

Use of Individual Based Assignment Tests in the Coastwide Management of Atlantic Sturgeon

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Individual based assignment (IBA) tests using DNA data provide the opportunity to determine the DPS or river of origin of individual Atlantic sturgeon specimens of unknown origin with high to moderate levels of accuracy, respectively. We used our reference microsatellite and mitochondrial DNA (mtDNA) characterizations of 1,318 adult and/or juvenile specimens from 11 spawning populations to identify the origin of individual Atlantic sturgeon from several locales, at some of which aggregations are anthropogenically threatened with a variety of stressors. Specifically, our new analysis was used to determine the origin of acoustically tagged adult specimens collected off the Delaware Coast, Long Island Sound, and the Connecticut River. Our genetic assignments were compared to where the individuals were detected in spawning rivers at spawning time. Furthermore, we used this approach to determine if subadult fish collected in the tidal Hudson River were all natal to the Hudson or whether some were spawned elsewhere. Finally, IBA was used to identify the origin of specimens bycaught in tidal weirs or which suffered mortality in the Bay of Fundy. In all cases, IBA proved an informative method to determine the population origin of individual fish and therefore allowed investigators and managers to monitor the complete life cycle of individuals from each DPS or population.