Green Crab

What is the Green Crab?

The European green crab (*Carcinus maenas*) is a small shore crab (adults measure about 3'' across) whose native distribution is along the coasts of the North and Baltic Seas. Although known by the common name of green crab, color is not its distinguishing feature. The shell (carapace) color can vary widely. Juveniles can change color to match their surroundings. Adults are generally dark greenish with yellow markings. The underside is often bright red or yellow. The crab is an effective forager, adept at opening bivalve shells. In California, it has caused losses as high as 50% in Manila clam stocks. It preys on numerous other organisms, making these crabs potential competitors for the food sources of native fish and bird species.

The recent arrival of the green crab on the U.S. West Coast is cause for concern. The green crab has already invaded numerous coastal communities outside of its native range, including South Africa, Australia, and both coasts of North America. An able colonizer and efficient predator, this small shore crab has the potential to significantly alter any ecosystem it invades. It has been blamed for the collapse of the soft-shell clam industry in Maine. The green crab could threaten Dungeness crab, oyster and clam fisheries and aquaculture operations in the Pacific Northwest and British Columbia.

First seen in San Francisco Bay in 1989, the green crab moved southward to Monterey Bay and northward to Humboldt Bay, California; Coos Bay, Oregon and into many Oregon estuaries. Green crab were sighted in Willapa Bay and Grays Harbor, Washington, and on the west coast of Vancouver Island, in 1998 and 1999.

Why should we be concerned?

The green crab feeds on many organisms, including clams, oysters, mussels, marine worms and small crustaceans. Since it can also prey on juvenile crabs and shellfish, a northward spread to the Washington coast and Puget Sound could put our Dungeness crab, clam and oyster fisheries at risk, and the green crab may compete with native fish and bird species for food. In Bodega Bay, California, a significant reduction in population abundance of clam and native shore crab is already evident since the arrival of the green crab in 1993. In addition, the green crab is an intermediate host to a marine worm that can harm the health of local shore birds.

How can it get to Washington State?

There are a number of ways the green crab can invade new habitat. Because the crab tolerates a wide range of environmental conditions, it could travel northward both by natural and human-mediated transportation.

**Natural Dispersal:**

Green crab larvae can survive as plankton up to 80 days. Ocean currents disperse the larvae many miles up and down the coast. After a period of growth and development in the open sea, green crabs in final larval stage aggregate at night in surface waters. Tides and currents sweep them back into coastal waters where they molt and settle out as juvenile crabs in the upper intertidal zone. If the conditions in their new home are suitable, the crabs may survive and even reproduce, establishing a new population and extending the species' range farther along the coast.

**Human-Mediated Dispersal:**

There are a number of ways humans can inadvertently disperse green crab to new habitats. Scientists believe that one likely pathway of introduction is through the distribution of live
seafood. Green crabs are sometimes present in seaweeds packed with lobsters and commercial oysters. If the packing material and containers are not disposed of properly, the crabs can find their way into waterways. Although heavily regulated, the aquaculture industry is also a potential source of green crab introductions.

Recreational boaters transport nuisance species in bait buckets or boat wells, often without realizing it. Live green crabs are also used as bait by recreational fishers, or are present in the seaweed packed with bait. In addition, they are available for purchase from marine biological supply companies. Supply companies will ship live green crabs anywhere, in any quantity, at any time. If the purchaser, who has acquired the crab either for research or as a "pet" doesn't dispose of the crab properly, or releases it into the wild, the crab is introduced into new habitat.

Scientists have also identified ballast water as a major pathway for aquatic introductions, including the larval stage of green crab. Marine vessels take on and discharge millions of tons of water for ballast each day, which may contain aquatic plants, animals and pathogens. No doubt other human-mediated pathways for introduction exist as well (See Pathways of Aquatic Introductions fact sheet).

Once introduced, some non-indigenous organisms may find the new environment unlivable and won't survive long enough to become established. But sometimes the new environment is favorable to the transported species, and it can live and even flourish. Once it arrives, the green crab can thrive in many types of coastal habitats and in wide ranges of temperature and salinity; many of these suitable habitats are found on the Washington coast. The green crab can produce up to 200,000 eggs at a time, and under certain conditions, it can survive up to two months out of water.

For more information contact:
Andrea Copping
Washington Sea Grant Program
3716 Brooklyn Ave., N.E.
Seattle, WA 98105-6716
206.543.6600; acopping@u.washington.edu

Scott Smith
Washington Dept. of Fish & Wildlife
Fish Management
600 Capitol Way N.
Olympia, WA 98501
360.902.2724; smithsss@dfw.wa.gov

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