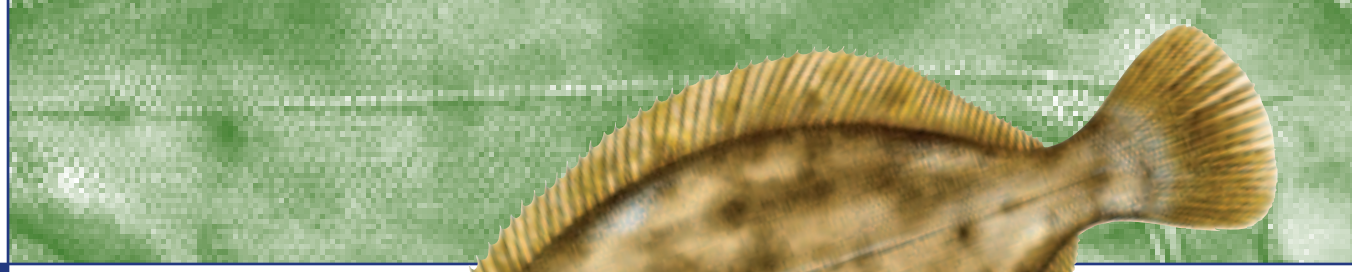

WINTER FLOUNDER

Pseudopleuronectes americanus

Life History and Habitat Needs

Geographic Range: Winter flounder are found in estuaries, coastal waters, and offshore fishing banks along the Atlantic coast of North America. Winter flounder are most common from New England to New Jersey with smaller populations extending to the Chesapeake Bay.

Movement/Migration: Movements inshore and offshore are related to spawning behavior and water temperature. The one exception is Georges Bank where the population does not migrate inshore. Adults seasonal movements consist of two phases: an autumn estuarine immigration prior to spawning, and a late spring/summer movement to either deeper, cooler portions of estuaries or to more offshore areas. In more southerly regions, winter flounder remain in shallow waters.

Spawning: Spawning occurs most commonly in the mouth or mid to outer margin of small rivers, and the middle reaches of larger harbors and rivers where tidal and river currents counterbalance each other to create a retention area for the youngest and most vulnerable larval stages. For southern locales spawning occurs in winter, and for northern locales in spring. Adults tend to return to the same spawning area each year.

Habitat Use: Eggs are adhesive and demersal, and have been found in sand, muddy sand, mud and gravel substrates. Eggs and larvae have been found in areas where water flow is restricted. As winter flounder larvae metamorphose to benthic juveniles, preferred habitat appears to shift from the retention areas to more protected reaches either up river or embayments in the lower estuary. Nursery habitat for larvae and juveniles includes littoral and sublittoral saltwater coves, coastal salt ponds, estuaries, and protected embayments. Juveniles rely on several different substrate types, such as mud bottoms, mud/shell-litter, and sandy substrate. Vegetated habitat, including submerged aquatic vegetation and macroalgal beds also provide important nursery habitat for juveniles. Substrate choice likely varies depending on other factors such as temperature, dissolved oxygen, and food availability. Reported spawning substrates include sand, silty sand, mud, and gravel.

Threats to Habitat

Nearshore water quality degradation:

- Habitat alteration caused by dredging, point and non-point source runoff, and construction of in-water and shoreline structures
- Nutrient enrichment caused by wastewater treatment plants, atmospheric deposition, sewage disposal systems, agricultural runoff, and some boating activities
- Introduction of toxic compounds caused by industrial and municipal wastewater discharges, and non-point sources
- Suspended sediments caused by dredging, vessel prop wash, bottom tending fishing gear, and submarine utility installation
- Entrainment and impingement from power plants and other activities, such as desalinization and water treatment plants

ASMFC Habitat Areas of Particular Concern

Habitat Areas of Particular Concern (HAPCs) for estuarine populations of winter flounder include spawning and nursery habitat. Estuarine-dependent populations of winter flounder usually spawn in shallow areas (<5 m) in the upper estuary, as well as in suitable coves and river mouths of the estuary. Nursery habitats are usually in or near spawning and settlement areas. Habitat used by adult fish moving into and out of the estuary to spawn and for post spawning foraging may also be considered an HAPC.

Recommendations to Improve Habitat Quality

Addressing degradation of near shore waters:

- Implement protective land use practices such as buffer zones around nursery areas
- Implement effective oil and toxic chemical spill prevention and control programs
- Establish and enforce no-vessel-discharge zones and promote boater education
- Address physical alteration of nursery habitat, such as sediment removal by dredging, bulkheading, and channelization. Provide spawning and nursery maps to all regulatory agencies
- Assess the cumulative effects of all existing and proposed docks, piers, platforms, and other physical structures within winter flounder spawning areas
- Use all state authorities under the Clean Water Act to minimize degradation of winter flounder habitat

Addressing suspended sediments:

- Establish and enforce strict timeframes when sediment dredge activities should be prohibited or minimized in spawning and nursery areas
- For projects that cause sediment resuspension, establish strict time frames when activities should be prohibited, and develop and use sediment toxic contamination level guidelines/criteria to assess potential toxicity to winter flounder.
- Use all state authorities under the Clean Water Act by issuing 401 water quality certifications that minimize sediment resuspension, especially in spawning habitats

Addressing power plant impacts:

- Encourage closed system plants especially when existing plants renew their permits or upgrade their technology, and encourage avoidance of spawning areas when siting new plants
- Assess entrainment/impingement mortality of all life stages at existing plants

Habitat Research Needs

- Quantify and determine the functional role of habitat by type (spawning, nursery and juvenile)
- Determine the effect of oceanographic and climatic processes (changes in water temperature) on winter flounder distribution, abundance, and productivity
- Determine the extent and degree of human impacts on habitat functions and values

Additional Information

Winter flounder are managed by the ASMFC under Amendment 1 to the Fishery Management Plan for Winter Flounder (2005), and by the New England Fishery Management Council. Amendment 1 can be found on the ASMFC website at www.asmfc.org or by contacting the ASMFC Habitat Specialist at (202) 289-6400.

www.asmfc.org

ATLANTIC STATES MARINE FISHERIES COMMISSION