

AMERICAN LOBSTER

Homarus americanus

Sometimes known as Canadian Lobster, Maine Lobster, Atlantic Lobster

SUMMARY

American Lobsters, found from Newfoundland to North Carolina, are a long-lived species and an important commercial fishery. Landings of American Lobsters have increased greatly during the last decade and most populations have stable abundance. The American Lobster fishery is well managed in both U.S and Canadian waters, however, entanglements of endangered North Atlantic Right Whales in lobster fishing gear is a significant concern. The Eastern Canada offshore lobster fishery has been certified as environmentally sustainable by the Marine Stewardship Council. Chef Barton Seaver described American Lobster this way: “The seafood that defines delicious. This rich and robust flavored species has a butter flesh and an unmatched sweetness.”

Criterion	Points	Final Score	Color
Life History	1.50	2.40 - 4.00	
Abundance	2.50	1.60 - 2.39	
Habitat Quality and Fishing Gear Impacts	2.25	0.00 - 1.59	
Management	3.50		
Bycatch	1.50		
Final Score	2.25		
Color			

LIFE HISTORY

Core Points (only one selection allowed)

If a value for intrinsic rate of increase ('r') is known, assign the score below based on this value. If no r-value is available, assign the score below for the correct age at 50% maturity for females if specified, or for the correct value of growth rate ('k'). If no estimates of r, age at 50% maturity, or k are available, assign the score below based on maximum age.

1.00 Intrinsic rate of increase <0.05; OR age at 50% maturity >10 years; OR growth rate <0.15; OR maximum age >30 years.

The intrinsic rate of increase and actual growth rate of American Lobsters are currently unknown (ASMFC 2007). Canada's DFO reports that the age at maturity for American Lobster is 5-8 years (DFO 1998b; DFO 2001), however, 10-12 years may be a more accurate estimate (Steneck, pers. comm., 2004). Lobsters may live to 100 years old, but estimates are difficult because as Lobsters molt, they leave behind the material that would be used for age determination (ASMFC 2000). The largest Lobster documented by the Department of Fisheries and Oceans Canada (DFO) was 48 lbs, or approximately 40-65 years old (DFO 2001).

2.00 Intrinsic rate of increase = 0.05-0.15; OR age at 50% maturity = 5-10 years; OR a growth rate = 0.16–0.30; OR maximum age = 11-30 years.

3.00 Intrinsic rate of increase >0.16; OR age at 50% maturity = 1-5 years; OR growth rate >0.30; OR maximum age <11 years.

Points of Adjustment (multiple selections allowed)

-0.25 Species has special behaviors that make it especially vulnerable to fishing pressure (e.g., spawning aggregations; site fidelity; segregation by sex; migratory bottlenecks; unusual attraction to gear; etc.).

-0.25 Species has a strategy for sexual development that makes it especially vulnerable to fishing pressure (e.g., age at 50% maturity >20 years; sequential hermaphrodites; extremely low fecundity).

-0.25 Species has a small or restricted range (e.g., endemism; numerous evolutionarily significant units; restricted to one coastline; e.g., American lobster; striped bass; endemic reef fishes).

American Lobsters are found only along the continental shelf waters from Newfoundland to North Carolina (ASMFC 2000). We consider this to be a small range.

-0.25 Species exhibits high natural population variability driven by broad-scale environmental change (e.g. El Nino; decadal oscillations).

+0.25 Species does not have special behaviors that increase ease or population consequences of capture OR has special behaviors that make it less vulnerable to fishing pressure (e.g., species is widely dispersed during spawning).

Egg bearing Lobsters will avoid crowds to protect their eggs, making them less likely to enter Lobster traps. If captured, fishers return egg bearing females to the water and most Lobsters are able to survive.

+0.25 Species has a strategy for sexual development that makes it especially resilient to fishing pressure (e.g., age at 50% maturity <1 year; extremely high fecundity).

Female Lobsters have one clutch and carry their eggs for 9-12 months before eggs hatch and are released (DFO 2001). Although this strategy might appear to be a vulnerability, it actually contributes to the resilience of the population because unlike spiny lobsters and many crab species, American Lobster have high parental investment in their eggs. Once the eggs hatch, the larval period is short, and the per capita survival rate of eggs is high.

+0.25 Species is distributed over a very wide range (e.g., throughout an entire hemisphere or ocean basin; e.g., swordfish; tuna; Patagonian toothfish).

+0.25 Species does not exhibit high natural population variability driven by broad-scale environmental change (e.g., El Nino; decadal oscillations).

The American Lobster does not exhibit high natural population variability as a result of broad-scale environmental change. The fishery was very stable from 1946 to 1986, indicating that there are no major interannual fluctuations.

1.50 Points for Life History

ABUNDANCE

Core Points (only one selection allowed)

Compared to natural or un-fished level, the species population is:

- 1.00 Low: Abundance or biomass is <75% of BMSY or similar proxy (e.g., spawning potential ratio).
- 2.00 Medium: Abundance or biomass is 75-125% of BMSY or similar proxy; OR population is approaching or recovering from an overfished condition; OR adequate information on abundance or biomass is not available.**

In the U.S., American Lobsters are fished in three regions: the Gulf of Maine, Georges Bank, and Southern New England. Total landings have increased greatly during the last 15 years, rising from 57 million pounds in 1993 to 93 million pounds in 2006 (ASMFC 2007). In the U.S., most American Lobsters come from the Gulf of Maine.

Currently, the abundance of American Lobsters varies among the regions, being relatively stable for Georges Bank and much of the Gulf of Maine, and decreasing in Southern New England and some of the Gulf of Maine (ASMFC 2006).

In Canada, American Lobsters are commercially fished from over 40 lobster fishing areas (AGR 2004). In 2004, there was a 720 tonne quota with most Lobsters caught from April to June and in December (AGR 2004). Abundance of Lobsters varies among fishing areas, but most are stable (DFO 2009).

Because the abundance of American Lobsters is stable in most fishing regions or areas, a core point of 2 was awarded

- 3.00 High: Abundance or biomass is >125% of BMSY or similar proxy.

Points of Adjustment (multiple selections allowed)

- 0.25 The population is declining over a generational time scale (as indicated by biomass estimates or standardized CPUE).
- 0.25 Age, size or sex distribution is skewed relative to the natural condition (e.g., truncated size/age structure or anomalous sex distribution).
- 0.25 Species is listed as "overfished" OR species is listed as "depleted", "endangered", or "threatened" by recognized national or international bodies.
- 0.25 Current levels of abundance are likely to jeopardize the availability of food for other species or cause substantial change in the structure of the associated food web.

+0.25 The population is increasing over a generational time scale (as indicated by biomass estimates or standardized CPUE).

Landings have increased in both the U.S. and Canada compared to the long-term averages. In the U.S. landings have been increasing since the 1960s due to both increasing fishing effort and increased lobster abundance (ASMFC 2000). In Canada, increases have been recorded since the mid-1970s. Increases are thought to be related to favorable environmental conditions enabling high survival of larvae (DFO 1998b; DFO 2001b). Canadian trends have now stabilized at a high level (Steneck, pers. comm., 2004). In Southwest Nova Scotia, landings have remained high. In the Bay of Fundy, catch rates were higher in 2000 compared to previous decades (DFO 2001b). In Maine, where most lobsters in U.S. waters are caught, landings are at a record high. However, populations in Rhode Island and Long Island, NY, are suffering declines in their abundance due to disease and other sources of mortality (ASMFC 2002). During the last few years, landings of American Lobsters have stabilized in most fishing locations, thus no points were added

+0.25 Age, size or sex distribution is functionally normal.

The Atlantic States Fishery Management Commission reports that size composition is severely truncated. They state that in the U.S., the majority of Lobsters landed are newly recruited animals, meaning that they have just barely reached legal size. On Georges Bank, 80% of landed female Lobsters are within this category. This means that the animals are not 50% mature at this size and have not yet reproduced. The size of the Lobsters brought in has fluctuated a bit over the years and has been increasing in recent years (ASMFC 2000). In Canada, most Lobsters caught are first year recruits, meaning that Lobsters are primarily caught between the minimum size and the first molt. There are fewer older animals in the population. It is difficult to determine, however, what the precise distribution of the catch is because the minimum size has changed many times in the southern Gulf of St. Lawrence fishery (Comeau 2001).

Even though there are more female Lobsters in the larger size classes as a result of the prohibition on catching female Lobsters, some lobster scientists state that this sex ratio is not necessarily a problem as long as there is no limitation on available sperm. Because dominant male Lobsters can inseminate a female who can in turn save her eggs for two years, builds in a safety mechanism for fertilization. In addition, fishery reports state that the size distribution of the Lobster population is skewed toward the smaller Lobsters. However, according to some lobster scientists, this pattern does not mean that the largest Lobsters are gone. Instead, by keeping the large classes and increasing the number of small Lobsters in the population, the same ratio can be attained. Steneck (personal communication, 2004), argues that there has been an increase in the largest size classes and that there has been a population explosion among young Lobsters.

+0.25 Species is close to virgin biomass.

For millennia, Lobsters were consumed by cod. Now that abundance of cod is low, there are no real predators of Lobsters and Lobster abundance has never been so high. Consequently, American Lobsters can be considered close to virgin biomass, or at unfished levels, given the lack of trophic limitations of today (Steneck, pers. comm., 2004).

+0.25 Current levels of abundance provide adequate food for other predators or are not known to affect the structure of the associated food web.

2.50 Points for Abundance

HABITAT QUALITY AND FISHING GEAR IMPACTS

Core Points (only one selection allowed)

Select the option that most accurately describes the effect of the fishing method upon the habitat that it affects

1.00 The fishing method causes great damage to physical and biogenic habitats (e.g., cyanide; blasting; bottom trawling; dredging).

2.00 The fishing method does moderate damage to physical and biogenic habitats (e.g., bottom gillnets; traps and pots; bottom longlines).

In Canadian fisheries, all American Lobsters are caught with traps (Comeau 2001). In the U.S., Lobsters are caught primarily with traps. Approximately 2% of landings are taken with trawl gear (ASMFC 2000).

3.00 The fishing method does little damage to physical or biogenic habitats (e.g., hand picking; hand raking; hook and line; pelagic long lines; mid-water trawl or gillnet; purse seines).

Points of Adjustment (multiple selections allowed)

-0.25 Habitat for this species is so compromised from non-fishery impacts that the ability of the habitat to support this species is substantially reduced (e.g., dams; pollution; coastal development).

- 0.25 Critical habitat areas (e.g., spawning areas) for this species are not protected by management using time/area closures, marine reserves, etc.
- 0.25 No efforts are being made to minimize damage from existing gear types OR new or modified gear is increasing habitat damage (e.g., fitting trawls with roller rigs or rockhopping gear; more robust gear for deep-sea fisheries).
- 0.25 If gear impacts are substantial, resilience of affected habitats is very slow (e.g., deep water corals; rocky bottoms).

+0.25 Habitat for this species remains robust and viable and is capable of supporting this species.

In the U.S. most American Lobsters are caught in state waters, which extend from zero to three miles from shore (ASMFC 2007). Most of the Lobster habitat in U.S and Canadian waters remains robust.

- +0.25 Critical habitat areas (e.g., spawning areas) for this species are protected by management using time/area closures, marine reserves, etc.
- +0.25 Gear innovations are being implemented over a majority of the fishing area to minimize damage from gear types OR no innovations necessary because gear effects are minimal.
- +0.25 If gear impacts are substantial, resilience of affected habitats is fast (e.g., mud or sandy bottoms) OR gear effects are minimal.

2.25 Points for Habitat Quality and Fishing Gear Impacts

MANAGEMENT

Core Points (only one selection allowed)

Select the option that most accurately describes the current management of the fisheries of this species.

- 1.00 Regulations are ineffective (e.g., illegal fishing or overfishing is occurring) OR the fishery is unregulated (i.e., no control rules are in effect).
- 2.00 Management measures are in place over a major portion over the species' range but implementation has not met conservation goals OR management measures are in place but have not been in place long enough to determine if they are likely to achieve conservation and sustainability goals.
- 3.00 Substantial management measures are in place over a large portion of the species range and have demonstrated success in achieving conservation and sustainability goals.**

Both the U.S. and Canada manage their American Lobster fisheries, through the Atlantic States Marine Fisheries Commission and Department of Fisheries and Oceans, respectively.

Management measures include limited entry programs, limits on the number of traps allowed, minimum sizes, escape vents on traps, and prohibitions on landing egg bearing females.

In most fishing locations, the abundance of American Lobsters is healthy (ASMFC 2007, DFO 2009) indicating good management overall.

Points of Adjustment (multiple selections allowed)

- 0.25 There is inadequate scientific monitoring of stock status, catch or fishing effort.
- 0.25 **Management does not explicitly address fishery effects on habitat, food webs, and ecosystems.**

There are currently no management measures in place specifically to address effects of fishery on the ecosystem (Selburg, pers. comm., 2004). However, there are no indicators that American Lobsters are affecting the ecological community. For example, in areas where Lobsters have died off (e.g. Long Island), there were no visible effects. This indicates that Lobsters are not 'strong interactors' in the community (Steneck, pers. comm., 2004). Thus, no points are subtracted.

-0.25 This species is overfished and no recovery plan or an ineffective recovery plan is in place.

-0.25 Management has failed to reduce excess capacity in this fishery or implements subsidies that result in excess capacity in this fishery.

+0.25 There is adequate scientific monitoring, analysis and interpretation of stock status, catch and fishing effort.

Catches are monitored and stock assessments are performed in both the U.S. and Canada. Management agencies in both countries are working toward development of better monitoring of populations (ASMFC 2002; DFO 2001).

+0.25 Management explicitly and effectively addresses fishery effects on habitat, food webs, and ecosystems.

+0.25 This species is overfished and there is a recovery plan (including benchmarks, timetables and methods to evaluate success) in place that is showing signs of success OR recovery plan is not needed.

+0.25 Management has taken action to control excess capacity or reduce subsidies that result in excess capacity OR no measures are necessary because fishery is not overcapitalized.

Although the American Lobster fisheries are not formally classified as 'overcapitalized,' all management areas in U.S. waters are working to limit effort in the fishery. For example, most areas are working to reduce the number of traps in the fishery. Maine and Canada have limits on the number of licenses allowed. Canadian managers are also working to reduce exploitation rates (Comeau, pers. comm., 2003).

3.50 Points for Management

BYCATCH

Core Points (only one selection allowed)

Select the option that most accurately describes the current level of bycatch and the consequences that result from fishing this species. The term, "bycatch" used in this document excludes incidental catch of a species for which an adequate management framework exists. The terms, "endangered, threatened, or protected," used in this document refer to species status that is determined by national legislation such as the U.S. Endangered Species Act, the U.S. Marine Mammal Protection Act (or another nation's equivalent), the IUCN Red List, or a credible scientific body such as the American Fisheries Society.

1.00 Bycatch in this fishery is high (>100% of targeted landings), OR regularly includes a "threatened, endangered or protected species."

The vast majority of American Lobsters are caught with traps, which have low bycatch of non-targeted finfish and undersized lobster species. Bycatch is low because Lobster traps are vented (Stockwell 2001). However, there are significant concerns about entanglements of endangered North Atlantic right whales (*Eubalaena glacialis*) in Lobster fishery gear. The population of right whales is currently estimated at only 300 animals due to centuries of hunting. Even though right whales have been protected from hunting for decades, the right whale population declined during the 1990s. Entanglements in fishing gear and collisions with ships are thought to be major causes of the decline. Right whales are known to feed in areas off New England and Canada where Lobster fisheries occur (Clapham and Pace 2001). In 2009, there were five confirmed right whale entanglements with lobster and other fishing gear (Dean 2009). Approximately 80% of adult right whales have scars on their body from fishing entanglement (Dean 2009).

2.00 Bycatch in this fishery is moderate (10-99% of targeted landings) AND does not regularly include "threatened, endangered or protected species" OR level of bycatch is unknown.

3.00 Bycatch in this fishery is low (<10% of targeted landings) and does not regularly include "threatened, endangered or protected species."

Points of Adjustment (multiple selections allowed)

-0.25 Bycatch in this fishery is a contributing factor to the decline of "threatened, endangered, or protected species" and no effective measures are being taken to reduce it.

-0.25 Bycatch of targeted or non-targeted species (e.g., undersize individuals) in this fishery is high and no measures are being taken to reduce it.

- 0.25 Bycatch of this species (e.g., undersize individuals) in other fisheries is high OR bycatch of this species in other fisheries inhibits its recovery, and no measures are being taken to reduce it.
- 0.25 The continued removal of the bycatch species contributes to its decline.
- +0.25 Measures taken over a major portion of the species range have been shown to reduce bycatch of "threatened, endangered, or protected species" or bycatch rates are no longer deemed to affect the abundance of the "protected" bycatch species OR no measures needed because fishery is highly selective (e.g., harpoon; spear).**

The Atlantic Large Whale Take Reduction Plan (ALWTRP) was implemented in 1997 (and modified in 1999, 2000, and 2002) to reduce injuries and deaths to large whales due to accidental entanglement in fishing gear in U.S. waters. Measures and programs in place under the ALWTRP include gear changes, a Disentanglement Network, a Sighting Advisory System, Dynamic Area Management (DAM), and Seasonal Area Management (NMFS 2003). Canadian Lobster fisheries are not included in the U.S. ALWTRP. NMFS tries to coordinate with the Canadian DFO by including Canadian participants in the development of the plan. However, there are no regulations in Canadian Lobster fisheries that specifically protect whales from fishing gear. Unlike the U.S., Canada does not have national legislation to protect marine mammals. Canadians have been more active in working to protect whales from ship strikes (Lankshear and Borggaard, pers. comm., 2003). Points were added here to account for the extensive efforts in U.S. fisheries.

- +0.25 There is bycatch of targeted (e.g., undersize individuals) or non-targeted species in this fishery and measures (e.g., gear modifications) have been implemented that have been shown to reduce bycatch over a large portion of the species range OR no measures are needed because fishery is highly selective (e.g., harpoon; spear).**

In both U.S. and Canadian fisheries traps have escape vents to release undersized Lobsters and other unwanted species (ASMFC 2002).

- +0.25 Bycatch of this species in other fisheries is low OR bycatch of this species in other fisheries inhibits its recovery, but effective measures are being taken to reduce it over a large portion of the range.**

No information was available to determine if bycatch of American Lobster in other fisheries is a significant problem.

- +0.25 The continued removal of the bycatch species in the targeted fishery has had or will likely have little or no impact on populations of the bycatch species OR there are no significant bycatch concerns because the fishery is highly selective (e.g., harpoon; spear).**

1.50 Points for Bycatch

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