

## *Acipenser oxyrinchus* (Atlantic Sturgeon)

### Priority 1 Species of Greatest Conservation Need (SGCN)

**Class:** *Actinopterygii* (Ray-finned Fishes)  
**Order:** *Acipenseriformes* (Sturgeons And Paddlefishes)  
**Family:** *Acipenseridae* (Sturgeons)

#### General comments:

Federally threatened Gulf of Maine DPS

#### No Species Conservation Range Maps Available for Atlantic Sturgeon

#### SGCN Priority Ranking - Designation Criteria:

##### Risk of Extirpation:

Maine Status: **Threatened**

Federal Status: **Threatened**

##### State Special Concern or NMFS Species of Concern: **NA**

##### Recent Significant Declines: **NA**

##### Regional Endemic: **NA**

##### High Regional Conservation Priority:

###### Northeast Endangered Species and Wildlife Diversity Technical Committee:

Risk: Yes, Data: Yes, Area: Yes, Spec: No, Warrant Listing: No, Total Categories with "Yes": 3

###### Northeast Regional Synthesis (RSGCN):

Responsibility: High, Concern: Very High

###### American Fisheries Society, Endangered Species Committee:

Status: Vulnerable, Trend: same, Listing: 12, Global Rank: G3T3, Comment:

###### Atlantic States Marine Fisheries Commission Stock Assessments:

Status: Decreasing, Status Comment: Currently, populations of Atlantic sturgeon throughout the species= range are either extirpated or at historically low abundance. Recruitment is variable at low levels in all regions. Impediments to recovery include overharvest and loss of spawning and nur

Reference: Atlantic States Marine Fisheries Commission. 1998. Atlantic Sturgeon Stock Assessment Peer Review Report.

Available from: <http://www.asmf.org/fisheries-science/stock-assessments#StockAssessments>

##### High Climate Change Vulnerability: **NA**

##### Understudied rare taxa: **NA**

##### Historical: **NA**

##### Culturally Significant:

Species identified as both biologically vulnerable and culturally significant by Maine's tribes.

#### Habitats Assigned to Atlantic Sturgeon:

##### Formation Name      Freshwater Aquatic

Macrogroup Name      Rivers and Streams

Habitat System Name: Large River    **\*\*Primary Habitat\*\***    Notes: *adult spawning, juvenile, juvenile wintering, assumed feeding habitat*

Habitat System Name: Medium River    Notes: *migratory route*

##### Formation Name      Intertidal

Macrogroup Name      Intertidal Mudflat

Habitat System Name: Non-Vascular Mudflat    Notes: *assumed feeding habitat*

Macrogroup Name      Intertidal Sandy Shore

Habitat System Name: Sand Flat    Notes: *assumed feeding habitat*

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#### Formation Name      Intertidal

**Macrogroup Name**      Intertidal Water Column

**Habitat System Name:** Confined Channel    **\*\*Primary Habitat\*\***    **Notes:** *adult spawning, juvenile, juvenile wintering, assumed feeding habitat*

**Habitat System Name:** Embayment

#### Formation Name      Subtidal

**Macrogroup Name**      Subtidal Mud Bottom

**Habitat System Name:** Unvegetated    **Notes:** *assumed feeding habitat*

**Macrogroup Name**      Subtidal Pelagic (Water Column)

**Habitat System Name:** Confined Channel

**Habitat System Name:** Nearshore    **Notes:** *migratory corridor*

**Habitat System Name:** Offshore    **Notes:** *migratory corridor*

**Macrogroup Name**      Subtidal Sand Bottom

**Habitat System Name:** Submerged Aquatic Vegetation    **Notes:** *assumed feeding habitat*

### Stressors Assigned to Atlantic Sturgeon:

Stressor Priority Level based on Severity and Actionability		Moderate Severity	High Severity
	Highly Actionable	Medium-High	High
	Moderately Actionable	Medium	Medium-High
	Actionable with Difficulty	Low	Low

#### IUCN Level 1 Threat      Biological Resource Use

**IUCN Level 2 Threat:**      Fishing and Harvesting of Aquatic Resources

**Severity:** Moderate Severity      **Actionability:** Moderately actionable

**Notes:** While no directed fishing is allowed, some bycatch occurs and can be fatal (especially in trawler fleets).

#### IUCN Level 1 Threat      Human Intrusions and Disturbance

**IUCN Level 2 Threat:**      Recreational Activities

**Severity:** Moderate Severity      **Actionability:** Moderately actionable

**Notes:** While directed fishing is banned, some bycatch occurs resulting in limited mortality. Also, where there are high numbers of recreational boats there are more frequent occurrences of boat strikes or sturgeon jumping and hitting boats.

#### IUCN Level 1 Threat      Natural Systems Modifications

**IUCN Level 2 Threat:**      Dams and Water Management-Use

**Severity:** Moderate Severity      **Actionability:** Moderately actionable

**Notes:** Some head of tide dams remain in Maine and limit or obstruct access to habitat. Dam removals on the Kennebec and Penobscot have already occurred and opened access to historical habitat, but the long-term effects of reduced habitat could be difficult to recover from.

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#### IUCN Level 1 Threat

#### Pollution

**IUCN Level 2 Threat:** Domestic and Urban Waste Water

**Severity:** Moderate Severity      **Actionability:** Moderately actionable

**Notes:** The specific causes of impact are increased non-point source pollution (heavy metals and nutrient inputs), increased turbidity, and lower dissolved oxygen.

**IUCN Level 2 Threat:** Garbage and Solid Waste

**Severity:** Moderate Severity      **Actionability:** Moderately actionable

**Notes:** Especially in high recreational use areas, garbage can be eaten by sturgeon and cause blockages. Ring shape garbage also has been found on sturgeon (around body) cutting into them as they grow and causing infection.

#### IUCN Level 1 Threat

#### Climate Change and Severe Weather

**IUCN Level 2 Threat:** Habitat Shifting or Alteration

**Severity:** Moderate Severity      **Actionability:** Actionable with difficulty

**Notes:** Climate change could reduce or relocate spawning habitat and truncate or shift species natural range, and result in reduced prey (clams and other calcareous animals).

**IUCN Level 2 Threat:** Storms and Flooding

**Severity:** Moderate Severity      **Actionability:** Actionable with difficulty

**Notes:** Increased flooding can lead to increased runoff and nonpoint source pollution and sedimentation. Preserving or improving stream buffers could help mitigate high velocity runoff.

**IUCN Level 2 Threat:** Temperature Extremes

**Severity:** Moderate Severity      **Actionability:** Actionable with difficulty

**Notes:** Range shifts with changing sea surface temperatures may already be occurring.

#### IUCN Level 1 Threat

#### Energy Production and Mining

**IUCN Level 2 Threat:** Oil and Gas Drilling

**Severity:** Moderate Severity      **Actionability:** Actionable with difficulty

**Notes:** There is potential for offshore oil spills in the Gulf of Maine from tankers. The use of oil dispersants increases the effect on pelagic species by increasing the toxicity of oil globules, though the exact effects are not well documented.

**IUCN Level 2 Threat:** Renewable Energy

**Severity:** Severe      **Actionability:** Actionable with difficulty

**Notes:** Some proposed renewable energy projects such as tidal barrages or tide driven turbines may significantly impact anadromous species by either obstructing or greatly reducing natural migration routes, as well as mortality associated with turbine strikes.

#### IUCN Level 1 Threat

#### Invasive and Other Problematic Species, Genes and Diseases

**IUCN Level 2 Threat:** Invasive Non-native-Alien Species-Diseases

**Severity:** Moderate Severity      **Actionability:** Actionable with difficulty

**Notes:** Effect of invasives largely unknown but might have effect on specific populations (Kennebec). The ability, likelihood, and certainty to mitigate invasives is low.

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<b>IUCN Level 1 Threat</b>	<b>Pollution</b>
<b>IUCN Level 2 Threat:</b>	Industrial and Military Effluents
<b>Severity:</b> Moderate Severity	<b>Actionability:</b> Actionable with difficulty
<b>Notes:</b> Non-point source pollution (heavy metals and nutrient inputs) has been directly related to declining runs. Likelihood is high and increasing (high certainty), current spatial extent is a few locations, , actionability is low because further regulation of effluents is not likely within next 10 years in Maine.	
<b>IUCN Level 1 Threat</b>	<b>Residential and Commercial Development</b>
<b>IUCN Level 2 Threat:</b>	Commercial and Industrial Areas
<b>Severity:</b> Severe	<b>Actionability:</b> Actionable with difficulty
<b>Notes:</b> Armored shores decrease available forage and over-winter habitat. Spatial extent is fairly low (confined to a few areas), but is substantial in those areas.	
<b>IUCN Level 1 Threat</b>	<b>Transportation and Service Corridors</b>
<b>IUCN Level 2 Threat:</b>	Shipping Lanes
<b>Severity:</b> Moderate Severity	<b>Actionability:</b> Actionable with difficulty
<b>Notes:</b> Sturgeon can be subject to ship strikes.	

### Species Level Conservation Actions Assigned to Atlantic Sturgeon:

None. ***Only species specific conservation actions that address high (red) or medium-high (orange) priority stressors are summarized here.***

### Conservation Actions Associated with the Diadromous Fish Guild:

<b>Conservation Action</b>	<b>Category:</b> Public Outreach	<b>Biological Priority:</b> moderate	<b>Type:</b> on-going
Continue to work with the fishing industry to develop gear modifications that reduce of bycatch of diadromous fishes			
<b>Stressor(s) Addressed By This Conservation Action</b>			
Fishing and Harvesting of Aquatic Resources			
<b>Conservation Action</b>	<b>Category:</b> Public Outreach	<b>Biological Priority:</b> high	<b>Type:</b> on-going
Conduct education to increase awareness of the importance of these species to maintaining productive ecosystem functioning.			
<b>Stressor(s) Addressed By This Conservation Action</b>			
Lack of knowledge, Fishing and Harvesting of Aquatic Resources			
<b>Conservation Action</b>	<b>Category:</b> Research	<b>Biological Priority:</b> high	<b>Type:</b> on-going
Improve understanding of species distribution especially in regards to ecosystem interactions, predator-prey relationships, and prey buffering concepts			
<b>Stressor(s) Addressed By This Conservation Action</b>			
Lack of knowledge			
<b>Conservation Action</b>	<b>Category:</b> Habitat Management	<b>Biological Priority:</b> high	<b>Type:</b> on-going
Encourage improved municipal planning for siting for new or retrofitting development, taking into account future environmental change, to improve connectivity for diadromous fish passage			
<b>Stressor(s) Addressed By This Conservation Action</b>			
Industrial and Military Effluents, Domestic and Urban Waste Water, Commercial and Industrial Areas , Housing and Urban Areas			

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<b>Conservation Action</b>	<b>Category:</b> Survey and Monitoring	<b>Biological Priority:</b> high	<b>Type:</b> on-going
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Ground-truth mapped habitat and compare to historical maps to monitor change over time, may require updating mapping plans to map more frequently

#### **Stressor(s) Addressed By This Conservation Action**

Lack of knowledge

<b>Conservation Action</b>	<b>Category:</b> Survey and Monitoring	<b>Biological Priority:</b> critical	<b>Type:</b> on-going
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Monitor population stock status through surveys and sampling programs

#### **Stressor(s) Addressed By This Conservation Action**

Other Threat

<b>Conservation Action</b>	<b>Category:</b> Research	<b>Biological Priority:</b> critical	<b>Type:</b> on-going
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Determine the location and timing of critical habitat use (for endangered species) and important habitat use for diadromous fishes at different life history stages

#### **Stressor(s) Addressed By This Conservation Action**

Lack of knowledge

<b>Conservation Action</b>	<b>Category:</b> Research	<b>Biological Priority:</b> high	<b>Type:</b> new
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Investigate methods to reduce incidental bycatch in commercial and recreational fisheries

#### **Stressor(s) Addressed By This Conservation Action**

Fishing and Harvesting of Aquatic Resources

<b>Conservation Action</b>	<b>Category:</b> Research	<b>Biological Priority:</b> high	<b>Type:</b> on-going
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Gather information to support management, including stock assessments, population genetics, population monitoring, etc.

#### **Stressor(s) Addressed By This Conservation Action**

Fishing and Harvesting of Aquatic Resources, Lack of knowledge

<b>Conservation Action</b>	<b>Category:</b> Research	<b>Biological Priority:</b> high	<b>Type:</b> new
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Improve understanding of the relative roles of natural predation, fishing mortality, and climate change in stock dynamics

#### **Stressor(s) Addressed By This Conservation Action**

Fishing and Harvesting of Aquatic Resources, Lack of knowledge, Problematic Native Species-Diseases, Habitat Shifting or Alteration

<b>Conservation Action</b>	<b>Category:</b> Public Outreach	<b>Biological Priority:</b> high	<b>Type:</b> on-going
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Encourage the use of more targeted fishing gear in order to reduce bycatch and habitat disturbance

### **Broad Taxonomic Group Conservation Actions:**

Additional relevant conservation actions for this species are assigned within broader taxonomic groups in Maine's 2015 Wildlife Action Plan: Element 4, Table 4-1.

### **Habitat Based Conservation Actions:**

Additional conservation actions that may benefit habitat(s) associated with this species can be found in Maine's 2015 Wildlife Action Plan: Element 4, Table 4-15. Click on the Habitat Grouping of interest to launch a habitat based report summarizing relevant conservation actions and associated SGCN.

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*The Wildlife Action Plan was developed through a lengthy participatory process with state agencies, targeted conservation partners, and the general public. The Plan is non-regulatory. The species, stressors, and voluntary conservation actions identified in the Plan complement, but do not replace, existing work programs and priorities by state agencies and partners.*