

NONINDIGENOUS SPECIES INFORMATION BULLETIN: Asian shore crab, Japanese shore crab, Pacific crab, *Hemigrapsus sanguineus* (De Haan) (Arthropoda: Grapsidae)

IDENTIFICATION: The Asian shore crab has a square-shaped shell with 3 spines on each side of the carapace. The carapace color ranges from green to purple to orange-brown to red. It has light and dark bands along its legs and red spots on its claws. Male crabs have a distinctive fleshy, bulb-like structure at the base of the moveable finger on the claws. This species is small with adults ranging from 35 mm (1.5 in) to 42 mm (1.65 in) in carapace width.

NATIVE RANGE: *Hemigrapsus sanguineus* is indigenous to the western Pacific Ocean from Russia, along the Korean and Chinese coasts to Hong Kong, and the Japanese archipelago.



Asian Shore Crab (*Hemigrapsus sanguineus*)
(Specimen courtesy of Susan Park, University of Delaware)

LIFE HISTORY: This species is an opportunistic omnivore, feeding on macroalgae, salt marsh grass, larval and juvenile fish, and small invertebrates such as amphipods, gastropods, bivalves, barnacles, and polychaetes. The Asian shore crab is highly reproductive with a breeding season from May to September, twice the length of native crabs. The females are capable of producing 50,000 eggs per clutch with 3-4 clutches per breeding season. The larvae are suspended in the water for approximately one month before developing into juvenile crabs. Because of this, the larvae have the ability to be transported over great distances, a possible means of new introductions.

HABITAT: This versatile crab inhabits any shallow hard-bottom intertidal or sometimes subtidal habitat. They can live on artificial structures and on mussel beds and oyster reefs. They also tend to aggregate at high densities under rocks where they overlap habitats with native crab species. *Hemigrapsus* can tolerate wide ranges of salinity and temperature as well as damp conditions in the upper intertidal regions.

NONINDIGENOUS OCCURRENCES: *Hemigrapsus* was first recorded in the United States at Townsend Inlet, Cape May County, New Jersey in 1988. This species is now well established and exceptionally abundant along the Atlantic intertidal coastline of the United States from Maine to North Carolina. It is actively breeding



and expanding its population within its nonnative range. Because the species is tolerant of a wide range of environmental conditions, it is likely that the invasion will continue along the US coastline.

MEANS OF INTRODUCTION: It is not known how this species was introduced to the United States Atlantic coast, but many speculate that adults or larvae were brought by incoming ships of global trade via ballast water discharge.

IMPACTS: Because this species has a very broad diet, it has the potential to affect populations of native species such as crabs, fish, and shellfish by disrupting the food web. It also occupies habitats very similar to our native mud crabs, possibly overwhelming and dominating their habitat. This potential impact on native species populations may be a result of direct predation or competition for a food source.

Hemigrapsus may compete with larger species, like the blue crab, rock crab, lobster, and the nonnative green crab. Recent trends show numbers of shore crabs are steadily increasing while native crab populations are declining. These opportunistic omnivores may also pose threats to coastline ecosystems and aquaculture operations. There are still many questions to be answered by scientists about impacts this species may pose to biodiversity in those ecosystems affected.



Hemigrapsus sanguineus locations in the United States

CONTROL AND MANAGEMENT: Preliminary evidence shows that rockfish and seagulls may prey upon *Hemigrapsus*. Parasites, which help control populations of *Hemigrapsus* in its native range, are not present along the US Atlantic coast. The shore crab may continue to expand its range along the US Atlantic coastline until it reaches its salinity and temperature tolerance levels. Scientists are monitoring changes in native species, tracking the shore crab's spread along the coastline, and conducting experiments to increase their knowledge of basic biology and ecology of this species. Ballast water management is also being researched to reduce or eradicate new introductions from occurring.

If you have collected or observed this species, or know of someone who has, please call the **Nonindigenous Aquatic Species Toll-Free Hotline, 1-877-STOP-ANS** and report the information. Or, report it using our website, <http://nas.er.usgs.gov/>.