



Life History and Habitat Needs

Geographic Range: American eel are found in fresh, brackish, and coastal waters from the southern tip of Greenland to northeastern South America.

Movement/Migration: From the Sargasso Sea, planktonic larvae are carried to the eastern seaboard by surface currents. When approaching the edge of the continental shelf, the larvae metamorphose into miniature transparent eels, called glass eels. Glass eels enter estuaries by drifting on flood tides and holding position near the bottom of ebb tides, and by actively swimming along shore in estuaries above tidal influence. Movements are primarily nocturnal. While in estuaries glass eels eventually change into pigmented elvers, which are active mostly at night. Triggered by a temperature decrease to about 12-14°C, elvers migrate upstream in waves and become more active during the day. The rate of movement upstream is determined by the water discharge and possibly nightly tidal height. The next life stage is the yellow eel. Some yellow eels continue to migrate upstream, while others remain in brackish portions of rivers until they mature into adult or silver eels. Silver eels migrate downriver to marine waters. Downstream migration is characterized by spurts with long periods of no movement and peaks of intensive movement.

Spawning: Spawning occurs in the Sargasso Sea, which is a large portion of the western Atlantic Ocean east of the Bahamas and south of Bermuda. Spawning occurs during the winter and the spring, from February to April, and possibly beyond. Spawning is thought to occur in the mid-upper water column and occurs on the side of the front in the Sargasso Sea that has warmer temperatures and more saline waters. Adults spawn once and die.

Habitat Use: American eel habitats include the open ocean, large coastal tributaries, small freshwater streams, lakes, and ponds. American eel are also sometimes found in land locked lakes, particularly in the Northeastern U.S. Water temperature and salinity may be important to spawning adults. Substrate might be an important habitat parameter for elvers, as they may burrow during the day and in between movements upstream. Yellow eels can remain in estuaries, rivers or lakes for up to 20 years before they fully mature into silver eels. Silver eels are bottom/substrate oriented.

Threats to Habitat

- Blockage of stream access
- Pollution
- Nearshore habitat destruction
- Oceanic changes

ASMFC Habitat Areas of Particular Concern

As the eel's only spawning ground, the Sargasso Sea is essential to the survival of the species. The estuary and freshwater areas where eels grow and mature are highly sensitive to human impacts. Areas upstream of artificial impediments are very important to the life cycle of American eel.

Recommendations to Improve Habitat Quality

- Identify, categorize, and prioritize important and historic American eel habitat and reestablish eel into historic habitats by mitigating the effects of various hazards to the upstream and downstream migration of American eel (e.g., by requiring fish (eel) passage facilities)
- Restore habitat in areas where residential and commercial development is adjacent to American eel habitat. Ensure American eel habitat is identified and considered in river basin and wetland restoration plans.
- Protect American eel habitat by obtaining land adjacent to critical migration corridors and staging areas and pursuing acquisition, deed restrictions, or conservation easements
- Preserve Sargasso Sea habitat through appropriate partnerships including implementation of the South Atlantic Fishery Management Council's Fishery Management Plan for Pelagic Sargassum Habitat of the South Atlantic Region
- Improve fish passage by improving access to upstream reaches of streams currently restricted by dams with no ladders and by investigating changes in turbine design
- Monitor enhancement efforts and report on the amount of habitat opened through upstream passage projects and evaluate the passability of blockages for different size classes of eels
- Establish windows of compatibility for activities known or suspected to adversely affect American eel life stages and their habitats (e.g. dredging, filling, aquatic construction, water diversions/withdrawal from important habitats and from rivers tributary to important habitats)
- Limit the introduction of contaminants that are a threat to human or American eel health
- Prohibit the use of any fishing gear or practice, which is documented by managers to have an unacceptable impact on American eel (e.g., habitat damage) within the affected important habitats

Habitat Research Needs

- Identify migratory routes and guidance mechanisms of silver eels migrating to the ocean
- Verify specific spawning locations in the Sargasso Sea
- Research behaviors and movements of eel during their freshwater residency
- Research the changes in ocean climate and environmental quality that might influence larval and adult eel migration, spawning, and survival
- Document characteristics and distribution of eel habitat, and the value of that habitat with respect to growth and sex determination
- Many research needs have been identified relating to upstream/downstream passage and impacts from contaminants

Additional Information

American eel are currently managed under the Interstate Fishery Management Plan for American Eel, approved in 1999. Long-term FMP objectives include: encourage protection of eel spawning, nursery and growth habitats; and protect and enhance inland and coastal water quality to protect the health of the eel population and to reduce bioaccumulation of toxic substances. Additional information is contained in the ASMFC's Source Document for Diadromous Fish. Both documents can be found on the ASMFC website at www.asmfmc.org or by contacting the ASMFC Habitat Specialist at (202) 289-6400.