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Conservation Genetics

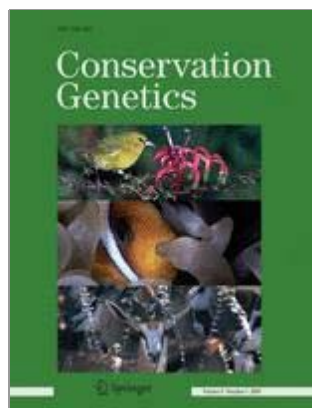
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## Conservation of Atlantic sturgeon *Acipenser oxyrinchus oxyrinchus*: delineation of stock structure and distinct population segments

### Abstract

The anadromous Atlantic sturgeon *Acipenser oxyrinchus oxyrinchus*, a wide-ranging species along the Atlantic Coast of North America, is being considered for federal listing under the U.S. Endangered Species Act. Identification of distinct population segments (DPS) is necessary but problematic for highly vagile species such as Atlantic sturgeon which may spend a high proportion of their lives outside of their natal estuaries. Characterization of genetic differentiation and estimates of gene flow provide a quantitative measure of the number of DPS into which species could be divided over their distribution and the reproductive independence of each unit. We sequenced a portion of the mitochondrial DNA control region to characterize population structure and gene flow across all naturally reproducing populations from which specimens could be obtained. We then considered these genetic data along with ancillary information on life history characteristics, historical fisheries data, and trajectories of abundance to determine the number of DPS into which this species should be divided. Our results suggest that philopatry is high for Atlantic sturgeon and that each U.S. estuary analyzed hosts genetically distinct populations of Atlantic sturgeon. We conclude that at least nine DPS of Atlantic sturgeon exist along the Atlantic Coast of the U.S. In contrast, the Atlantic Sturgeon Status Review Team has proposed a five DPS scheme for this subspecies based largely on results from nuclear DNA microsatellites, but with fewer populations represented and lower sample sizes. These different conclusions illustrate the somewhat arbitrary nature of the DPS concept, at least as applied to Atlantic sturgeon.



17 Citations