

## GARFO Master ESA Species Table - Atlantic Sturgeon

**General distribution:** Atlantic Ocean waters and associated bays, estuaries, and coastal river systems from Hamilton Inlet, Labrador, Canada, to Cape Canaveral, Florida; only subadult and adult lifestages occur in marine waters, where they are typically found in waters 5-50 meters in depth (Stein et al. 2004; ASMFC TC 2007); subadults and adults may travel long distances in marine waters, aggregate in both ocean and estuarine areas at certain times of the year, and exhibit seasonal coastal movements in the spring and fall; distribution in rivers and inshore bays typically occurs from the estuary or river mouth generally up to the first impassible barrier (e.g., a dam or falls); Atlantic sturgeon generally use the deepest habitats available to them in rivers, but they have also been collected over shallow (2.5 meters), tidally influenced flats and substrates ranging from mud to sand and mixed rubble and cobble (Savoy and Pacileo 2003)

**Disclaimer:** the best available information on Atlantic sturgeon presence within coastal rivers, estuaries, and bays of the Greater Atlantic Region is presented below; waterbodies highlighted below are ones where we have information specific to Atlantic sturgeon use of the area that would be helpful for action agencies reviewing proposed actions and their potential effects on Atlantic sturgeon; however, they may occur in other watersheds within this range for which we do not currently have specific information; note: individuals from any of the five listed DPSs (Gulf of Maine, New York Bight, Chesapeake Bay, Carolina, and South Atlantic) may occur in any of the areas identified throughout the species' range; a description of Atlantic sturgeon life history stages are included at the end of the table below

Body of Water (State)	Distribution/Range in Watershed	Life Stages Present	Use of the Watershed	References
Cobscook Bay/St. Croix River (ME)	Up to the Milltown Dam at Calais, ME (RKM 16)	subadults and adults	<b>Foraging</b> - assumed to occur wherever suitable forage is present	ASSRT 2007
Penobscot River (ME)	Up to the Milford Dam (RKM 62)	subadults and adults (potentially eggs, larvae, YOY, and juveniles)	<b>Spawning</b> - undocumented but suitable spawning habitat is accesible <b>Foraging</b> - lower river (RKM 21-24)	Kieffer and Kynard 1993; ASSRT 2007; Fernandes et al. 2010; Wippelhauser 2012; Dzaugis 2013; Wippelhauser et al. 2015
Damariscotta River (ME)	Up to RKM 30	subadults and adults	<b>Foraging</b> - assumed to occur wherever suitable forage is present; tag detections indicate that usage of the river is for short periods during coastal migrations	Picard and Zydlewski 2014
Sheepscoot River (ME)	Up to the head-of-tide dam (RKM 35)	subadults and adults	<b>Foraging</b> - assumed to occur wherever suitable forage is present; may occur in Montsweag Bay as shortnose sturgeon foraging has been documented there	NMFS and USFWS 1998; Squiers 1998; ASSRT 2007
Kennebec River (ME)	Up to the Lockwood Dam (RKM 103); ELS, YOY, juveniles, and non-spawning sturgeon can be found up to RKM 68 primarily from spring through the fall	eggs, larvae, YOY, juveniles, subadults, and adults	<b>Spawning</b> - documented via captures of spawning condition adults (Jun-Jul from RKM 53-75) and larvae; assumed to occur in summer; potentially occurs as far upstream as the Lockwood Dam <b>Rearing</b> - ELS and YOY have been documented near spawning grounds <b>Foraging</b> - assumed to occur wherever suitable forage is present <b>Overwintering</b> - fall-winter; lower estuary or nearshore ocean	Squiers et al. 1981; Lazzari et al. 1986; ASMFC 1998; NMFS and USFWS 1998; ASSRT 2007; Wipplehauser and Squiers 2015; Wippelhauser et al. 2015

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Androscoggin River (ME)	Up to the Brunswick Dam (RKM 8.4)	eggs, larvae, YOY, juveniles, subadults, and adults	<p><b>Spawning</b> - capture of larvae in the summer below the Brunswick Dam indicates that spawning is likely occurring</p> <p><b>Rearing</b> - ELS have been documented below the Brunswick Dam; YOY from the Kennebec River could also be present due to the geography of the estuary</p> <p><b>Foraging</b> - assumed to occur wherever suitable forage is present</p>	Squiers et al. 1981; Lazzari et al. 1986; ASMFC 1998; NMFS and USFWS 1998; ASSRT 2007; ME Department of Marine Resources 2011
Presumpscot River (ME)	Up to Presumpscot Falls (RKM 3)	subadults and adults	<p><b>Foraging</b> - assumed to occur wherever suitable forage is present</p>	ASSRT 2007; Yoder et al. 2009
Saco River (ME)	Up to Cataract Dam (RKM 10)	subadults and adults	<p><b>Foraging</b> - assumed to occur wherever suitable forage is present</p>	Kieffer and Kynard 1993; ASSRT 2007; Fernandes et al. 2010; Furey and Sulikowski 2011; Wippelhauser 2012
Piscataqua River Watershed (NH)	Up to the confluence with the Salmon Falls and Cocheco Rivers (RKM 19) and including Great Bay	subadults and adults (eggs, larvae, YOY, and juveniles possible)	<p><b>Spawning</b> - potentially occurs in the Salmon Falls and Cocheco rivers based on the presence of features necessary to support reproduction and recruitment as well as the capture of an adult female Atlantic sturgeon in spawning condition in 1990</p> <p><b>Foraging</b> - spring-fall wherever suitable forage is present</p>	Kynard et al. 2000; ASSRT 2007
Merrimack River (MA)	Up to the Essex Dam (RKM 46); often found around the lower islands reach (RKM 3-12)	subadults and adults (potentially eggs, larvae, YOY, and juveniles)	<p><b>Spawning</b> - potentially occurs due to the presence of features necessary to support reproduction and recruitment</p> <p><b>Rearing</b> - used by ELS and YOY as a nursery area</p> <p><b>Foraging</b> - mouth of the river and the lower islands area (RKM 0-12)</p> <p><b>Overwintering</b> - limited information available; some overwintering at sites at RKM 14, 19, and 26</p>	Kieffer and Kynard 1993; ASSRT 2007; Fernandes et al. 2010; Wippelhauser 2012; Wippelhauser et al. 2015
Charles River (MA)	Up to Charles River Locks	subadults and adults	<p><b>Foraging</b> - assumed to occur wherever suitable forage is present</p>	Boston Globe February 20, 2012 ( <a href="http://boston.cbslocal.com/2012/02/20/man-spots-rare-atlantic-sturgeon-fish-in-charles-river/">http://boston.cbslocal.com/2012/02/20/man-spots-rare-atlantic-sturgeon-fish-in-charles-river/</a> )
North River (MA)	Up to Hanover/Pembroke line	subadults and adults	<p><b>Foraging</b> - assumed to occur wherever suitable forage is present</p>	The Patriot Ledger June 1, 2012 ( <a href="http://www.patriotledger.com/article/20120601/NEWS/306019786">http://www.patriotledger.com/article/20120601/NEWS/306019786</a> )
Taunton River (MA)	Lower region	subadults and adults	<p><b>Foraging</b> - assumed to occur wherever suitable forage is present</p>	Burkett and Kynard 1993; ASSRT 2007

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Thames River (CT)	Up to the Greenville Dam	subadults and adults	<b>Foraging</b> - assumed to occur wherever suitable forage is present	Whitworth 1996; ASSRT 2007
Connecticut River (CT/MA)	Up to the Holyoke Dam (RKM 143); mainly stay in lower range of the salt wedge (RKM 10-26)	eggs, larvae, YOY, juveniles, subadults, and adults	<b>Spawning</b> - captures of juvenile sturgeon in the river strongly suggests that spawning is occurring in this river <b>Rearing</b> - spring through fall; lower 26 RKM <b>Foraging</b> - spring through fall; adults and subadults; typically in waters less than 50 meters in depth	Savoy and Shake 1993; Savoy and Pacileo 2003; ASSRT 2007
Quinnipiac River (CT)	Up to bridge at Quinnipiac Street and River Road in Wallingford (RKM 27)	subadults and adults	<b>Foraging</b> - assumed to occur wherever suitable forage is present	Courant September 30, 1994 ( <a href="http://articles.courant.com/1994-09-30/news/9409300111_1_sturgeon-fish-story-giant-fish">http://articles.courant.com/1994-09-30/news/9409300111_1_sturgeon-fish-story-giant-fish</a> )
Housatonic River (CT)	Up to the Derby Dam (RKM 23.5)	subadults and adults (potentially eggs, larvae, YOY, and juveniles)	<b>Spawning</b> - potentially occurs due to the presence of features necessary to support reproduction and recruitment <b>Foraging</b> - assumed to occur wherever suitable forage is present	Whitworth 1996; NMFS and USFWS 1998; ASSRT 2007
Long Island Sound (NY/CT)	All of Long Island Sound typically in late spring through fall	subadults and adults	<b>Migration</b> - typically in 10-50 meters <b>Foraging</b> - where suitable forage is present; 85% of Atlantic sturgeon caught in Long Island Sound are over mud/transitional bottoms of 27-37 meters deep in the central basin	Savoy and Pacileo 2003; ASSRT 2007; NYSDEC 2014
East River (NY)	full length of the East River	subadults and adults	<b>Migration</b> - subadults and adults have been documented using this waterbody to move between the Hudson River and western Long Island Sound <b>Foraging</b> - assumed to occur wherever suitable forage is present, but forage is limited	Savoy and Pacileo 2003; Tomich et al. 2014

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<p>Hudson River (NY/NJ)</p>	<p>up to the Troy Dam (approximately RKM 246)</p>	<p>eggs, larvae, YOY, juveniles, subadults, and adults</p>	<p><b>Spawning</b> - late spring to summer around Hyde Park (RKM 134), Catskill (RKM 182), and around RKM 112; evidence strongly suggests that there is also spawning further upstream of RKM 193  <b>Rearing</b> - eggs - RKM 60-148; larvae - summer; remain upstream of the salt wedge; vicinity of spawning area; YOY: between RKM 60-148; juveniles - spring through fall in RKM 68-107; utilize the estuary from the Tappan Zee Bridge through Kingston (RKM 69-238); occupy waters from RM 37-66 during the summer; Newburgh and Haverstraw Bays (RKM 55-61) are areas of known juvenile concentrations  <b>Foraging</b> - tidally influenced flats; may be using the lower Hudson River for foraging in the summer  <b>Overwintering</b> - may be using the lower Hudson River from winter; juveniles - RKM 19-74 from fall through winter</p>	<p>Dovel and Berggren 1983; Coch 1986; Van Eenennaam et al. 1996; Bain 1997; Kahnle et al. 1998; Bain et al. 1998, 2000; Savoy and Pacileo 2003; Sweka et al. 2006; ASSRT 2007; Normandeau Associates, Inc. 2014</p>
<p>Delaware River (NJ/DE/PA)</p>	<p>Up to the fall line near Trenton, NJ (RKM 210)</p>	<p>eggs, larvae, YOY, juveniles, subadults, and adults</p>	<p><b>Spawning</b> - documented in spring through summer from Marcus Hook Bar to the fall line at Trenton, NJ (RKM 134-211); additional spawning sites may occur from RKM 120-150 and RKM 170-190  <b>Rearing</b> - YOY - late fall-early spring; Deepwater, NJ to Roebing (RKM 105-199)  <b>Migration</b> - subadults - immigrate to the estuary late winter through fall; from nearshore ocean to Philadelphia, PA (RKM 148); areas of particular concentration near Artificial Island (RKM 80-90), Marcus Hook (RKM 123-130), and Cherry Island Flats (RKM 110-118)  <b>Foraging</b> - where suitable forage and appropriate habitat conditions are present typically tidally influenced flats and mud, sand and mixed cobble substrates  <b>Overwintering</b> - adults - Delaware Bay or in the nearshore ocean; juveniles - move between lower (RKM 100-150) to upper (RKM 180-199) tidal areas in the fall; may overwinter in tidal fresh water</p>	<p>Brundage and Meadows 1982; Lazzari et al. 1986; Shirey et al. 1997, 1999; Savoy and Pacileo 2003; ASSRT 2007; Simpson 2008; Brundage and O'Herron 2009; Fisher 2009; Brundage and O'Herron in Calvo et al. 2010; Fox and Breece 2010; Fisher 2011; Breece et al. 2013</p>

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Chesapeake Bay (MD/VA)	Throughout the bay typically in spring through fall	subadults and adults	<b>Migration</b> - subadults - spring-fall; wander among coastal and estuarine habitats <b>Foraging</b> - typically in areas where suitable forage and appropriate habitat conditions are present typically tidally influenced flats and mud, sand and mixed cobble substrates	ASSRT 2007
Susquehanna River (MD)	Up to the Conowingo Dam (RKM 16)	subadults and adults (potentially eggs, larvae, YOY, and juveniles)	<b>Spawning</b> - potentially occurs due to the presence of features necessary to support reproduction and recruitment <b>Foraging</b> - where suitable forage and appropriate habitat conditions are present	Niklitschek and Secor 2005; ASSRT 2007
Choptank River (MD)	Range has not been documented, but they have been documented in this river (likely throughout the entire river)	subadults and adults (potentially eggs, larvae, YOY, and juveniles)	<b>Spawning</b> - not documented, but a gravid female was caught at the mouth of the river near Tilghman Island	ASSRT 2007; The Baltimore Sun June 13, 2007 ( <a href="http://articles.baltimoresun.com/2007-06-13/news/0706130110_1_sturgeon-chesapeake-bay-university-of-maryland">http://articles.baltimoresun.com/2007-06-13/news/0706130110_1_sturgeon-chesapeake-bay-university-of-maryland</a> )
Nanticoke River (MD)	Range has not been documented, but they have been documented in this river (likely throughout the entire river)	subadults and adults (potentially eggs, larvae, YOY, and juveniles)	<b>Spawning</b> - potential for spawning due to the presence of features necessary to support reproduction and recruitment in one of its tributaries (Marshyhope Creek) <b>Rearing</b> - may be used as a nursery <b>Foraging</b> - assumed to occur wherever suitable forage is present	ASSRT 2007; Balazik 2012; MD DNR September 17, 2014 ( <a href="http://news.maryland.gov/dnr/2014/09/17/mature-endangered-atlantic-sturgeon-discovered-in-marshyhope-creek/">http://news.maryland.gov/dnr/2014/09/17/mature-endangered-atlantic-sturgeon-discovered-in-marshyhope-creek/</a> )
Marshyhope Creek (MD), tributary of the Nanticoke River	Up to Federalsburg, MD	subadults and adults (potentially eggs, larvae, YOY, and juveniles)	<b>Spawning</b> - suspected to occur as spawn ready adults have been captured here	MD DNR September 17, 2014 ( <a href="http://news.maryland.gov/dnr/2014/09/17/mature-endangered-atlantic-sturgeon-discovered-in-marshyhope-creek/">http://news.maryland.gov/dnr/2014/09/17/mature-endangered-atlantic-sturgeon-discovered-in-marshyhope-creek/</a> ); C. Stence, pers. comm., 2015
Pocomoke River (MD)	Range has not been documented, but they have been documented in this river (likely throughout the entire river)	subadults and adults	<b>Foraging</b> - assumed to occur wherever suitable forage is present	ASSRT 2007; MD DNR September 17, 2014 ( <a href="http://news.maryland.gov/dnr/2014/09/17/mature-endangered-atlantic-sturgeon-discovered-in-marshyhope-creek/">http://news.maryland.gov/dnr/2014/09/17/mature-endangered-atlantic-sturgeon-discovered-in-marshyhope-creek/</a> )
Potomac River (MD/VA)	Up to Little Falls Dam (RKM 189)	juveniles, subadults, and adults (potentially eggs, larvae, and YOY)	<b>Spawning</b> - potentially occurs as small juveniles have been captured and due to the presence of features necessary to support reproduction and recruitment <b>Rearing</b> - juveniles have been captured <b>Foraging</b> - where suitable forage and appropriate habitat conditions are present	ASSRT 2007; Kynard et al. 2007

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Rappahannock River (VA)	Range has not been documented, but they have been documented in this river (likely up to the old Embrey Dam)	subadults and adults (potentially eggs, larvae, YOY, and juveniles)	<p><b>Spawning</b> - potentially occurs due to the capture of a male sturgeon in spawning condition and the presence of features necessary to support reproduction and recruitment</p> <p><b>Rearing</b> - may be used as a nursery</p> <p><b>Foraging</b> - where suitable forage and appropriate habitat conditions are present</p>	ASSRT 2007; Balazik 2012
York River (VA)	Up to its confluence with the Mattaponi and Pamunkey Rivers (RKM 55)	subadults and adults (potentially eggs, larvae, YOY, and juveniles)	<p><b>Spawning</b> - potential for fall spawning due to the presence of features necessary to support reproduction and recruitment in both the river and its tributaries (Pamunkey and Mattaponi Rivers)</p> <p><b>Rearing</b> - may be used as a nursery</p> <p><b>Foraging</b> - where suitable forage and appropriate habitat conditions are present</p>	ASSRT 2007; Balazik et al. 2012
Pamunkey River (VA), tributary of the York River	Up to RKM 150	eggs, larvae, YOY, juveniles, subadults, and adults	<p><b>Spawning</b> - documented through the capture of an adult sturgeon in spawning condition in early fall and the presence of features necessary to support reproduction and recruitment; may occur as far upstream as RKM 150</p> <p><b>Rearing</b> - in freshwater reaches downstream of spawning site</p>	Hager et al. 2014; Kahn et al. 2014
James River (VA)	Up to Boshers Dam (RKM 160)	eggs, larvae, YOY, juveniles, subadults, and adults	<p><b>Spawning</b> - both a spring (likely at RKM 77) and fall spawning event (likely between RKM 77 and the fall line near Richmond, VA at RKM 155) have been documented</p> <p><b>Rearing</b> - freshwater reaches downstream of spawning locations</p> <p><b>Foraging</b> - where suitable forage and appropriate habitat conditions are present</p>	ASSRT 2007; NMFS and USFWS 2007; Hager 2011; Balazik et al. 2012
Appomattox River (VA), tributary of the James River	Range has not been documented, but they have been documented in this river (likely up to the old Harvell Dam)	subadults and adults	<p><b>Foraging</b> - where suitable forage and appropriate habitat conditions are present</p>	Bushnoe et al. 2005; VIMS 2005; ASSRT 2007; Hager 2011

**Listing rules:** 77 FR 5880 and 77 FR 5914, February 6, 2012; **Recovery plan:** none published

## Descriptions of Atlantic sturgeon life history stages

<b>Age Class</b>	<b>Size</b>	<b>Description</b>
<b>Eggs</b>		Fertilized or unfertilized
<b>Larvae</b>		Negative photo-taxis, nourished by yolk sac
<b>Young of Year (YOY)</b>	<b>0.3 grams &lt;41 cm total length</b>	Fish that are >3 months and <1 year old; capable of capturing and consuming live food
<b>Juveniles</b>	<b>&gt;41 cm and &lt;76 cm total length</b>	Fish that are at least 1 year old and are not sexually mature and do not make coastal migrations
<b>Subadults</b>	<b>&gt;76cm and &lt;150cm total length</b>	Fish that are not sexually mature, but make coastal migrations
<b>Adults</b>	<b>&gt;150 cm total length</b>	Fish that are sexually mature