)(D). The Service's January 12, 2010 (75 FR 1574), 12-month finding on a petition to revise critical habitat for the Florida manatee found that a revision to critical habitat is warranted but precluded because sufficient funds were not (and still are not) available due to higher priority actions such as court-ordered listing-related actions and judicially approved settlement agreements. Because of this, the existing critical habitat designation remains in effect.

(55) *Comment:* The Service has not adequately addressed cumulative impacts from continued development, increased vessel use, and ongoing water quality problems that threaten the aquatic habitats on which manatees depend for survival.

Response: Our five-factor analysis, under Summary of Factors Affecting the Species, above, assessed all known threats to the West Indian manatee. In our assessment, we reviewed several manatee population models (Castelblanco-Martínez *et al.*, 2012; Arriaga *et al.*, in Gómez *et al.*, 2012, entire, Runge presentation, 2016) that assessed the effects of threats individually and cumulatively. Threats can individually impact a species or its habitat or can work in concert with one another to cumulatively create conditions that may impact a species or its habitat beyond the scope of individual threats. *See Cumulative Effect of Threats* below.

(56) *Comment:* The Service has violated the Act by invoking its "significant portion of range" policy and relying on its range-wide threatened determination to avoid any analysis of whether the West Indian manatee is endangered in any significant portion of its range, contrary to the plain language of Section 3(6) of the Act, 16 U.S.C. 1532(6). FWS-cited data strongly suggest that one or more portions of the West Indian manatees' range merits analysis for significance.

Response: For our analysis, we followed the Service's final policy on "Significant Portion of its Range" (SPR) (79 FR 37578; July 1, 2014). This policy provides our interpretation of the phrase "significant portion of the range" in the Act's definitions of "endangered species" and "threatened species". The policy improves the implementation of the Act by providing a consistent and uniform standard interpretation of the

phrase and its role in listing (and delisting and reclassification) determinations. The policy provides an interpretation and application of SPR that reflects a permissible reading of the law and minimizes undesirable policy outcomes, while fulfilling the conservation purposes of the Act. The final policy states "that a portion of a species' range can be "significant" only if the species is not currently endangered or threatened *throughout all of its range*" (emphasis added); furthermore, if a species is listed throughout its entire range, there can be no separate listings for portions of the species (the final policy defines "significant" such that a portion of the range cannot be significant if the species already warrants listing throughout all of its range). As this policy is applied, there will be no circumstance in which a species is threatened throughout all of its range *and* [emphasis added] endangered throughout an SPR. Based on our evaluation of the biology and current and potential threats to the West Indian manatee, we determined that the entire listed entity meets the definition of threatened. Accordingly, the SPR analysis concludes that the species should be listed as threatened and no further analysis is warranted.

This final policy reflects the Services' expert judgment as to the best way to interpret and apply "significant portion of its range" as that phrase appears in the Act. Because we conclude that the entire West Indian manatee should be listed as threatened, we do not analyze this species at a smaller geographic scale.

(57) *Comment:* Commenters stated that when the Service downlists the manatee, the Act's take prohibition no longer applies and, accordingly, if the Service believes that it should continue to regulate the take of the manatee (despite local and State regulations that prohibit take), the Service must follow additional procedures laid out in the Act. The Service states in the proposed rule to reclassify the manatee that the take prohibition in Section 9 of the Act will automatically apply to the manatee when it is reclassified as threatened. But the Act expressly limits Section 9 to endangered species because Congress recognized that the take prohibition imposes stringent limits on individuals and businesses that are only justified by the dire situations endangered species face. Likewise, the Service should consider the impacts of the downlisting on the continuing need for Manatee Protection Areas, which prohibit certain waterborne activities "for the purpose of preventing the taking of manatees" in coastal and inland waters in Florida.

Because the Act's take prohibition does not automatically apply to threatened species, the Service will need to determine anew whether Manatee Protection Areas are necessary and advisable.

Response: Take prohibitions for manatee do not change with this final rule. The same prohibitions are in place for the manatee as a threatened species that were in place when it was an endangered species through the Act's implementing regulations. Under section 9(a)(1) of the Act, all take prohibitions outlined in section 50 CFR 17.21 (except § 17.21(c)(5)) apply to threatened species through the regulations codified at 50 CFR 17.31 and 17.32. Although the Service has discretion to issue a species-specific 4(d) rule that could remove or modify take prohibitions from or for specific activities, we have not chosen to do so at this time for manatee. The Service believes the prohibitions and exceptions set out in 50 CFR 17.31 and 17.32 are most appropriate to address the particular conservation needs of the West Indian manatee at this time. Accordingly, protections in Florida's coastal and inland waters will not change with the reclassification of manatee to threatened status. Manatee Protection Areas (MPAs) have played a substantial role in manatee conservation and will be needed into the foreseeable future, and the designation of these areas will not be affected by the change in status. In addition, as mentioned in the response to Comment 40, the MMPA prohibits the "take" (*i.e.*, to harass, hunt, capture, kill, or attempt to harass, hunt, capture, or kill) of marine mammals. MPAs also play an important role in avoiding take under the MMPA.

(58) *Comment:* The overall lack of any cumulative analysis with respect to any or all of the relevant listing factors demonstrates that the FWS has not articulated a rational explanation to justify downlisting.

Response: In making our determination and in accordance with the definitions of an endangered vs. threatened species, the Service concluded that the West Indian manatee is not currently endangered but is likely to become endangered in the foreseeable future. In our review of the best available information, we did not find significant information that would lead us to believe that the cumulative effect of threats on the species warrants maintaining the West Indian manatee as an endangered species. Rather, the potential cumulative effects of threats on the West Indian manatee, in part, contribute to the species' threatened

status (see *Cumulative Effects* section later in this rule).

Summary of Changes From the Proposed Rule

We made the following changes from the proposed rule:

- We updated the Population Size and Population Trends sections to include a "Minimum Population Size" column to Table 1, changed the column heading "Population Estimate" to "Non-statistical Population Estimate," and provided additional information on the Castelblanco-Martínez *et al.*, (2012) publication.
- We revised the Recovery Actions section of the preamble to include information from a Manatee Core Biological Model (CBM) update and to include updates for the timeframes for establishing spring minimum flows.
- We expanded the introduction of the Summary of Factors Affecting the Species to further clarify the definitions of endangered and threatened.
- We included new information on threats and mortality under the Summary of Factors Affecting the Species section.
- We reviewed and incorporated, as appropriate, information from Coulson *et al.* 2001; Gómez *et al.* 2012; Galves *et al.* 2015; and a presentation on Manatee Core Biological Model updates in this rule. These references were contributed by commenters and/or became available in September 2016.
- We added a "Cumulative Effects" section to our Summary of Factors Affecting the Species section.
- We clarified in this rule why the West Indian manatee is no longer endangered but rather meets the definition of a threatened species.

Summary of Factors Affecting the Species

Section 4(a)(1) of the Act requires us to determine by regulation whether "any species is an endangered species or a threatened species because of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence" (16 U.S.C. 1533(a)(1); hereafter, the section 4(a)(1) factors). Section 3 of the Act defines an "endangered species" as "any species which is in danger of extinction throughout all or a significant portion of its range" and a "threatened species" as one "which is likely to become an

endangered species within the foreseeable future throughout all or a significant portion of its range" (16 U.S.C. 1532(6), (20)).

The U.S. District Court for the District of Columbia noted that Congress included "a temporal element to the distinction between the categories of endangered and threatened species" in *re Polar Bear Endangered Species Act Listing and § 4(d) Rule Litigation*, 794 F. Supp. 2d 65, 89 n. 27. (D.D.C. 2011). Thus, we interpret an "endangered species" to be one that is presently in danger of extinction. A "threatened species," on the other hand, is not presently in danger of extinction, but is likely to become so within the foreseeable future (*i.e.*, at a later time). In other words, the primary statutory difference between a threatened and endangered species is the timing of when a species may be in danger of extinction, either presently (endangered) or within the foreseeable future (threatened).

In making our downlisting determination, the foreseeable future must take into account the life history of the species, habitat characteristics, availability of data, particular threats under consideration, the ability to predict those threats, and the reliability of forecasts of changes in the species' status in response to the threats. See also "The Meaning of 'Foreseeable Future' in Section 3(20) of the Endangered Species Act," (DOI 2009). Pursuant to M-37021 (DOI 2009), we identify a foreseeable future of 50 years for the West Indian manatee, which we believe can be predicted with reliability. Please see section entitled *Foreseeable Future*.

Thus, we used the best available scientific and commercial data for the West Indian manatee, including demographic parameters and section 4(a)(1) factors. We note that, for the Antillean subspecies, the best available scientific and commercial information relies in many cases upon expert opinion and anecdotal observations. In responding to the petition to downlist the West Indian manatee species and, after considering conservation efforts by States and foreign nations to protect the West Indian manatee as required under section 4(b)(1)(A), we proposed downlisting (80 FR 1000, February 6, 2016) based on the statutory definitions of endangered and threatened species. To make our final listing determinations, we reviewed all information provided during the 90-day public comment period and additional scientific and commercial data that became available since the publication of the proposed rule. See Summary of

Changes From Proposed Rule. However, this additional information merely supplemented, and did not differ significantly from, the information presented in the proposed rule. We received no significant new information that would cause us to change our listing determination (see the Comments and Summary of Changes from the Proposed Rule sections above). With this rule, we finalize our proposed listing determination.

The following analysis examines all factors currently affecting or that are likely to affect the West Indian manatee within the foreseeable future.

Factor A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

At the time of listing, resource managers were concerned about the effect of the loss of seagrass on manatees. Subsequently, it became apparent that habitat loss and fragmentation were significant concerns outside the United States. Within the southeastern U.S., the loss of manatee winter habitat has become a significant concern. Degradation and loss of manatee habitat occurs throughout its range (UNEP 2010, p. 12). Although the immediacy and the magnitude of this factor varies throughout the species' range, available manatee foraging habitat does not seem to be a limiting factor in most of the range countries, including Florida and Puerto Rico (Orth *et al.* 2006, p. 994; Drew *et al.* 2012, p. 13; Lefebvre *et al.* 2001, entire; UNEP 2010, entire). Still, manatee habitat degradation and loss remain a threat in most countries, and ongoing efforts to address these threats remains a recovery priority (Castelblanco *et al.* 2012, p. 142).

Some countries have been able to document manatee habitat loss effects, while other countries do not have site-specific information available to quantify the severity and/or frequency of this threat on manatees. For example, in Mexico, loss of manatees from certain areas has been attributed to, among other factors, the construction of a dam along a river (Colmenero-Rolón and Hoz-Zavala 1986, in UNEP 2010, p. 59), while significant manatee habitat modification has affected the number of animals along the coast of Veracruz (Serrano *et al.* 2007, p. 109). Other important manatee habitat in Belize such as Turneffe atoll is also affected by unsustainable fishing, mangrove clearing, overdevelopment, and dredging (Edwards 2014, entire).

In Honduras, manatee abundance declined, in part, because of habitat degradation (Cerrato 1993, in Lefebvre

et al. 2001, p. 440), while in Costa Rica, habitat modification activities such as logging and agriculture have increased sedimentation in rivers and lagoons, making it difficult for manatees to access suitable habitat in the Tortuguero River system (Smethurst and Nietschmann 1999, in Lefebvre *et al.* 2001, p. 442). In Panama, manatee distribution is apparently fragmented by discontinuous and likely depleted habitat (Lefebvre *et al.* 2001, p. 442).

Although threats continue, there are recovery efforts being made to protect the manatee against threats posed by habitat loss or modification in many range countries and in the areas of U.S. jurisdiction. In Belize, three protected areas were created specifically to protect critical manatee habitat, and more than 43 percent of the country's protected areas are within the coastal zone (UNEP 2010, p. 24). Mexico has designated significant special manatee protection areas (UNEP 2010, p. 60), and Trinidad protected the Nariva Swamp, the most important manatee habitat in that country (UNEP 2010, p. 77). Although most countries within the species' range outside of the United States continue to provide suitable manatee habitat, habitat degradation and loss remains a threat requiring ongoing recovery efforts.

The Service's 2007 5-year review identified specific threats including loss of seagrass due to marine construction activities (extent unknown), propeller scarring and anchoring (magnitude unknown), and oil spills; loss of freshwater due to damming and competing uses; and increasing coastal commercial and recreational activities (USFWS 2007, pp. 30–31). Human activities that result in the loss of seagrass include dredging, fishing, anchoring, eutrophication, siltation, and coastal development (Duarte 2002, p. 194; Orth *et al.* 2006, p. 991; PRDNER 2008, entire; PRDNER 2012, entire).

Since the 2007 5-year review, habitat effects including threats to seagrass habitat have been quantitatively assessed in Puerto Rico. The PRDNER has been gathering new relevant information documented in its two reports entitled *Evaluation of Recreational Boating Anchor Damage on Coral Reefs and Seagrass Beds* (PRDNER 2008, entire; PRDNER 2012, entire). The report identified the east, south, and west coasts of the island as the areas with major impacts on seagrass beds caused by vessel propellers, indiscriminate anchorage, and poor navigation skills. According to the reports, the areas with major impacts of severe magnitude were those on the south-central coast, including high

manatee use areas in the municipalities of Guayama, Salinas and Guayanilla, among others. The PRDNER (2008, 2012, p. 6) also describes that sea grasses are being severely impacted by both the scarring actions of motor boat propellers and the scouring action of jet ski traffic in shallow waters. In addition, small to mid-size boat owners prefer to visit near-shore areas, which have contributed to the decrease in seagrass density and an increment in the fragmentation of this habitat (PRDNER 2008, 2012, p. 7).

Although anthropogenic activities that result in the loss of seagrass such as dredging, anchoring, effects from coastal development, propeller scarring, boat groundings, and inappropriate recreational activities occur in Puerto Rico, seagrass abundance is not considered a limiting factor for the current Antillean manatee population of the Island (Drew *et al.* 2012, p. 13). It would be expected that a significant decrease of this resource could cause stress to the manatee population. However, no data is available to support estimates of how much seagrass is needed to sustain a larger manatee population (Bonde *et al.* 2004, p. 258). Based on the present availability of seagrass habitat in Puerto Rico, the Service believes the severity of the threat of degraded and or decreased seagrass habitat is low and there is no indication that potential foraging limitations or specialization are decreasing manatee fitness or causing manatee mortalities in Puerto Rico.

To offset these threats in Puerto Rico, a wide range of conservation efforts are ongoing (see Recovery and Recovery Actions). These include the collective efforts of the Service, the U.S. Army Corps of Engineers, the PRDNER, the National Oceanic and Atmospheric Administration (NOAA), the U.S. Coast Guard, and others working to avoid, minimize, and mitigate project impacts on manatee habitat. The development and implementation of no-wake areas, marked navigation channels, boat exclusion areas, and standardized construction conditions for marinas and boat ramps are a few of the efforts making a positive impact on maintaining and protecting important manatee habitat (see Recovery and Recovery Plan Implementation sections).

Manatees require sources of fresh water for daily drinking and do not appear to exhibit a preference for natural over anthropogenic freshwater resources (Slone *et al.* 2006, p. 3). Sources of freshwater are currently not considered limiting in Puerto Rico and include the mouths of streams and

rivers, coastal groundwater springs, and even industrial wastewater outflows (e.g., wastewater treatment plants, hydroelectric power plants). At this time, the lack and/or degradation of fresh water is considered a low-level threat in Puerto Rico. There is no indication that manatees are being affected by a lack of freshwater sources, even during the 2015 severe drought and especially since it is possible for manatees to drink from several sources. However, the potential impact of poor water quality on the manatee population is unknown. The Service will continue to assess and work with others towards maintenance and potential enhancement of manatee freshwater drinking sources.

Within the southeastern United States, the potential loss of warm water at power plants and natural, warm-water springs used by wintering manatees is identified as a significant threat (USFWS 2007, entire; Laist and Reynolds 2005 a, b, entire, and (USFWS 2001, entire). Natural springs are threatened by potential reductions in flow and water quality (due to unsustainable water withdrawals combined with severe droughts) and by factors such as siltation, disturbance caused by recreational activities, and others that affect manatee access and use of the springs (Florida Springs Task Force 2000, p. 13). Power plants, which provide winter refuges for a majority of the Florida manatee population, are not permanent reliable sources of warm water. In the past, some industrial sources of warm water have been eliminated due to plant obsolescence, environmental permitting requirements, economic pressures, and other factors (USFWS 2000, entire). Experience with disruptions at some sites has shown that some manatees can adapt to minor changes at these sites; during temporary power plant shutdowns, manatees have been observed to use less preferred nearby sites. In other cases, manatees have died when thermal discharges have been eliminated due to behavioral persistence or site fidelity (USFWS 2000, entire).

The current network of power plant sites will likely endure for another 40 years or so (Laist *et al.* 2013, p. 9). We do not know for sure if the plants will be replaced or eliminated at the end of this time period, but the likelihood is that the power plants will close (Laist and Reynolds 2005b, p. 281). We also do not know how manatees would respond if some sites are lost, since past modifications or changes to power plant sites have resulted in variable responses from manatees. If power plant outflows are lost, manatees would rely on

remaining springs in the upper St. Johns River and northwest Florida regions and on Warm Mineral Springs in southwest Florida, passive thermal basins, and warm ambient waters in southernmost Florida. The loss of certain warm-water sites potentially could cause a change in Atlantic coast abundance and distribution of manatees because there are no natural springs on the Atlantic coast north of the St. John's River (Laist and Reynolds 2005b, p. 287).

Florida's springs have seen drastic declines in flows and water quality, and many springs have been altered (dammed, silted in, and otherwise obstructed) to the point that they are no longer accessible to manatees (Florida Springs Task Force 2001, p. 4; Laist and Reynolds 2005b, p. 287; Taylor 2006, pp. 5–6). Flow declines are largely attributable to demands on aquifers (spring recharge areas) for potable water used for drinking, irrigation, and other uses (Marella 2014, pp. 1–2). Declining flows provide less usable water for wintering manatees. Declines in water quality (e.g., increased nitrates) can promote the growth of undesirable alga, such as *Lyngbya* sp., which can cover and smother food plants used by wintering manatees (Florida Springs Task Force 2001, pp. 12, 26). Notable springs largely inaccessible to manatees due to damming include springs in the Ocklawaha and Withlacoochee river systems. Springs that have silted in include Manatee and Fanning springs, Warm Mineral Spring, Weeki Wachee Spring, and others (Taylor 2006, pp. 5, 8).

In the case of Manatee, Fanning, and Weeki Wachee springs, restoration efforts have removed sand bars and other obstructions, making these sites once again accessible to manatees (The Nature Conservancy 2015). See: <http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/florida/howwework/saving-manatees-through-springs-restoration.xml>. Also, Marella (2014, p. 1) noted declining demands on central Florida aquifers due to increased rainfall, declining agricultural demands, use of re-use water, and other water conservation measures, suggesting that spring flows used by manatees can be maintained. Chapter 62–42, Florida Administrative Code, requires that minimum flow levels be set for Florida waterbodies. Set flow levels require that measures be taken should flows drop below statutorily adopted levels, thus insuring adequate flows. Minimum flows have been set for six springs that are important to wintering manatees. Flow levels must be identified for the Crystal River springs complex and other important springs.

In the southeastern United States, a wide range of conservation efforts identified in the 2007 5-year Review are continuing (USFWS 2007, pp. 17–18; see also Recovery and Recovery Plan Implementation discussion above). Service efforts in cooperation and coordination with State and industry partners are ongoing to minimize any future manatee losses from industrial site reductions or closures by seeking short-term alternatives and long-term sustainable options for supporting manatees without the reliance on industrial warm-water sources. Spring studies and on-the-ground restorations seek to restore flows and access to existing natural springs. Habitat degradation and loss from natural and human-related causes are being addressed through collective efforts to improve overall water quality, minimize construction-related impacts, and minimize loss of seagrass due to prop scarring. Efforts to replant areas devoid of seagrass are showing success in restoring lost manatee foraging habitat (van Katwijk *et al.* 2016, p. 572).

Summary of Factor A: In Florida and Puerto Rico, the manatee has not experienced any curtailment of its range; however, a concern continues to be the loss of warm water habitat. Outside of the U.S. habitat loss, fragmentation, and degradation continue to be a concern for manatees as well. There have been substantial improvements due to regulatory mechanisms in place towards addressing habitat threats since listing. However, these factors still threaten the West Indian manatee but not to the magnitude that currently places the species in danger of extinction, especially given the availability of suitable habitat throughout the species' range. In view of increasing human populations and associated development within the range of the species, it is reasonable to predict that these threats will continue within the foreseeable future of 50 years. Please see section entitled *Foreseeable Future*. We will continue to evaluate projects in areas of U.S. jurisdiction (Puerto Rico and areas of the continental United States) to benefit habitat for the West Indian manatee and make recommendations to avoid and minimize impacts to manatee habitat. For West Indian manatees in the continental United States, ensuring the continued availability of warm-water refugia sites is a critical need related to this factor.

In the discussion above (and in supplemental documents), we describe progress with local, county, city, and State partners to maintain minimum

flows and restore habitat at sites where we believe it will help address this habitat need for the species. For areas outside U.S. jurisdiction, we have documented examples of habitat destruction, modification, and fragmentation that have impacted West Indian manatees, by damming rivers and destroying estuaries. There are also a number of positive examples of manatee protection areas that will continue to provide long-term suitable manatee habitat. The Service, led by our International Affairs Program, will continue to work together with other countries towards manatee habitat conservation.

Factor B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Since the manatee was originally listed, information indicates that overutilization, particularly poaching, occurs to a lesser extent now but continues to affect manatees. Throughout the range of the species, manatees are used for a variety of purposes. Outside the United States, manatees have been hunted and poached to supply meat and other commodities. Recreationally, people seek out opportunities to view manatees through commercial ecotour operators or on their own. There are numerous scientific studies being conducted on captive and wild manatees, including studies of specimens salvaged from carcasses. The public is educated about manatees through a variety of media, such as videos and photographs, including rehabilitating manatees in captivity.

Poaching is hypothesized no longer to occur in a few regions, has been reduced in others, and is still common in others (UNEP 2010, entire; Marsh *et al.* 2011, p. 386). A number of recent poaching events and reports are a concern (Alvarez-Alemán, *et al.*, No Date (ND), retrieved 2017 from: <http://sea2shore.org/focal-species/manatees/antillean-manatee-conservation-in-cuba/>; World Atlas, ND, Retrieved 2017 from: <http://www.worldatlas.com/articles/threatened-mammals-of-guatemala.html>; Grattan 2016, retrieved 2017 from <http://latin correspondent.com/2016/02/20-endangered-manatees-slaughtered-in-colombia/>; Rodríguez Mega 2016, retrieved 2017 from <https://www.worldwildlife.org/magazine/issues/summer-2016/articles/eyes-on-the-water-in-belize/>; Tejo and Maria 2016, retrieved 2017 from <http://dukespace.lib.duke.edu/dspace/handle/10161/12872>). Poaching has been responsible for past declining numbers

throughout much of the Antillean subspecies' range (Thornback and Jenkins 1982, in Lefebvre *et al.* 2001, p. 426) (in 17 of 20 range countries). For example, in Guadeloupe (French Antilles), the local manatee population was hunted to extinction by the early 1900s (Marsh *et al.* 2011, p. 429). In Honduras, manatees are still actively poached on an opportunistic basis in La Mosquita (González-Socoloske *et al.* 2011, p. 129). Depending on certain social and economic factors, current poaching rates in northern Nicaragua vary from year to year (Self-Sullivan and Mignucci-Giannoni 2012, p. 44). Other manatee products include oil, bones, and hide (Lefebvre *et al.* 2001, p. 426; Marsh *et al.* 2011, p. 264; Self-Sullivan and Mignucci-Giannoni 2012, pp. 42–45).

Because of their low reproductive rates (Lefebvre *et al.* 2001, p. 12), poaching continues to pose a serious threat to some manatee populations, especially in those areas where few manatees remain. As of 2009, although manatee poaching in Colombia still occurred in specific areas and seasons (Castelblanco-Martínez 2009, p. 239); it is less common than in the past (UNEP 2010, p. 30). Marsh (2011, p. 269) and other more current reports (Alvarez-Alemán, *et al.*, No Date (ND), retrieved 2017 from: <http://sea2shore.org/focal-species/manatees/antillean-manatee-conservation-in-cuba/>; World Atlas, ND, Retrieved 2017 from: <http://www.worldatlas.com/articles/threatened-mammals-of-guatemala.html>; Grattan 2016, retrieved 2017 from <http://latin correspondent.com/2016/02/20-endangered-manatees-slaughtered-in-colombia/>; Rodríguez Mega 2016, retrieved 2017 from: <https://www.worldwildlife.org/magazine/issues/summer-2016/articles/eyes-on-the-water-in-belize/>; Tejo and Maria 2016, retrieved 2017 from <http://dukespace.lib.duke.edu/dspace/handle/10161/12872>) identifies poaching as a threat to manatees in Belize, Brazil, Colombia, Costa Rica, Cuba, Dominican Republic, French Guiana, Guatemala, Haiti, Honduras, Mexico, Suriname, Trinidad and Tobago, and Venezuela. Poaching is no longer a threat in the mainland United States and Puerto Rico (Marsh 2011, p. 269). Foreign governments have instituted regulations to address this threat (see Factor D discussion). We continue to pursue initiatives with other countries that encourage a ban on poaching and hunting of manatees.

In the southeastern United States and other areas where people view manatees, numerous measures are in

place to prevent the take of manatees due to disturbance of viewing-related harassment. Well-enforced sanctuaries keep people out of sensitive manatee habitats (*i.e.*, warm-water sites), educated tour guides ensure that their customers do not harass manatees, and many educational programs prescribe appropriate measures to take when in the presence of manatees. For example, in 1992, manatees stopped visiting suitable manatee habitat (Swallow Caye, Belize) after swim-with-the-manatee programs were allowed without proper control (Auil 1998, p. 12). Community groups and a local conservation organization helped to declare the area a wildlife sanctuary in 2002. The area is currently co-managed between the Belize Forest Department and a local conservation organization (UNEP 2010, p. 23), and manatees have returned to the area.

In Puerto Rico, harassment of manatees by kayak users and swimmers has been reported in several popular beach and coastal recreational areas. In addition, harassment related to speedboat races in manatee areas has increased. In 2014 alone, the Service reviewed 12 permit applications for speed boat races in Puerto Rico, several of them in areas with high concentrations of manatees. However, to date there have been no reported injuries or deaths of manatees caused by speedboat races. Consultation with the Service under Section 7 of the Act has served to implement specific conservation measures during marine events such as boat races (see Recovery and Recovery Implementation and Available Conservation Measures sections). The U.S. Coast Guard consistently consults with the Service on marine event applications and readily includes manatee conservation measures when applicable. In addition, government agencies and local nongovernmental organizations have implemented education and outreach strategies to ensure that manatee harassment is avoided and minimized.

Education and research programs involving manatees are designed to ensure that manatees are neither adversely affected nor overutilized. Examples include outreach efforts used to minimize manatee harassment in Crystal River, Florida, and the Service's Act/MMPA marine mammal scientific research permitting program, which limits the potential negative effects that research activities have on manatees.

Summary of Factor B: In summary, overutilization (particularly poaching and hunting) occurs to a lesser extent than when the species was originally listed but continues to occur with

varying frequency from absent to common throughout the species' range due to regulatory measures (see detailed discussion in Factor D section) that have been implemented to protect manatees. Efforts are in place to address remaining concerns and are proving effective in a good portion of the West Indian manatee's range. The manatee's situation has improved since it was originally listed; poaching is not a current threat in the southeastern United States (including Puerto Rico) and has been reduced in other countries. However, the threat of poaching in some range countries where poaching is poorly controlled will likely continue within the foreseeable future which we determined to be 50 years (please see section entitled Foreseeable Future).

Factor C. Disease or Predation

At the time of listing, neither disease nor predation were identified as concerns for manatees. While numerous infectious disease agents and parasites have been reported in sirenians (manatees and dugongs), there have been no reports of major West Indian manatee mortality events caused by disease or parasites (Marsh *et al.* 2011, p. 294).

However, disease-related deaths are known to occur in West Indian manatees. Recent cases of toxoplasmosis are a concern in Puerto Rico (Bossart *et al.* 2012, p. 139). Marsh *et al.* (2011, p. 294) stated that the importance of disease as a threat to the manatee is unknown. In spite of concerns about the manatee's ability to rebound from a population crash should an epizootic event occur, the impact of disease on population viability remains unknown (Sulzner *et al.* 2012, p. 1). Marsh *et al.* 2011 (p. 294) speculated that the Florida subspecies appears to have a robust immune system that safeguards them from significant disease outbreaks. We suspect this to be also true for the Antillean subspecies because we have no documented disease outbreaks.

Mou Sue *et al.* (1990) described rare attacks by sharks on manatees in Panama (p. 239). Reported instances of sharks and alligators feeding on manatees are extremely rare (Marsh *et al.* 2011, p. 239).

Summary of Factor C: We do not have information to indicate that disease and predation is now or will be a significant factor in the foreseeable future. However, because of the long lifespan of this mammal, we will continue to monitor disease and predation of manatees with all of our conservation partners.

Factor D. The Inadequacy of Existing Regulatory Mechanisms

Since the manatee was originally listed in 1967, regulatory mechanisms have been established throughout the West Indian manatee's range with varying degrees of effectiveness. At the time of the manatee's original listing, there were very few regulatory mechanisms in place. Currently, regulatory mechanisms include, but are not limited to, specific laws and regulations that prohibit specific and general human activities that impact manatees and their habitat, and the establishment of long-term conservation protection measures at key locations throughout the manatee's range. These include those efforts being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect manatees. The extent and overall effectiveness of these regulatory mechanisms varies widely from country to country. Enforcement and compliance with these measures, as well as the need for additional efforts in some countries, continues to be a concern and will require additional cooperative efforts into the foreseeable future. In the United States, Florida county manatee protection plans (MPPs) have improved the status of manatees.

Outside the United States, West Indian manatees are protected in most countries by a combination of national and international treaties and agreements as listed in Table 4 in UNEP (2010, p. 14), in Lefebvre *et al.* (2001, entire), and Table 4.2 in Self-Sullivan and Mignucci-Giannoni (2012, p. 41). See Supplemental Document 3 in Docket No. FWS-R4-ES-2015-0178. Countries within the range of the Antillean manatee protect the manatee by national legislation (UNEP 2010, Table 4). For example, in the Bahamas, manatees are protected under the Wild Animals Protection Act (Chapter 248, 21 of 1968 E.L.A.O. 1974), which prohibits the taking or capture of any wild animal (Government of the Bahamas 2004). In 2005, the Bahamian Government also created the Marine Mammal Protection Act (No. 12), which monitors and regulates human interactions with marine mammals. The Act prohibits taking, selling, or harassing any marine mammal (Government of the Bahamas 2006). As another example, the Manatee Protection Ordinance (1933-1936) provided the first protective legislation for the species in Belize. In 1981, manatees in Belize were included as an endangered species in the Wildlife Protection Act No. 4 of the Forest Department. The Act prohibits the killing, taking, or molesting of manatees,

as well as possession and sale of any part of any manatee (Auil 1998, pp. 29-30).

The West Indian manatee is listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). CITES (see www.cites.org) is an international agreement through which member countries work together to protect against over-exploitation of animal and plant species found in international trade. Commercial trade in wild-caught specimens of these Appendix I species is illegal (permitted only in exceptional licensed circumstances). The Service reviewed the CITES trade database for the West Indian manatee, which currently has information from 1977 to 2013, and found that trade does not pose a threat to the West Indian manatee at this time. The manatee and its habitat are also protected by the Cartagena Convention Protocol Concerning Specially Protected Areas and Wildlife for the protection and development of the marine environment of the Wider Caribbean Region (SPAW Protocol). The SPAW Protocol, approved in 1990, prohibits the possession, taking, killing, and commercial trade of any sirenian species (UNEP 2010, p. 14).

Although manatees outside of the southeastern United States are legally protected by these and other mechanisms, full implementation of these international and local laws is lacking, especially given limited funding and understaffed law enforcement agencies (UNEP 2010, p. 89).

Marsh *et al.* (2011, p. 387) indicated that enforcement remains a critical issue for West Indian manatees. Outside the United States, mechanisms are needed to allow existing West Indian manatee protection laws to work as intended. Despite all of the existing regulations for manatees, illegal poaching and destruction of habitat continue (Self-Sullivan and Mignucci-Giannoni 2012, p. 41). Enforcement of conservation policies varies in different coastal regions; in some regions, poaching is common and in areas with a government presence, enforcement efforts are thought to be significant (Self-Sullivan and Mignucci-Giannoni 2012, p. 45).

In the United States, in addition to being listed under the Act, the West Indian manatee is further considered a depleted stock under the Marine Mammal Protection Act (see greater detail just below; MMPA, 16 U.S.C. 1361 *et seq.*; Previous Federal Actions section, and Supplemental Document 2 in Docket No. FWS-R4-ES-2015-0178),

and is also taken into consideration when addressing actions under the Clean Water Act and the Fish and Wildlife Coordination Act. The MMPA has contributed to the improvement of the status of the manatee in part through its general moratorium on the taking and importation of marine mammals and their products, with some exemptions (e.g., Alaska Native subsistence purposes) and exceptions to the prohibitions (e.g., for scientific research, enhancement of the species, and unintentional incidental take coincident with conducting lawful activities).

“Take” is defined under the MMPA as “harass, hunt, capture, or kill, or attempt to harass, hunt, capture or kill.” The term “harassment” means “any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild” (Level A harassment), or “has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering” (Level B harassment).

Under the MMPA, any marine mammal species or population stock that is listed as an endangered or a threatened species under the Act is considered by definition “depleted” and managed as such. Furthermore, a marine mammal stock that is listed under the Act is considered a “strategic stock” for purposes of commercial fishery considerations. Neither of these categorizations change with the reclassification of the West Indian manatee from endangered to threatened. Both the Florida and Puerto Rico stocks will remain depleted and strategic under the MMPA.

Title II of the MMPA established the Marine Mammal Commission (Commission), an independent agency of the U.S. Government, to review and make recommendations on the marine mammal policies, programs, and actions being carried out by Federal regulatory agencies related to implementation of the MMPA. The Service coordinates and works with the Commission in order to provide the best management practices for marine mammals.

Within the southeastern United States and Puerto Rico, the West Indian manatee also receives protection by most State and Territorial agencies, and will continue to receive protection as a threatened species. In Florida, the manatee is protected by the Florida Manatee Sanctuary Act (FMSA), which established Florida as a sanctuary for manatees. This designation protects

manatees from injury, disturbance, harassment, and harm in the waters of Florida, and provides for the designation and enforcement of manatee protection zones and has helped to improve the status of the species. However, Florida statutes state that, “[w]hen the federal and state governments remove the manatee from status as an endangered or threatened species, the annual allocation may be reduced” (Florida Manatee Sanctuary Act (FMSA) Chap. 379.2431(2)(u)(4)(c)), suggesting that adequate funding could be reduced after downlisting. Florida laws also provide a regulatory basis to protect habitat and spring flows (Florida Water Resources Act).

In Georgia, West Indian manatees are listed as endangered under the Georgia Wildlife Act of 1973 (O.C.G.A. sections 22–3–130) which prohibits the capture, killing, or selling of protected species and protects the habitat of these species on public lands. In 1999, the Commonwealth of Puerto Rico approved the Law No. 241, known as the New Wildlife Law of Puerto Rico (*Nueva Ley de Vida Silvestre de Puerto Rico*). The purpose of this law is to protect, conserve, and enhance both native and migratory wildlife species, declare to be the property of Puerto Rico all wildlife species within its jurisdiction, and regulate permits, hunting activities, and exotic species, among other actions. In 2004, the PRDNER approved Regulation 6766 to regulate the management of threatened and endangered species in Puerto Rico (*Reglamento 6766—Reglamento para Regir el Manejo de las Especies Vulnerables y en Peligro de Extinción en el Estado Libre Asociado de Puerto Rico*). In particular, the New Wildlife Law of Puerto Rico of 1999 and its regulations provide for severe fines for any activities that affect Puerto Rico’s endangered species, including the Antillean manatee. These laws similarly prohibit the capture, killing, take, or selling of protected species.

Also, the Navigation and Aquatic Safety Law for the Commonwealth of Puerto Rico (Law 430) was implemented in year 2000 and allows for the designation and enforcement of watercraft speed zones for the protection of wildlife and coastal resources (PRDNER 2000). However, in Puerto Rico and Florida, despite protections, watercraft collisions continue to negatively impact manatees (see Factor E). The PRDNER has indicated that current speed regulatory buoys are ineffective, in part because regulations do not identify the perimeter or area that each buoy regulates (Jiménez-Marrero 2015, pers. comm.). Thus, emphasis has been given to public

education and signage in coastal areas to further reduce manatee mortality.

In addition, there are numerous other manatee protection laws and regulations in place in other States within the United States. These are detailed in a table entitled “Existing International, Federal, and State Regulatory Mechanisms,” see “Supplemental Document 2” in Docket No FWS–R4–ES–2015–0178 or <http://www.fws.gov/northflorida> and <http://www.fws.gov/caribbean/es>. This table shows an extensive list of existing regulatory mechanisms in place for the West Indian manatee; many have been instituted, revised, or improved to better protect the manatee.

Based on population growth and stability described earlier in this rule, the above-described regulatory mechanisms in place have contributed towards growth in the West Indian manatee population in the United States and provided protection for their habitat as needed. These existing regulatory mechanisms will remain in effect when the species is reclassified to threatened. The West Indian manatee in the United States will remain protected as a threatened species under the Act, and as a depleted species under the MMPA. As long as funding remains available, recovery actions would continue to be implemented, regulations enforced, and additional measures adopted as needs arise. State and Federal agencies would continue to coordinate on the implementation of manatee conservation measures.

Summary of Factor D: In summary, regulatory mechanisms implemented since the manatee’s listing, such as state and foreign country protections, have ameliorated some of the factors affecting manatees. However, challenges in the enforcement of regulatory mechanisms remain and there are still outstanding threats to the species. When this rule becomes effective and the species is reclassified to threatened, regulatory mechanisms will remain in place under the Act and will continue to provide legal protections to the species. CITES and MMPA protections will also remain in place. We will continue to maintain our relationships with local, State, and foreign governments to encourage the use of regulatory mechanisms to support the recovery of manatees.

Factor E. Other Natural or Manmade Factors Affecting Its Continued Existence

At the time of listing in 1967, one of the primary factors that led to its federally-protected status was watercraft collisions with manatees. Since 1967, several regulatory measures have been

established to help address this concern which are discussed in detail below. In addition, since manatees have been protected, studies and monitoring have revealed that current factors that may affect West Indian manatees include: Human-related interactions, such as watercraft collisions, harassment, fishing gear entanglement, exposure to contaminants, and naturally occurring phenomena such as harmful algal blooms, exposure to the cold, loss of genetic diversity, effects of climate change, and tropical storms and hurricanes. In 2007, the Service considered watercraft collisions to be the most significant factor affecting manatees in the United States (USFWS 2007, pp. 32–33). We provide summaries of other natural and manmade factors below:

Watercraft—Watercraft collisions that kill or injure manatees are a threat in some range countries outside the United States. However, current information on the effects of boat traffic on manatees does not exist for most range countries outside the United States. In some countries such as Belize, watercraft collisions are the predominant cause of death and are increasing (Auil and Valentine 2004, in UNEP 2010, p. 22; Galves *et al.* 2015, entire). As the number of registered boats has increased significantly since the mid-1990s, manatees are most vulnerable to collisions in the waters near Belize City (Auil 1998, in UNEP 2010, p. 22; Galves *et al.* 2015, entire). Motorboats are becoming more abundant and popular in Guatemala, and watercraft traffic and speed are not regulated even within protected areas (UNEP 2010, pp. 45–46). An aquatic transportation system with high-powered engines has increased boat transit in one of the most important manatee habitat areas in Panama (UNEP 2010, p. 66). Increased boating activities in Brazil have resulted in both lethal collisions with manatees and disruption of manatee behavior (Self-Sullivan and Mignucci-Giannoni 2012, p. 43).

Within the United States, watercraft-related deaths have been identified as the most significant anthropogenic threat to manatees in both Florida and Puerto Rico. In Puerto Rico, 34 years of manatee mortality data from 1980 to 2014 indicate that a total of 37 manatees have died due to watercraft (Mignucci *et al.* 2000, p. 192; Mignucci-Giannoni 2006, p. 2; PRDNER 2015, unpubl. data). This number represents approximately 15 percent of the total known mortality cases during that time (37 out of 242) or an average of 1.1 manatees per year. Although 37 deaths may be considered a low number, it can be argued that the percentage of watercraft-related causes

of death may be somewhat underestimated for three reasons. First, for the majority of the manatee mortality cases in Puerto Rico, the cause of death is deemed undetermined (38 percent, 92 out of 242), mostly because carcasses are too decomposed when found and a cause of death cannot be determined, so it may be that many of these deaths are also watercraft-related. Second, watercraft-related effects that may cause a mother and calf to separate will go undetected, as it would be challenging to find evidence of such an event. The number of dependent calf deaths in Puerto Rico for the past 34 years is 55 calves (22.6 percent, 55 out of 242) or an average of 1.6 manatee calves per year. The majority of the manatees rescued for rehabilitation in Puerto Rico are calves. Lastly, it is assumed that not all carcasses are recovered, so there may be additional undocumented deaths caused by watercraft.

However, carcass salvage numbers for Puerto Rico indicate that the number of watercraft-related deaths is low, and the population is believed to remain stable (see Population Size and Population Trends sections) in spite of these numbers. As boat use in Puerto Rico has increased in number and distribution (PRDNER 2012, p. 3), and with no State or Federal MPAs yet established, one may expect an increase in watercraft-related conflicts. Still, manatee carcass totals for Puerto Rico have exceeded 10 or more only six times over 34 years and average approximately 7 per year (Mignucci *et al.* 2000, p. 192; Mignucci-Giannoni 2006, p. 2; PRDNER Manatee Stranding Reports 2015, unpubl. data). In addition, calf numbers documented in the most recent aerial surveys indicate the population is reproducing well, with a record high of 23 calves counted in December 2013 (see Population Size section). As the species continues to move towards recovery, the Service will continue to address and make improvements towards avoiding and further reducing watercraft-related deaths or impacts.

In Florida, a manatee carcass salvage program, started in 1974, collected and examined manatee carcasses to determine cause of death. This program identified watercraft collisions with manatees as a primary cause of human-related manatee mortality. The recent status review and threats analysis shows that watercraft-related mortality remains the single largest threat in Florida to the West Indian manatee (O'Shea *et al.* 1985, entire; Ackerman *et al.* 1995, entire; Wright *et al.* 1995, entire; Deutsch *et al.* 2002, entire; Lightsey *et al.* 2006, entire; Rommel *et al.* 2007, entire; Runge *et al.* 2015, p. 16). Runge

et al. (2015, p. 20) observed that watercraft-related mortality makes the largest contribution to the risk of extinction; full removal of this single threat would reduce the risk of extinction to near negligible levels. Mortality data from FWCs Manatee Carcass Salvage Program and other sources describe numbers of watercraft-related deaths, general areas where deaths occur, trauma, and other parameters (O'Shea *et al.* 1985, entire; Ackerman *et al.* 1995, entire; Wright *et al.* 1995, entire; Deutsch *et al.* 2002, entire; Lightsey *et al.* 2006, entire; Rommel *et al.* 2007, entire).

Over the past 5 years, more than 80 manatees have died from watercraft-related incidents each year. The highest year on record was 2009, when 97 manatees were killed in collisions with boats. The Manatee Individual Photo-identification System (1978 to present) identifies more than 3,000 Florida manatees by scar patterns mostly caused by boats, and most catalogued manatees have more than one scar pattern, indicative of multiple boat strikes. A cursory review of boat strike frequency suggested that some manatees are struck and injured by boats twice a year or more (O'Shea *et al.* 2001, pp. 33–35).

Federal, State, and local speed zones are established in 26 Florida counties. In Brevard and Lee Counties, where watercraft-related mortality is among the highest reported, speed zone regulations were substantially revised and areas posted to improve manatee protection in the early 2000s. Since 2004, the FWC has approved new manatee protection rules for three counties in Tampa Bay and reviewed and updated speed zones in Sarasota, Broward, Charlotte, Lee, and Duval Counties. In October 2005, the Hillsborough County Commission adopted mandatory manatee protection slow-speed zones in the Cockroach Bay Aquatic Preserve that previously had been voluntary. In 2012, speed zones were established in the Intracoastal Waterway in Flagler County. In addition, of the 13 counties identified in 1989 as in need of State-approved MPPs, all have approved plans. Two additional counties, Clay and Levy, proactively developed their own MPPs. Implementation of these protective measures stabilizes and may even reduce the mortality rate from watercraft collisions. An anticipated increase (118 percent) in the number of boats using Florida waterways over the next 50 years will require continued efforts to minimize watercraft collisions with manatees.

The primary conservation action in place to reduce the risk of manatee

injury and death from watercraft collisions is a limitation on watercraft speed. The rationale is that a slower speed allows both manatees and boaters additional response time to avoid a collision. Furthermore, if an impact occurs, the degree of trauma will generally be less if the colliding boat is operating at slower speed (Laist and Shaw 2006, p. 478; Calleson and Frohlich 2007, p. 295). Despite continued losses due to watercraft collisions, the southeastern U.S. manatee population is expected to increase slowly under current conditions (Runge *et al.* 2015, p. 11), which is due in part to regulatory measures that have been implemented since the manatee was listed.

The Service developed programmatic consultation procedures and permit conditions for new and expanding watercraft facilities (*e.g.*, docks, boat ramps, and marinas) as well as for dredging and other in-water activities through an effect determination key with the U.S. Army Corps of Engineers and State of Florida (the “Manatee Key”) (revised in 2013). The Manatee Key ensures that watercraft facility locations are consistent with MPP boat facility siting criteria and are built consistent with MPP construction conditions. The Service concluded that these procedures constitute appropriate and responsible steps to avoid and minimize adverse effects to the species and contribute to recovery of the species.

Fishing Gear—Fishing gear (nets, crab traps, etc.) is known to entangle and injure and kill manatees; ingestion of fishing gear and other debris (monofilament and associated tackle, plastic banana bags, etc.) also kills manatees. In countries outside the United States, the incidental capture of animals in fishing gear is still a threat, and the captured manatees are occasionally butchered and used for food and various products. In Cuba, researchers have recently documented a decrease in the number of manatee deaths within a marine protected area, hypothesized to be due to a ban on the use of trawl net fishing in that area (Sea to Shore Alliance 2014, entire). One of the principal causes of perceived increases in manatee decline along the northern and western coasts of the Yucatan peninsula includes increased use of fishing nets that entangle manatees (Morales-Vela *et al.* 2003, in UNEP 2010, p. 59; Serrano *et al.* 2007, p. 111). In Honduras, the major cause of known manatee mortality in the period 1970–2007 was due to entanglement in fishnets (González-Socoloske *et al.* 2011, p. 123), while Nicaragua reports

between 41 and 49 manatees being killed by accidental entanglements in fishing nets from 1999 to 2000 (Jiménez 2002, in UNEP 2010, p. 63). Although gillnets are illegal in Costa Rica, gillnet entanglements still occur there. However, they are uncommon in certain protected manatee use areas (Jiménez 2005, in UNEP 2010, p. 34). Castelblanco-Martínez *et al.* (2009, in Marsh *et al.* 2011, p. 278) suggest that incidental drowning in fishing nets causes almost half of the mortality and wounding of manatees in the Orinoco River in Colombia. A variety of fishing gear was reported to cause manatee entanglements, and at least 43 calves were entangled in gear in northeast Brazil between 1981 and 2002 (UNEP 2010, p. 26). On the northeast coast of Brazil, the main cause of manatee deaths is due to the constant presence of gill and drag nets (Lima *et al.* 2011, p. 107). However, most range countries outside of the United States do not have current information on the effects of fishing gear and entanglements on manatees.

In Puerto Rico, fisheries-related entanglements and debris ingestion may cause take and reduce fitness of manatees. In July 2009, there was a documented case of entanglement (beach seine net) and successful release of an adult manatee. In 2014, three adult manatees were entangled in large fishing nets, one of which was an adult female that died (PRDNER 2015, unpubl. data). A few manatees have also been found that were severely entangled in monofilament line. Stranding records indicate they rarely cause manatee deaths in Puerto Rico; a total of four in 34 years have been documented.

Fishing gear, including both gear in use and discarded gear (*i.e.*, crab traps and monofilament fishing line), is a continuing and increasing problem for manatees in the southeastern United States. It is unknown if the increasing number of rescues is a reflection of increasing awareness and reporting of entangled manatees, increases in fishing effort, increases in the number of manatees, or other factors. Between 2010 and 2014, researchers attributed 18.2 percent of all rescues to entanglement.

Rescue activities that disentangle manatees have almost eliminated mortalities and injuries associated with fishing gear (USFWS Captive Manatee Database 2015, unpubl. data) which has likely contributed towards the improvement of the status of the species. Derelict crab trap removal and monofilament recycling programs aid in efforts to reduce the number of entanglements by removing gear from

the water. Extensive education and outreach efforts increase awareness and promote sound gear disposal activities. As a result, deaths and serious injuries associated with fishing gear are now extremely rare. Runge *et al.* (2015, p. 16) determined that marine debris (including entanglements in and ingestion of fishing gear) presented a weak threat to the West Indian manatee in Florida. In the future, we would like to seek opportunities to share information with countries like Cuba, Belize, and Mexico and continue to reduce entanglements from discarded or current gear range wide.

Water Control Structure—Advances in water control structure devices that prevent manatees from being crushed or impinged have been largely successful. In Florida, most structures have been fitted with devices. These devices include acoustic arrays, piezoelectric strips, grates, and bars that reverse closing structures and/or prevent manatees from accessing gates and recesses. Runge *et al.* (2015, p. 16) determined that water control structures presented a weak threat to the West Indian manatee in Florida and noted that death or injury due to water control structures had become a rare event (2015, p. 19).

Contaminants—Direct and indirect exposure to contaminants and/or chemical pollutants in benthic habitats is another factor that may have adverse effects on manatees (Bonde *et al.* 2004, p. 258). Contaminants are known to have affected one manatee in Puerto Rico (diesel spill), and residues from sugar processing in Cuba are thought to have killed manatees there (Caribbean Stranding Network 1999, entire; UNEP 1995 in UNEP 2010, p. 37). Because of this, manatees may have abandoned Cuba’s largest bay area because of contamination (UNEP 1995 in UNEP 2010, p. 37). In Florida, manatees congregate at warm water outfalls in port areas where large volumes of petroleum products are transshipped. The proximity of large numbers of manatees to these areas where they and their habitat can be exposed to petroleum puts them at risk. The U.S. Coast Guard and the State of Florida practice oil spill drills in these areas and prepare for such contingencies. There are many activities that introduce contaminants and pollutants into the manatees’ environment—gold mining, agriculture, oil and gas production, and others. Despite the presence of contaminants in manatee tissues, the effect that these have on manatees is poorly understood (Marsh *et al.* 2011, pp. 302–305).

Algal Blooms—These red tide blooms occur when large concentrations of the red tide organism *Karenia brevis* are present along Florida's Gulf coast. These concentrations produce brevetoxins which are inhaled or ingested by manatees with lethal effect. In southwest Florida, extensive red tide blooms killed 276 manatees in 2013. Runge *et al.* (2015, p. 20) noted that on Florida's Gulf coast, red tide effects are stronger than the effect of watercraft-related mortality due, in part, to "the increased estimate of adult survival in the Southwest and the anticipated continued increase in the frequency of severe red-tide mortality." Runge *et al.*'s (2015, p. 1) analysis did not address the effect of the 2013 red tide event in its assessment.

In 2011, algal blooms in Florida's Indian River Lagoon clouded the water column and killed over 50 percent of the seagrass beds in the region (St. Johns River Water Management District, 2015). The loss of seagrass beds likely caused a dietary change that may have played a role in the loss of more than 100 manatees in the area. While algal blooms occur in other parts of the species' range, there have not been any significant die-offs attributable to this cause in this portion of the species' range.

Cold Weather—The Florida manatee subspecies is at the northern limit of the species' range. As a subtropical species, manatees have little tolerance for cold and must move to warm water during the winter as a refuge from the cold. See Recovery section for additional information. During extremely cold weather, hundreds of animals died in 2010 and 2011 due to cold stress. Notably, animals that relied on Florida's natural warm-water springs fared the best, while animals in east-central and south Florida, where springs are absent, fared the worst (Barlas *et al.* 2011, p. 31). Manatees using seagrass beds along east-central Florida's Atlantic coast cannot easily access warm-water springs of the St. Johns River during periods of cold temperatures, and in the absence of access to warm water associated with power plants, these manatees are at risk. Since these events, the number of deaths due to cold has returned to an average of roughly 30 per year (FWC FWRI 2015, unpubl. data). While cold stress remains a threat to Florida manatees, Antillean manatees, found outside of the southeastern United States, do not suffer from cold stress because they inhabit warm subtropical waters. Progress is being made in protecting warm-water sites; we continue to work with our partners to

protect these sources to minimize cold-related manatee deaths.

Genetics—Isolated locations, small population sizes, and low genetic diversity increase the susceptibility of West Indian manatee to rapid decline and local extinction (Hunter *et al.* 2012, p. 1631). Low genetic diversity has been identified as a threat to manatee populations in Puerto Rico and Belize (Hunter *et al.* 2010, entire; Hunter *et al.* 2012, entire). In addition, the manatee population in Puerto Rico is essentially closed to immigration from outside sources. Natural geographical features and manatee behavior limits gene flow from other neighboring manatee populations (*i.e.*, Dominican Republic), and genetic mixing is not expected (Hunter *et al.* 2012, p. 1631). Manatee populations in other portions of the range may also be affected by isolation, small population size, and low genetic diversity. Low genetic diversity in the southeastern United States has been identified as a potential concern (Bonde *et al.* 2012, p. 15). However, there is limited detailed genetic information to confirm the significance of this to the West Indian manatee as a whole.

Tropical Storms—Tropical storms and hurricanes may also pose a threat to manatees. Live manatee strandings and reduced adult manatee survival rates can be attributed, in part, to hurricanes and storms (Langtimm and Beck 2003, entire; Langtimm *et al.* 2006, entire). Langtimm and Beck (2003) suggest that both direct and indirect mortality (from strandings, debris-related injuries, animals being swept offshore, etc.) and/or emigration associated with hurricanes and storms may cause a decrease in adult survival rates. This result has been observed in Florida and in Mexico: Hurricanes and storms are thought to affect the presence/absence of manatees in storm-struck areas. In Puerto Rico, tropical storms and hurricanes intensify heavy surf, and at least one manatee calf death was attributed to Hurricane Hortense in 1996 (USFWS 2007, p. 33). Other factors can either exacerbate or ameliorate risk to the manatee population, such as density of manatees within the strike area, the number of storms within a season, protective features of the coastline such as barrier islands, or occurrence of other mortality factors (Langtimm *et al.* 2006, p. 1026). However, there is limited information to confirm the significance of tropical storms on manatees.

Climate Change/Sea-level Rise—The Intergovernmental Panel on Climate Change (IPCC) concluded that warming of the climate system is unequivocal (IPCC 2014, p. 3). The more extreme impacts from recent climate change

include heat waves, droughts, accelerated snow and ice melt including permafrost warming and thawing, floods, cyclones, wildfires, and widespread changes in precipitation amounts (IPCC 2014, pp. 4, 6). Due to the projected sea level rise (SLR) associated with climate change, coastal systems and low-lying areas will increasingly experience adverse impacts such as submergence, coastal flooding, and coastal erosion (IPCC 2014, p. 17). In response to ongoing climate change, many terrestrial, freshwater, and marine species have shifted their geographic ranges, seasonal activities, and migration patterns (IPCC 2014, p. 4).

Although SLR is due in part to natural variability in the climate system, scientists attribute the majority of the observed increase in recent decades to human activities that contribute to ocean thermal expansion related to ocean warming, and melting of ice (Marcos and Amores 2014, pp. 2504–2505).

Trend data show increases in sea level have been occurring throughout the southeastern Atlantic and Gulf coasts, and, according to Mitchum (2011, p. 9), the overall magnitude in the region has been slightly higher than the global average. Measurements summarized for stations at various locations in Florida indicate SLR there has totaled approximately 200 millimeters (mm) (8 inches (in.)) over the past 100 years, with an average of about 3.0 mm per year (0.12 in. per year) since the early 1990s (Ruppert 2014, p. 2). The relatively few tidal gauges in Florida, Alabama, Georgia, South Carolina, and southern North Carolina also show increases, the largest increases being in South Carolina, Alabama, and parts of Florida (NOAA Web site <http://tidesandcurrents.noaa.gov/sltrends/sltrends.shtml>, accessed August 28, 2015).

Continued global SLR is considered virtually certain to occur throughout this century and beyond (Stocker, 2013, p. 100; Levermann *et al.* 2013, entire). Depending on the methods and assumptions used, however, the range of possible scenarios of global average SLR for the end of this century is relatively large, from a low of 0.2 meters (m) (approximately 8 in.) to a high of 2 m (approximately 78 in., *i.e.*, 6.6 feet (ft)) (Parris *et al.* 2012, pp. 2, 10–11). Although this relatively wide range reflects considerable uncertainty about the exact magnitude of change, it is notable that increases are expected in all cases, and at rates that will exceed the SLR observed since the 1970s (IPCC 2013, pp. 25–26). Given the large number and variety of climate change

and SLR models, forecasts of the rate and extent of SLR vary significantly. Because of the variation in projections and uncertainties associated with manatee response to SLR, it will be important to continue monitoring manatee habitat use throughout the species' range.

Other possible effects of climate change include increases in the frequency of harmful algal blooms, increases in the frequency and intensity of storms, losses of warm-water refugia and possible decreases in the number of watercraft collisions. Warmer seas may increase the frequency, duration, and magnitude of harmful algal blooms and cause blooms to start earlier and last longer. Increases in salinity could create more favorable conditions for other species; conversely, increases in storm frequency and extreme rainfall could offset the effects of salinity on algal growth (Edwards *et al.* 2012, p. 3).

Climate change models predict that the intensity of hurricanes will increase with increasing global mean temperature (Edwards *et al.* 2012, p. 4). Langtimm *et al.* (2006, entire) found that mean adult survival dropped significantly in years after intense hurricanes and winter storms. These decreases were thought to be due to tidal stranding, animals being swept out to sea, loss of forage, or emigration of animals out of affected areas (Langtimm *et al.* 2006, p. 1026).

For manatees in the southeastern United States, SLR could mean the loss of most of the major industrial warm-water sites and result in changes to natural warm-water sites. In the event of a projected SLR of 1 to 2 meters (3.3 to 6.6 feet) in 88 years (Rahmstorf 2010 and Parris *et al.* 2012 in Edwards *et al.* 2012, p. 5), SLR will inundate these sites and warm-water capacity could be lost. While power plants may not be in operation when SLR inundates their sites, the increased intensity and frequency of storms could interrupt plant operations and warm-water production. If storms result in the loss of a power plant, manatees that winter at that site could die in the event that they did not move to an alternate location (Edwards *et al.* 2012, p. 5). Increased intrusion of saltwater from SLR or storm surge coupled with reduced spring flows could reduce or eliminate the viability of natural springs used by wintering manatees (Edwards *et al.* 2012, p. 5).

Climate-change-induced loss of fishing habitat and boating infrastructure (docks, etc.), increases in storm frequency, and pollutants and changes in economics and human demographics could decrease the per

capita number of boats operating in manatee habitat. If these changes were to occur, decreases in the numbers of boats operating in manatee habitat could reduce numbers of manatee-watercraft collisions (Edwards *et al.* 2012, p. 7).

Many complex factors with potentially negative consequences are likely to operate on the world's marine ecosystems as global climate change progresses. Conversely, climate change could potentially have a beneficial effect, as well (see discussion above). Therefore, there is uncertainty regarding how climate change and its effects may impact the manatee and its habitat in the future (Hoegh-Guldberg and Bruno 2010 in Marsh *et al.* 2011, p. 313). See *Cumulative Effects* below.

Summary of Factor E: At the time of listing, manatees were believed to be threatened by watercraft, the loss of seagrasses, contaminants, and harassment. Since the then, efforts to reduce boat collisions have been successful in some cases; however, watercraft collisions continue to be an ongoing concern for manatees. Watercraft strikes or collisions, fishing gear entanglement, entrapment or crushing in water control structures, contaminants; harmful algal blooms, cold weather, loss of genetic diversity, tropical storms, and the effects of climate change are factors that may continue to have an effect on West Indian manatees for the foreseeable future. The negative effects associated with increasing numbers of watercraft will require continued maintenance and enforcement of manatee protection areas, and the adoption of additional protected areas both inside and outside the United States will continue as needs become apparent. Increasing fishing efforts and the consequent increase of fishing gear in water will require continued efforts to maintain gear in a manatee-safe fashion, additional and continued gear clean-ups, and maintenance of the manatee rescue program to rescue entangled manatees. While most water control structures in the United States have been fitted to prevent impingements and crushings and have contributed to the improvement of the status of manatees, new structures in the United States must be fitted to minimize impacts to manatees. Existing and new structures outside the United States should be fitted, as well. For manatees in Florida, harmful algal blooms and cold weather will continue to affect this subspecies. Tropical storms and hurricanes will continue to have an effect on the West Indian manatee in most parts of its range. Effects of climate change and sea level rise impacts on West Indian

manatees and their habitat are uncertain.

While watercraft collisions and the pending loss of the Florida manatees' loss of warm water habitat are being addressed, they have not been eliminated. There is a high level of uncertainty regarding the overall effects of climate change on the species and its habitat.

Cumulative Effects—Factors can individually impact a species and/or its habitat and can work in concert with one another to cumulatively create conditions that may impact a species or its habitat beyond the scope of individual threats and, thereby, increase the risk of extinction. Factors negatively affecting manatees include habitat loss, degradation, and fragmentation; watercraft collisions; the loss of winter warm-water habitat; poaching; and others.

In our assessment, we reviewed manatee population models (Castelblanco-Martínez *et al.* 2012; Runge *et al.*, 2007; and others) that assessed the effects of these threats both individually and cumulatively. Runge *et al.* (2007) conducted a simultaneous and integrated analysis of the threats facing Florida manatees and concluded that the role of threats faced by manatees is cumulative and increases the risk of extinction. Castelblanco-Martínez *et al.* (2012, p. 130) observed that “[t]he cumulative actions of natural catastrophes, anthropogenic disturbances, and low recovery rates can cause a progressive decrease in the [Antillean manatee] population throughout the range.”

Runge *et al.* (2007) considered the individual effect of each threat and the cumulative effect of multiple threats in pairs, multiples and all threats. By way of example, the authors observed that the addition of the watercraft threat to a baseline scenario with no threats raised the extinction probability and that the addition of the watercraft threat to a scenario that contained all of the remaining threats raised the extinction probability to an even greater extent (Runge *et al.*, 2007, p. 13). They noted that “[a]ny single threat does not pose a particularly large risk, but in combination the risk is substantially greater” (Runge *et al.*, 2007, p. 13).

We did not find significant information that would lead us to believe that the cumulative effect of factors acting on the species warrants maintaining the West Indian manatee as endangered. Rather, the potential cumulative effects of factors (both positive and negative) affecting the West Indian manatee, in part, contribute to the species' threatened status.

Foreseeable Future

The Act does not define the term “foreseeable future.” In a general sense, the foreseeable future is the period of time over which events can reasonably be anticipated; in the context of the definition of “threatened species,” the Service interprets the foreseeable future as the extent of time over which the Secretary can reasonably rely on predictions about the future in making determinations about the future conservation status of the species. It is important to note that references to “reliable predictions” are not meant to refer to reliability in a statistical sense of confidence or significance; rather the words “rely” and “reliable” are intended to be used according to their common, non-technical meanings in ordinary usage. In other words, we consider a prediction to be reliable if it is reasonable to depend upon it in making decisions, and if that prediction does not extend past the support of scientific data or reason so as to venture into the realm of speculation.

In considering threats to the species and whether they rise to the level such that listing the species as a threatened species or endangered species is warranted, we assess factors such as the imminence of the threat (*i.e.*, is it currently affecting the species or, if not, when do we expect the effect from the threat to commence, and whether it is reasonable to expect the threat to continue into the future), the scope or extent of the threat, the severity of the threat, and the synergistic effects of all threats combined. If we determine that the species is not currently in danger of extinction, then we must determine whether, based upon the nature of the threats, it is reasonable to anticipate that the species is likely to become in danger of extinction within the foreseeable future. As noted in the 2009 Department of the Interior Solicitor’s opinion on foreseeable future, “in some cases, quantifying the foreseeable future in terms of years may add rigor and transparency to the Secretary’s analysis if such information is available. Such definitive quantification, however, is rarely possible and not required for a foreseeable future analysis” (DOI 2009; p. 9), available at <https://solicitor.doi.gov/opinions/M-37021.pdf>.

One possible way to determine foreseeable future is as the lifespan of the species. As explained in our proposed rule (81 FR 1004; January 8, 2016), the lifespan of the manatee is not known with certainty, but there is a record of a 67-year old captive Florida manatee and documented longevity records of over 55 years in the wild. We

identify in our determination that the foreseeable future of this species is 50 years (see below), is largely consistent with the lifespan of this species. We have also used two published population models (Castelblanco-Martínez *et al.* 2012; Runge *et al.* 2015) and a threats analysis to state there is a small chance that the West Indian manatee will become extinct within this timeframe.

As suggested in the Solicitor’s opinion, for the purposes of the present analysis, we are relying on an evaluation of the foreseeability of threats and the foreseeability of the effect of the threats on the species, extending this time period out only so far as we can use the data to formulate reliable predictions about the status of the species, and not extending so far as to venture into the realm of speculation. Therefore, in the case of the West Indian manatee, we conclude that the foreseeable future is that period of time within which we can reliably predict whether or not the species is likely to become an endangered species as a result of the effects of the threats specified in this rule. We consider 100 years to be beyond the foreseeability of threats to the West Indian manatee across the 21 countries where the West Indian manatee currently occurs (Table 1), especially given the known uncertainties and data limitations throughout most of the Antillean subspecies range. We have identified a foreseeable future of 50 years because it is a period of time over which we are able to reliably predict the magnitude of threats and their effects on manatee. This time period is consistent with respect to our ability to make predictions on the magnitude and the effects of the principal factors impacting the species as described above. The 50-year period is also similar to the timeframe used for the decline predictions identified for this species by the IUCN (decline at a rate of at least 10 percent over the course of three generations or about 60 years, Deutsch *et al.* 2008, online). This approach creates a more robust analysis of the best scientific and commercial data available.

As explained in more detail above, principal factors impacting the species include: Habitat destruction and modification, future availability of warm-water sites for the Florida manatee, the frequency of red tide and/or other unusual mortality events, watercraft strikes and injuries, and poaching in some areas of its range. In addition, although numerous regulatory mechanisms to protect manatees exist, challenges in the enforcement of these

regulatory mechanisms have been identified, including in areas outside the United States. For example, full implementation of international and local laws is lacking, especially given limited funding and understaffed law enforcement agencies (UNEP 2010, p. 89). Most of the identified factors in this rule impacting the West Indian manatee are influenced by humans, and recovery actions are aimed at mitigating or reducing these human activities that are detrimental to the species.

Within the foreseeable future of 50 years, human populations and concomitant factors affecting the species are expected to increase. For example, human population growth and the resulting pressure exerted on habitats are expected to result in more impacts to coastal and freshwater resources, as land is converted to uses that will meet the needs of the human population. In 2015, there were 634,000,000 people in Latin America and the Caribbean (UN 2015, p. 1); in 2010, there were 18,801,310 people in Florida (Carr and Zwick *et al.* 2016, p. 4). Human populations in the Latin American and Caribbean region are projected to grow to 784,000,000 by 2050 (23.7 percent) and in Florida, to 33,721,828 (68.7 percent) by 2070 (UN 2016; Carr and Zwick *et al.* 2016, p. 4). Given that human populations continue to grow (Marsh *et al.* 2012, p. 321), it is expected that human-manatee conflicts will also increase and will result in additional stressors to the West Indian manatee population and greater challenges for conservation. In Florida, human population increases will increase water withdrawals from Florida’s aquifers which, in turn, will diminish the amount of warm water available to manatees in Florida’s springs (Edwards 2012, p. 6). This population increase will also increase the number of registered boats in Florida from 915,713 (Florida Department of Highway Safety and Motor Vehicles: Florida Vessel Owners, Statistics 2015; <http://www.hsmv.state.fl.us/dmrv/TaxCollDocs/vesselstats2015.pdf>) to an estimated 2,000,000 boats by 2060 (118.4 percent), likely increasing the risk of vessel collisions with manatees (FWC 2008, p. 24). Continuing and increasing efforts will be needed to ensure that this species does not become endangered within the foreseeable future.

Determination

An assessment of the need for a species’ protection under the Act is based on whether a species is in danger of extinction or likely to become so because of any of the five factors: (A)

The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or human-made factors affecting its continued existence. As required by section 4(a)(1) of the Act, we conducted a review of the status of the West Indian manatee and assessed the five factors to evaluate whether the species is in danger of extinction, or likely to become endangered in the foreseeable future throughout all or a significant portion of its range. We examined the best scientific and commercial information available regarding the past, present, and future threats faced by this species.

In considering what factors might constitute current threats, we must look beyond the mere exposure of the species to the factor to determine whether the exposure causes actual impacts to the species. If there is current exposure to a factor, but no response, or only a positive response, that factor is not a threat. If there is exposure and the species responds negatively, the factor may be a threat and we then attempt to determine how significant the threat is. If the threat is significant, it may drive, or contribute to, the risk of extinction of the species such that the species warrants listing as an endangered species or threatened species as those terms are defined by the Act. This determination does not necessarily require empirical proof of a threat. The combination of exposure and some corroborating evidence of how the species is likely impacted could suffice. The mere identification of factors that could impact a species negatively is not sufficient to compel a finding that listing is appropriate; we require evidence that these factors are operative threats that act on the species to the point that the species meets the definition of an endangered species or threatened species under the Act.

By definition, an endangered species is a "species which is in danger of extinction throughout all or a significant portion of its range" and a threatened species is a "species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." In the southeastern United States, where the largest population of manatees exists, the manatee population has likely grown in size, based on updated adult survival rate estimates and estimated growth rates (Runge *et al.*, 2015, p. 19). A summary of the factors affecting the species, including successes in the

species' recovery, is discussed in more detail below.

Human causes of mortality and injury are being addressed in part throughout the manatee's range. Predominant causes of mortality and injury include poaching (factor B), entanglement in fishing gear (factor E), and collisions with watercraft (factor E). Poaching has been eliminated in the southeastern United States and in Puerto Rico (factor B). Efforts to address poaching outside the United States vary in effectiveness, with some successful reductions in a few countries (factor D). Poaching attempts in areas where controls are not in place are a threat to the West Indian manatee that makes it likely to become endangered within the foreseeable future. Entanglement in fishing gear continues throughout the species' range (factor E). In the southeastern United States, entangled manatees are rescued and very few deaths and serious injuries occur. In Puerto Rico, there have been few entanglements since 1986, when entanglements were first reported as a severe threat. Entanglements outside the United States are known to occur; however, the magnitude and severity of this threat is unknown.

Watercraft collisions are the predominant anthropogenic cause of death for manatees in the United States (factor E). The Service, other Federal agencies, and State and Commonwealth wildlife management agencies continue to be engaged in significant efforts to address and further reduce this threat. In Florida, a network of marked, enforced, manatee protection areas ensure that boat operators slow down to help avoid manatees. In Puerto Rico, manatee protection areas have not been designated, but a number of regulated manatee speed buoys are in place to better protect manatees (factors A and D). Watercraft collisions are known to kill manatees outside the United States; however, available information on the magnitude of this threat in other countries is limited, except for in Belize where this threat is known to be significant and increasing.

Habitat fragmentation and loss are thought to be the greatest threats to manatees outside the United States (factor A). Development activities in coastal and riverine areas destroy aquatic vegetation and block access to upriver reaches and freshwater. This can disrupt dispersal and foraging patterns and exacerbate the effects of poaching especially on small populations. Within the United States, Federal, State, and Commonwealth agencies limit habitat losses and those activities that block access through regulatory processes. For example, the

State of Florida and the Service rely on county MPPs to address impacts to manatee habitat from installation of, for example, a boat dock or marina. In Florida, the other potential significant threat facing manatees is the loss of winter warm-water habitat and algal blooms pose a localized threat to West Indian manatees. Federal and State agencies are working with the power industry and others to ensure a future warm-water network to sustain manatees into the future. While many strides have been made in this area, work continues to be done to fully address and reduce this threat, as described above in our review of the Florida manatee recovery plans. In addition, we must continue to address pending changes in the manatees' warm-water network (develop and implement strategies) and support the adoption of minimum flow regulations for remaining important springs used by manatees. If warm water refuges are lost, this threat could cause the loss or debilitation of manatees due to cold stress that will make the West Indian manatee likely to become endangered in the foreseeable future.

Available population estimates suggest that there may be as many as 13,142 manatees throughout the species' range (UNEP 2010, p. 11 and Castelblanco-Martínez *et al.*, 2012, p. 132, Martin *et al.*, 2015, p. 44). Estimates from countries outside the United States (6,250) are largely conjectural and are based on the opinions of local experts. Within the United States, Martin *et al.*, (2015, p. 44) and Pollock *et al.*, (2013, p. 8) describe population estimates of 6,350 manatees and 532 manatees in the southeastern United States and Puerto Rico, respectively.

Recent demographic analyses (through 2009) suggest a stable or increasing population of Florida manatees (Runge *et al.*, 2015, entire) and demonstrate that Florida manatees are not endangered at the present time. Castelblanco-Martínez *et al.*'s (2012, pp. 129–143) PVA baseline model for the Antillean manatee describes a metapopulation with positive growth. Runge *et al.*, (2015, p. 13) predict that it is unlikely (< 2.5 percent chance) that the Florida population of manatees will fall below 4,000 total individuals over the next 100 years, assuming current threats remain at their current levels indefinitely. The ability of the West Indian manatee to survive long-term across its range is related to its ability to withstand human-caused and natural threats of varying magnitude and duration and the efforts of stakeholders

to adequately address manatees' conservation needs.

There are numerous ongoing efforts to protect, conserve, and better understand West Indian manatees and their habitat throughout their range, as described in this rule. The contribution of these recovery efforts to the current status of the species is important. Given our review of the best scientific and commercial information available and analyses of threats and demographics, we conclude that the West Indian manatee no longer meets the Act's definition of endangered. However, there are many important actions that must be taken to address the remaining threats to manatees before the manatee can be delisted. Some imminent threats remain and will likely continue into the foreseeable future and possibly escalate and need to be addressed as appropriate. Escalating threats may be concomitant with increasing human populations, and commensurate efforts will be needed to keep pace with these and any new threats that may evolve. These remaining or new potential threats, especially those acting upon declining and smaller populations make the species likely to become endangered in the foreseeable future (50 years).

We did not find significant information that would lead us to believe that the cumulative effect of factors acting on the species warrants maintaining the West Indian manatee as endangered. Rather, we find that the potential cumulative effect of factors acting on the West Indian manatee, in part, contributes to the species' threatened status. Overall, regulatory mechanisms adopted since the manatee's listing have ameliorated some factors affecting manatees. However, in some instances, regulatory mechanisms are still inadequate such that the manatee continues to require the protections of the Act. We find that the West Indian manatee is no longer in danger of extinction throughout all of its range due to (1) significant recovery efforts made throughout parts of its range to address threats and (2) a better understanding of manatee population demographics. Examples of remaining threats that make this species likely to become endangered in the foreseeable future include habitat loss, degradation, and fragmentation and the loss of winter warm-water habitat (factor A); poaching (factor B); watercraft collisions and others (factor E). Accordingly, we are reclassifying the species as threatened under the Act.

Significant Portion of the Range

Because we have concluded that the West Indian manatee is a threatened

species throughout all of its range, no portion of its range can be "significant for purposes of the definitions of "endangered species" and "threatened species." See the Service's Significant Portion of its Range (SPR) Policy (79 FR 37578, July 1, 2014).

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing increases public awareness of threats to the West Indian manatee, and promotes conservation actions by Federal, State, and local governments in the United States, foreign governments, private organizations and groups, and individuals. The Act provides for possible land acquisition and cooperation with the State, and for recovery planning and implementation. The protection required of Federal agencies and the prohibitions against taking and harm are discussed, in part, below.

A number of manatees occur in near-shore waters off Federal conservation lands and are consequently afforded some protection from development and large-scale habitat disturbance. West Indian manatees also occur in or offshore of a variety of State-owned properties, and existing State and Federal regulations provide protection on these sites. There are also a significant number of manatees that occur along shores or rivers of private lands, and through conservation partnerships, many of these use areas are protected through the owners' stewardship. In many cases, these partnerships have been developed through conservation easements, wetland restoration projects, and other conservation means.

Section 7(a) of the Act, as amended, and as implemented by regulations at 50 CFR part 402, requires Federal agencies to evaluate their actions with respect to the West Indian manatee within the United States or under U.S. jurisdiction. If a Federal action may adversely affect the manatee or its habitat, the responsible Federal agency must consult with the Service to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of the West Indian manatee. Federal action agencies that may be required to consult with us include but are not limited to the U.S. Army Corps of Engineers, the U.S. Coast Guard, the Environmental Protection Agency, and others, due to

involvement in actions or projects such as permitting boat access facilities (marinas, boat ramps, etc.), dredge and fill projects, high-speed marine events, warm-water discharges, and many other activities.

Section 8(a) of the Act authorizes the provision of limited financial assistance for the development and management of programs that the Secretary of the Interior determines to be necessary or useful for the conservation of endangered or threatened species in foreign countries. Sections 8(b) and 8(c) of the Act authorize the Secretary to encourage conservation programs for foreign listed species, and to provide assistance for such programs, in the form of personnel and the training of personnel.

The Secretary has the discretion to prohibit by regulation, with respect to any threatened species, any act prohibited under section 9(a)(1) of the Act. Exercising this discretion, the Service developed general prohibitions (50 CFR 17.31) and exceptions to those prohibitions (50 CFR 17.32) under the Act that apply to most threatened species. Our regulations at 50 CFR 17.31 provide that all the prohibitions for endangered wildlife under 50 CFR 17.21, with the exception of 50 CFR 17.21(c)(5), will generally also be applied to threatened wildlife. These prohibitions make it illegal for any person subject to the jurisdiction of the United States to "take" (including to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt any of these) within the United States or upon the high seas, import or export, deliver, receive, carry, transport, or ship in interstate or foreign commerce in the course of a commercial activity, or to sell or offer for sale in interstate or foreign commerce, any endangered (and hence, threatened) wildlife species. It also is illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken in violation of the Act. Certain exceptions apply to agents of the Service and State conservation agencies. These prohibitions will continue to be applicable to the West Indian manatee. The general provisions for issuing a permit for any activity otherwise prohibited with regard to threatened species are found at 50 CFR 17.32.

The Service may develop regulations tailored to the particular conservation needs of a threatened species under Section 4(d) of the Act if there are specific prohibitions and exceptions that would be necessary and advisable for the conservation of that particular species. In such cases, some of the prohibitions and exceptions under 50

CFR 17.31 and 17.32 may be appropriate for the species and incorporated into the regulations, but they may also be more or less restrictive than those general provisions. The Service believes the prohibitions and exceptions set out in 50 CFR 17.31 and 17.32 are most appropriate to address the particular conservation needs of the West Indian manatee at this time.

In Florida, questions regarding whether specific activities will constitute a violation of section 9 of the Act should be directed to the U.S. Fish and Wildlife Service, North Florida Ecological Services Office (see **FOR FURTHER INFORMATION CONTACT** section). In Puerto Rico, questions regarding whether specific activities will constitute a violation of section 9 of the Act should be directed to the Caribbean Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT** section). Requests for copies of the regulations regarding listed species and inquiries about prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Ecological Services Division, 1875 Century Boulevard, Suite 200, Atlanta, GA 30345 (telephone 404-679-7097, facsimile 404-679-7081).

Effects of This Rule

When it becomes effective, this final rule revises 50 CFR 17.11(h) to reclassify the West Indian manatee from an endangered species to a threatened species on the Federal List of Endangered and Threatened Wildlife. This rule formally recognizes that the West Indian manatee is no longer in danger of extinction throughout all or a significant portion of its range. However, this reclassification does not significantly change the protections afforded to this species under the Act. Anyone taking, attempting to take, or otherwise possessing this species, or parts thereof, in violation of section 9 of the Act or its implementing regulations, is subject to a penalty under section 11 of the Act. Pursuant to section 7 of the Act, all Federal agencies must ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of the West Indian manatee. In addition, although the West Indian manatee is reclassified to threatened when this rule becomes effective, the West Indian manatee is still considered depleted and strategic under the MMPA.

Recovery actions directed at the West Indian manatee will continue to be implemented as outlined in the recovery plans (USFWS 1986 and 2001, entire). Highest priority recovery actions needed to address remaining threats include: (1) Reducing watercraft collisions with

manatees; (2) protecting habitat, including foraging and drinking water sites and for the Florida subspecies, warm-water sites; and (3) reducing entanglements in fishing gear. Other recovery initiatives also include addressing harassment and illegal hunting in sites where these occur.

Finalization of this rule does not constitute an irreversible commitment on our part. Reclassification of the West Indian manatee from threatened status back to endangered status could occur if changes occur in management, population status, or habitat, or if other factors detrimentally affect or increase threats to the species. Such a reclassification would require another rulemaking.

Under section 4(d) of the Act, the Service has discretion to issue regulations that we find necessary and advisable to provide for the conservation of threatened species. The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to threatened wildlife. The prohibitions of section 9(a)(1) of the Act, as applied to threatened wildlife and codified at 50 CFR 17.31 make it illegal for any person subject to the jurisdiction of the United States to take (which includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these) threatened wildlife within the United States or on the high seas. In addition, it is unlawful to import; export; deliver, receive, carry, transport, or ship in interstate or foreign commerce in the course of commercial activity; or sell or offer for sale in interstate or foreign commerce any listed species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to employees of the Service, the National Marine Fisheries Service, other Federal land management agencies, and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving threatened wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.32. With regard to threatened wildlife, a permit may be issued for the following purposes: for scientific purposes, to enhance the propagation or survival of the species, and for incidental take in connection with otherwise lawful activities. There are also certain statutory exemptions from the prohibitions, which are found in sections 9 and 10 of the Act. Whenever a species is listed as threatened, the Act allows promulgation of special rules under section 4(d) that modify the

standard protections for threatened species found under section 9 of the Act and Service regulations at 50 CFR 17.31 (for wildlife) and 17.71 (for plants), when it is deemed necessary and advisable to provide for the conservation of the species. No additional regulations are being implemented, or anticipated to be implemented, for the West Indian manatee because there is currently no conservation need to do so for this species. If there is a conservation need for a 4(d) rule at some point in the future for the West Indian Manatee, such a rulemaking would require a companion special rule under the MMPA.

Required Determinations

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act of 1969 need not be prepared in connection with regulations pursuant to section 4(a) of the Endangered Species Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, "Government-to-Government Relations with Native American Tribal Governments" (59 FR 22951), Executive Order 13175, Secretarial Order 3206, the Department of the Interior's manual at 512 DM 2, and the Native American Policy of the Service, January 20, 2016, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. We contacted tribes in the southeastern United States within the range of the West Indian manatee and requested their comments on our proposed rule. The Seminole Tribe of Florida and Miccosukee Tribe of Indians of Florida responded to our request (see Summary of Comments).

References Cited

A complete list of all references cited in this final rule is available at <http://www.regulations.gov> at Docket No. FWS-R4-ES-2015-0178 or upon request from the North Florida Ecological Services Field Office or Caribbean Ecological Services Field

Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this final rule are staff members of the North Florida Ecological Services Field Office and the Caribbean Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and

recordkeeping requirements, Transportation.

Regulation Promulgation

For the reasons stated in the preamble, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

■ 2. Amend § 17.11(h) by revising the entry for “Manatee, West Indian” under “MAMMALS” in the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

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(h) * * *

| Common name | Scientific name | Where listed | Status | Listing citations and applicable rules |
|----------------------------|---------------------------------|----------------------|--------|--|
| Mammals | | | | |
| * | * | * | * | * |
| Manatee, West Indian | <i>Trichechus manatus</i> | Wherever found | T | 32 FR 4001, 3/11/1967; 35 FR 8491, 6/2/1970; 82 FR [Insert Federal Register page where the document begins], 4/5/2017; 50 CFR 17.108(a); 50 CFR 17.95(a). ^{CH} |

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Dated: March 16, 2017.
James W. Kurth,
Acting Director, U.S. Fish and Wildlife Service.
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