



Life History and Habitat Needs

Geographic Range: The American lobster is widely distributed over the continental shelf of the western North Atlantic Ocean. In inshore U.S. waters (out to a depth of 40 m), lobsters are most abundant from Maine to New Jersey. In offshore areas, lobsters occur from Maine through North Carolina. Generally, lobster abundance declines from northern to southern areas.

Movement/Migration: Lobsters usually remain within a home range of about 5-10 square km. In offshore areas, large mature lobsters make seasonal migrations inshore to reproduce. In southern inshore areas, large lobsters may move to deeper, cooler waters seasonally or permanently.

Reproduction: Reproduction and growth are linked to the molting cycle. Lobsters have hard, external skeletons that provide protection and body support. Lobsters periodically shed their exoskeleton to allow their body size to increase and mating to occur. Sperm is deposited in "soft" (recently molted) females and stored internally until extrusion, which can extend for two years. When extruded, the eggs are fertilized and attached to the underside of the female, where they are carried for 9-11 months before hatching. Hatching peaks in mid-May to mid-July when water temperatures rise above 12.5°C.

Habitat Use: Newly hatched lobsters are planktonic (free-swimming) larvae during their first four molts, a period lasting 20-100 days depending on water temperature. Larvae tend to concentrate in surface waters where currents converge which also create retention areas for their food sources. After their fourth molt, juvenile lobsters settle to the ocean floor where they stay for the remainder of their lifetime.

Post-larval lobsters have been observed settling into rock or gravel often covered with algae, salt-marsh peat, eelgrass, seaweed substrates, and firm mud. The preferred habitat for settlement of post-larval lobster appears to be any area with three-dimensional structure where they can build and maintain burrows for shelter from predators.

Adult lobsters have been found in waters from the intertidal zone to as deep as 700 meters. Coastal populations concentrate in areas where shelter is readily available. Offshore populations are most abundant in the vicinity of submarine canyons along the continental shelf edge. Lobsters are most active at night. Juvenile and adult lobsters have been reported in waters with temperatures ranging from 0-25°C and with salinities ranging from 15-32 ppt, but temperatures from 15-18°C and salinities of 20-25 ppt are preferred. Water temperature can have a significant impact on juvenile and adult lobster growth, survival, and reproduction particularly at non-optimal dissolved oxygen and salinity levels. Adult lobsters exposed to temperatures above 20°C for several days show symptoms of respiratory stress and compromised immune response. Further, juvenile and adult lobsters may be more sensitive to low dissolved oxygen levels and high temperatures when they prepare to molt. When inactive, lobsters find shelter in burrows under rocks or, less frequently, in mud tunnels. In winter, especially when the water temperature is below 5°C, lobsters have been found close to the mouth of their burrow with sediment and debris, and remain in their burrow for weeks.

Threats to Habitat

- Pollutants such as heavy metals, pesticides, and petroleum products
- Destructive or unregulated practices in silviculture, agriculture, or coastal development that contribute to increased siltation and turbidity
- Ocean dumping of sewage sludge
- Dredging and dredge spoil placement
- Sewage treatment and disposal
- Energy exploration, extraction, processing, and transport
- Fishing practices such as trawling

ASMFC Habitat Areas of Particular Concern

Scientists, managers, and fishermen are concerned about the habitat conditions for American lobster in inshore southern New England waters, particularly in Long Island Sound. Scientists believe that a combination of environmental factors and events resulted in a die-off of lobster in western Long Island Sound in late 1999, with a lesser event in 2002. Warmer water temperatures combined with hypoxia (low dissolved oxygen levels) and other stress factors contributed to the die-off. Continued elevated water temperatures coupled with routine fall hypoxia may cause repeated die-off events.

Recommendations to Improve Habitat Quality

- Support water quality programs that reduce the severity and duration of hypoxia and pollutant concentrations in nearshore waters from Massachusetts to New Jersey.
- Regulate environmentally destructive fishing gear and practices, and develop gears that minimize impacts to lobster habitat.

Habitat Research Needs

- Map, characterize, and quantify lobster habitat types throughout U.S. waters.
- Identify important habitat to post-larval settlement and early benthic phase lobsters.
- Compare prey species composition and diversity in areas with a hard bottom complex versus areas with a soft bottom complex.
- Conduct research on mobile gear impacts to hard bottom habitat.
- Assess the effects of hypoxia and pollutants on incubating lobster eggs.
- Examine the effects of temperature on growth, reproduction, and mortality.
- Assess the contribution of the bacterial disease Gaffkemia and Shell Disease to natural mortality and determine if the mode of infection in the wild includes physical contact with free-living bacteria found in sediments and surface slimes.

Additional Information

American lobster are currently managed by the ASMFC under Amendment 3 (1997) to the Interstate Fishery Management Plan for American Lobster, and Addenda I-VII and Technical Addendum I to Amendment Three. Amendment 3 and related documents are available on the ASMFC website at www.asmf.org or by contacting the ASMFC Habitat Specialist at (202) 289-6400.

www.asmf.org

