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TITLE: Low genetic variation and evidence of limited dispersal in the regionally important Belize manatee

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ABSTRACT:

Abstract The Antillean subspecies of the West Indian manatee Trichechus manatus is found throughout Central and South America and the Caribbean. Because of severe hunting pressure during the 17th through 19th centuries, only small populations of the once widespread aquatic mammal remain. Fortunately, protections in Belize reduced hunting in the 1930s and allowed the country's manatee population to become the largest breeding population in the Wider Caribbean. However, increasing and emerging anthropogenic threats such as coastal development, pollution, watercraft collision and net entanglement represent challenges to this ecologically important population. To inform conservation and management decisions, a comprehensive molecular investigation of the genetic diversity, relatedness and population structure of the Belize manatee population was conducted using mitochondrial and microsatellite DNA. Compared with other mammal populations, a low degree of genetic diversity was detected (H E =0.455; N A =3.4), corresponding to the small population size and long?term exploitation. Manatees from the Belize City Cayes and Southern Lagoon system were genetically different, with microsatellite and mitochondrial F ST values of 0.029 and 0.078, respectively (P ?0.05). This, along with the distinct habitats and threats, indicates that separate protection of these two groups would best preserve the region's diversity. The Belize population and Florida subspecies appear to be unrelated with microsatellite and mitochondrial F ST values of 0.141 and 0.63, respectively (P ?0.001), supporting the subspecies designations and suggesting low vagility throughout the northern Caribbean habitat. Further monitoring and protection may allow an increase in the Belize manatee genetic diversity and population size. A large and expanding Belize population could potentially assist in the recovery of other threatened or functionally extinct Central American Antillean manatee populations.

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