

Atlantic Sturgeon movements in of the Gulf of Maine with special attention on the Kennebec System and Penobscot Estuary

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Between 2006 and 2013 145 Atlantic sturgeon were captured and tagged with acoustic transmitters in four GOM rivers. Detections between 2006 and 2014 indicate that Atlantic sturgeon tagged in these rivers visited three spawning areas in the Kennebec system and less than 10% were detected opportunistically outside of the GOM. The majority (78%) of individuals were regularly detected in the estuaries of the four rivers, primarily from May through October. Tagged fish were found in saline, brackish, and fresh water in the Kennebec system; spent most of their time in saline water in the Saco and Merrimack Rivers; and used brackish water in the Penobscot River. Penobscot individuals were predominantly subadults that repeatedly used a defined mesohaline reach of the estuary during the summer months. They predictably emigrated each fall (August 31 $SD \pm 43.5$ d) and returned each spring/early summer (May 15 ± 27.8 d), with many individuals (>95%) returning one or more (up to 5) years. Marine detections of these subadults were common ($n = 24$, 75%), spanning from Nova Scotia to New York, more typically detected on receivers in the GOM when not in the river of tagging. Critical habitats in the GOM are spawning habitat in the Kennebec and subadult summer habitat in the lower estuaries of all four rivers. The extent of marine habitat use remains an open question requiring better collaboration across telemetry networks.