



Illustration by Robert Perry

Coastal Zone

Species Profile Series

No. 3

Toad Crab

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Two species (*Hyas araneus* and *Hyas coarctatus*) referred to as toad crabs are also known as policeman crab, sea toad, spider crab, and Atlantic lyre crab.

Physical Characteristics

- Obvious characteristics include: (1) shield-like carapace (dorsal part of cephalothorax); (2) five pairs of walking legs; (3) pair of well-developed claws on the front pair of legs; (4) roughly triangular carapace about 1 1/3 times longer than wide, narrowing towards the front; (5) uneven carapace surface; and (6) 'rostrum' extending forward between eyes is two-pronged.
- Male toad crabs weigh up to approximately 0.75 kg, with carapace lengths and widths up to 95 mm and 75 mm, respectively. The female maximum carapace width is approximately 65 mm.
- The upper carapace surface is reddish-brown to olive and the lower surface is off-white.

Distribution

- Found on both sides of the North Atlantic at recorded depths ranging from shallow subtidal to 510 m. Its distribution in the western North Atlantic extends from Labrador to Rhode Island.
- Found in considerable numbers near most of the insular Newfoundland coast, on the Labrador coast inshore, and also on the continental slopes from Labrador to the Grand Banks. Predominantly at intermediate depths, overlapping rock crab and snow crab zones. Compared to lobsters and rock crabs, the bulk of toad crab biomass is in much deeper water.

Natural History

* Life Cycle

- Larvae usually hatch during the warmer summer months and move to the upper water column where

they remain as plankton from one to several months. As plankton, the larvae disperse more by oceanic currents and water movement than by their limited swimming ability. The larvae develop through a number of stages before settling down on the sea bed. The juveniles then grow through to sexual maturity (as small as 20 mm carapace length).

* Habitat Requirements

- Habitat needs vary with the life cycle stage. Larval toad crabs require uncontaminated water within critical temperature and salinity ranges, and containing appropriate food supply. Despite the belief that crab larvae are not selective for habitat on which to settle and begin a benthic existence, certain bottom habitat types definitely promote higher survival. Toad crabs appear to prefer gravel, sand, or mud bottoms.

* Feeding and Predation

- Food of toad crab includes amphipods, polychaetes, bivalves, ophiuroids, gastropods, chitons, sea urchins, small crabs, and scavenged fish.
- Toad crab larvae are susceptible to predation by other plankton and surface-feeding fish. After settlement to the ocean bottom, they become prey to mainly certain groundfish species as well as to lobster in the shallow part of their range.

Potential Impacts of Nearshore/Coastal Development

Critical habitat for toad crabs exists further offshore than lobsters and rock crab.

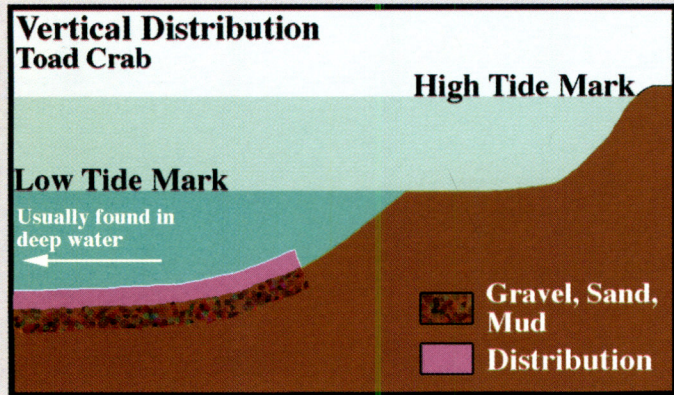
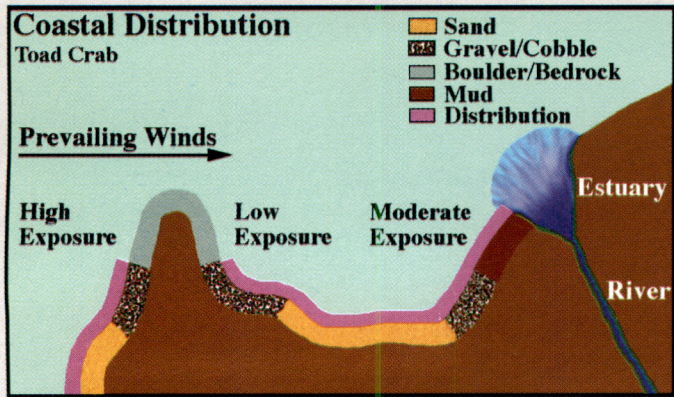
* Larvae

- Toad crabs are most sensitive to development impacts during their larval stages. For example:

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- physical obstructions (e.g. causeway) limit larval dispersal and thereby reduce population mixing.
- industrial plant effluent containing petroleum products and heavy metals may reduce larval survival and growth. Other possible effects of contaminants on toad crab larvae include increased malformation and delayed development.

* Juveniles and Adults

- Less sensitive than the larval stages, juveniles and adults are still susceptible to development impacts, both directly and indirectly through physical habitat change. For example:
 - some fishing gears can physically alter the substrate by inducing excessive siltation and disturbing habitat, possibly causing a decrease in survival and an increase in relocation behaviour.
 - discharges such as drilling muds, heavy metals, pesticides, and oil can have lethal and sublethal effects on individuals. The sublethal effects on individuals might reduce recruitment to the populations. Contaminant loading in the crab not

only affects resource marketability, but the added stress makes the animals more susceptible to disease and less tolerant to temperature and salinity change.

Fishery

- In Newfoundland, a directed fishery for toad crabs was started in 1994 and expanded in 1995. This species is also a common by-catch in lobster and snow crab fisheries. Extracted meat from larger toad crabs forms a worthwhile supplement to lobster and other crab catches.

Selected References and Further Reading

- Miller, R.J., and P.G. O'Keefe. 1981. Seasonal and depth distribution, size, and molt cycle of the spider crabs, *Chionoecetes opilio*, *Hyas araneus*, and *Hyas coarctatus* in a Newfoundland Bay. Canadian Technical Report of Fisheries and Aquatic Sciences No. 1003. 18 p.
- Squires, H.J. 1990. Decapod Crustacea of the Atlantic Coast of Canada. Canadian Bulletin of Fisheries and Aquatic Sciences. No. 221. 532 p.
- Warner, G.F. 1977. The biology of crabs. Van Nostrand Reinhold Company, New York. 202 p.

For further information, please contact your local office of the Department of Fisheries and Oceans.