Expert Opinion

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Opinion prepare on 6 April, 2016 to the final decision on the best available Science.

The U.S. Fish and Wildlife Service has proposed to reclassify the West Indian Manatee on the U.S. List of Threatened and Endangered Species from its current listing status as “endangered” to “threatened.”

On January 8, 2016, the U.S. Fish and Wildlife Service (Service) has proposed to reclassify the West Indian Manatee (WIM) on the U.S. List of Threatened and Endangered Species from its current listing status as “endangered” to “threatened”, due to substantial improvements in the species overall status since 1967. Also, comment that this action is based on a review of the best scientific information available for the species.

The Endangered Species Act include the Antillean manatee subspecies. For this subspecies the Service use as Basis for their Action to reclassify the WIM specifically only the publication of Castelblanco-Martinez et al. 2012 about a predictive model of the entire Antillean manatee population. This publication described an Antillean manatee metapopulation with positive growth.

The Service accepts (p.1023) and 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. The Service proposal comment that the WIM outside of the United States has an extensive and fragmented distribution in 20 countries. In other words, this represents the most significant portion of the species distribution. Also, recognized that the available population estimates in this extended region are based on data of highly variable quality, and this should be considered only as crude approximations.
For Antillean manatee, the Service proposal uses the population estimation of 3600 manatees in Mexico and Central America, and a total of 6700 Antillean manatees population based on UNEP 2010 Table 3, dates without references (Table 1, Service proposal, p 1003) and Castelblanco-Martinez et al. 2012.

Expert opinion and comments

In my opinion, the publication of Castelblanco-Martinez et al. (2012) that describes at the Antillean manatee as a metapopulation with an estimated size of 6700 manatees and predicting a positive growth do not have a solid scientific basis. This opinion is based on that the most of the existing population estimation information of this subspecies in different countries are based on anecdotal information, and because the authors assumed that the Antillean manatee has a metapopulation structure along of its range distribution.

About the use of the PVA models, Coulson et al. (2001) concluded that these models can only be accurate if the data are extensive and reliable. If the data are poor, the prediction of PVA models should be treated with extreme caution and possibly even ignored entirely. In Castelblanco-Martínez et al. (2012) the data about vital rates for Antillean manatee were in the most of the cases inexistent, fragmented and extrapolated from the Florida manatee studies supposing that environmental and life history parameters are the same for the two subspecies in its different wider range of spatial distribution.

Manatee population size.

Mexico and Belize are considered that concentrate the biggest Antillean manatee population in Mesoamerica region, with 1000 to 2000 manatees in Mexico (SEMARNAT/CONANP. 2010, p 16) and 400-700 or close to 1000 manatees in Belize (UNEP 2010). Is important to comment that in both cases, the estimations are based on anecdotal information, local expert opinion, and data from distributional aerial surveys O’Shea and Salisbury 1991; Morales-Vela et al. 2000; Auil 2004) more that aerial surveys planed for getting population size and trends.
In the case of the Gulf of Mexico, the rivers and lagoons of the Tabasco states are considered to concentrate the most significative manatee population in Mexico (SEMARNAT/CONANP. 2010). Actually, with the use of side-scan sonar to detect free manatees in turbid waters (Gonzalez-Socoloske and Olivera Gómez 2009) we are implementing intensively evaluation in specific places of the Tabasco with recognized manatee presence, and the actual abundances are lower that we supposed (date not published). Also, in rivers and lagoons of Chiapas and Campeche in the Gulf de Mexico the manatee abundances are lowered. That minds, that the Mexican manatee population could be lower that we estimated before based on fragmented experience and anecdotal information.

In the other Mesoamerican countries, the Greater Antilles and South American countries the manatee abundances are low or unknown.

Metapopulation approach.
The metapopulation concept is a relatively new concept that can be used to study the ecological process of species living in fragmented habitats or patchy environments (Hanski and Gilpin 1991; Valverde-Valdés 1999). A metapopulation is defined as the ensemble of interacting population with a finite lifetime and is closely associated with the processes of population turnover of extinction and establishment of a new population of the same species by individual movements (Hanski and Gilpin 1991).

Hanski and Gilpin (1991) observed that some species with a historical continuous spatial distribution are begin turned into possible metapopulation by habitat fragmentation, but cannot necessarily function as a metapopulation, with limited dispersal ability of the individuals, that local population, once extinct, will remain extinct. This is the case of the Antillean manatee. In the past, the manatee was present in the Lesser Antilles (Lefebvre et al. 2001) and currently this population was not reestablishment by individual movements.

The actual distribution of the Antillean manatee, the knowledge of their movements and their genetic structure do not shows that the Antileans manatee have a metapopulation structure supported by individual movements between local populations. In Mexico two distinct genetic population appear to exist, one along
riverine systems connected to the Gulf of Mexico and other on the Caribbean coast, with evidence that supports unidirectional gene flow from the Gulf to the Caribbean population but not are evidence of migration from the Caribbean to the Gulf of Mexico (Nourisson et al. 2011). This limited and unidirectional gene flow put in highest risk of extinction to the local population of the Gulf in case that this happens without the capacity to be reestablishment by individual that come from the Caribbean. Several threats affect manatees in different parts of their range. As poaching, habitat loss, chemical contaminants, entanglements, boat collisions, deforestation, draining of wetlands, sedimentation, and oil and gas exploration, most of these threats are not yet evaluated. In Mexico, metal concentrations detected in bone tissues of manatees were higher than most of those reported for bones in other marine mammals around the world (Romero-Calderón et al. 2015). Oil production in Mexico may increase in the coming years because of recent energy reforms implemented by the Mexican government. These type of changes in the political economy in the oil and energy industry with the highest impact on the habitat of the manatees are difficult to predict. In this cases, the concept of the precautionary approach is a policy action that the states need to implement in cases that of some action could cause damages in habitats and biodiversity in the absence of best scientific data and consensus. It is the case of the Antillean manatee. The U.S. government need to use this precautionary approach and to avoid to reclassify the West Indian Manatee; that is in danger of extinction throughout all or a significant portion of its range. At least, is necessary that the Service consider the Antillean manatee subspecies as a separate listing of the Florida subspecies.

Based in all the comment before, is evident the strong necessity to continue to protect the WIM at the highest level possible and increment the knowledge about movements, genetic structure, and threats of these populations.

References:


