

Toad Crab (*Hyas araneus* and *Hyas coarctatus*)

Common Names: Policeman crab, sea toad, spider crab, and Atlantic lyre crab.

Description, Distribution and Biology

The two species of crab identified in the waters off Newfoundland and Labrador are *H. araneus* and *H. coarctatus*. Both species are characterized by a shield-like, uneven carapace, five pairs of tubular walking legs and one pair of well-developed claws on the front pair of legs. The carapace is triangular in shape and roughly 1 1/3 times longer than wide, narrowing towards the front. They also have a two-pronged rostrum that extends between the eyes (Fig. 1). Although similar in many respects, *H. araneus* is larger in size and is typically found in shallower water than the *H. coarctatus*. Adult male toad crab weigh up to 0.75 kg, with carapace length and width up to 9.5 cm and 7.5 cm. Adult female is typically smaller than the male, reaching a maximum carapace width of 6.5 cm. The surface of the carapace is usually a red-brown to olive colour, shading to a white colour on the lower surface.



Figure 1. Toad crab. Source: Department of Fisheries and Aquaculture, St. John's, NL.

Toad crab is widespread on both sides of the North Atlantic Ocean, ranging from shallow subtidal areas to depths to 1650 m. Toad crab prefer gravel, sand or mud substrates. In the northwest Atlantic the toad crab is common off the coast of Labrador, in the Gulf of St. Lawrence and Bay of Fundy, and is common throughout nearshore areas of Newfoundland and Nova Scotia. This species has also been recorded southward to Rhode Island, USA. Toad crab is often located in areas that are inhabited by both rock and snow crab species.

Toad crab larvae typically hatch during the warm summer months. Immediately after hatching, the larvae will float to the surface where they will remain as plankton from one to several months. Larvae are dispersed throughout the upper water column by oceanic currents. The larvae passes through a number of developmental stages prior to settling on the bottom. Juveniles usually reach sexual maturity at 20 mm carapace length. Habitats and needs vary according to life cycle stages, however eggs, larvae, juveniles and adults all require uncontaminated water with an adequate food supply. The toad crab feeds on a variety of organisms including amphipod, polychaete, bivalve, ophiuroid, gastropod, chiton, sea urchin and small crab. They are also known to be scavengers of dying or dead

fish. The main predators for toad crab larvae include other plankton and surface feeding fish. Adult toad crabs are common prey of groundfish and lobster species.

Harvesting, Technology and Resource Management

No direct fishery for toad crab species existed in Newfoundland and Labrador until a small-scale exploratory test fishery was developed in 1994. A modified snow crab pot was employed during the test fishery. The pots were constructed of 3-³/₄ inch mesh and were 50.8 cm high, with 44.5 cm top (26.7 cm cone size) and 91.4 cm bottom. The experimental fishery concluded that toad crab resources appeared to be healthy and well distributed throughout the Newfoundland and Labrador coastal regions and suggested a new-target fishery for 1995. Landings reached 3 million pounds in 1995, declining to 400,000 lbs in 2000. Fisheries based around Newtown and Musgrave Harbour are currently considered 'fished out' by local residents. In 1994, fishers were paid \$0.20 to 0.50/lb for their catch.

The processing of toad crab involved the modification of snow crab processing equipment. Toad crab is much smaller and has a different body structure in comparison to snow crab. The toad crab's legs are circular in shape and the shell is approximately 3 to 4 times thicker than the oval shaped carapace of the snow crab. Therefore, the meat has to be extracted by mincing as opposed to the traditional method of rolling. The greatest concern in processing toad crab is a gel-like, mossy covering found on the shell. If the gel substance is not removed prior to processing it is noticeable in the final product. Therefore, workers have to monitor the catch and remove any crab displaying the substance, clean the shell, and then insert the crab back into the processing line.

One of the biggest problems facing the management of toad crab in waters off Newfoundland and Labrador is distinguishing between species. Of the two species found in coastal areas, *H. araneus* typically reaches market size. However, it is difficult to distinguish *H. araneus* from the smaller *H. coarctatus* in the wild, thereby affecting pre-recruit abundance surveys of the larger target species. Future management will require further research into species identification. Furthermore, since little is known about the abundance of toad crab a 'go-slow' approach to future expansion is needed.

ADDITIONAL READINGS:

CAFID. (1995). *Rock/Toad Crab Processing*. Project Summary, Canada/Newfoundland Cooperation Agreement for Fishing Industry Development (CAFID) #4.

CAFID. (1995). *Rock/Toad Crab Harvesting*. Project Summary, Canada/Newfoundland Cooperation Agreement for Fishing Industry Development (CAFID) #3.

DFO. (1998). *Eastern Nova Scotia Offshore Multi-species Crab Fishery Integrated Management Plan*. Department of Fisheries and Oceans, Scotia-Fundy Fisheries, Maritime Region.

DFO. (1999). *Toad Crab, Coastal Zone Species Profile Series No. 3*. Retrieved from the World Wide Web {May 27/02}: http://www.nwafc.nf.ca/sealane/References/Species/toad_crab.htm

DFO. (Undated) *Offshore/Inshore Fisheries Development. Atlantic Coast CRABS*. Communication Directorate, Department of Fisheries and Oceans, Ottawa, Ontario, Canada. Retrieved from the World Wide Web {May 27/02}. <http://www.mi.mun.ca/mi-net/fishdeve/atlantic.htm>

Squires, H.J. (1990). Decapod Crustacea of the Atlantic Coast of Canada. *Can. Bull. Fish. Aquat. Sci.*, 221: 532 p.

For Further Information Contact:

Centre for Sustainable Aquatic Resources, Marine Institute of Memorial University of Newfoundland, P.O. Box 4920, St. John's, NL A1C 5R3
Toll Free: 1-709-778-0521 Website: <http://www.mi.mun.ca/csar/> OR
Department of Fisheries and Aquaculture, Government of Newfoundland and Labrador, P.O. Box 8700, St. John's, NL, A1B 4J6
Telephone: 1-709-729-3766

Partners/Contributors:

Centre for Sustainable Aquatic Resources (CSAR)
Fisheries and Marine Institute of Memorial University of Newfoundland