

A Success Story From a Different Species: The Green Crab, *Carcinus maenas*

Another extremely invasive crustacean was the Green Crab (*Carcinus Maenas*). It was extremely invasive on the East Coast of North America. According to green crab researcher Chris McCarthy, a small group of fishermen were able to catch two million crabs within a few years. After that occurred, the eelgrass returned by 34%, and soft-shelled clam populations also returned to the Canadian estuary. (Thomson 2016). These green crabs were also appealing to the locals. They served green crab empanadas, and it was found the 63% would “probably” or “definitely” buy the empanadas if available locally. The average rating was a 72% like rating. The participants also said that most of them only eat crab in restaurants. The Green Crabs also had a very high yield of meat of 49.2% , compared to the 20-25% of Mitten crabs and Dungeness crabs. Serving these green crabs was doing great for local restaurants as well as managing the invasive population. (Galetti et al. 2017). Could it also work with the Chinese Mitten Crab?



European Green Crab, *Carcinus Maenas*. (McCann and Noble 2013).

Nutritional Facts:

The Chinese Mitten Crab can be a nutritious food source for humans.

- Traditionally, only the hepatopancreas and gonads are eaten (Zhang H., et al. 2018), which makes up about 9.2% of the weight of the crab (Chen D., et al. 2007)
- However, 24.2% of the crab can be harvested as crab meat, which is similar to the 20-25% yield in Dungeness and Blue Crabs (Galetti J.A., 2017).
- Mitten crabs are very high in minerals, amino acids, and fatty acids. (Chen D., et al. 2007).
- A typical 100g crab would yield 8g of brown meat and 11g of white meat. (Clark 2011).
- Typically, only ovigerous crabs are eaten. They are no good after reaching sexual maturity. (Clark 2011).

Culinary Creations:

The Chinese Mitten Crab is seen as a delicacy in China, where it is native. Traditional recipes include steam-cooking them, brewing them with oranges, or soaking them in liquor.

Modern recipes like to pair them with Tofu. (Su 2019).



Hairy Crab as Shanghai Cuisine (Fisher 2008)

Using Human Consumption as a Method of Management of the Invasive Chinese Mitten Crab, *Erocheir sinensis*

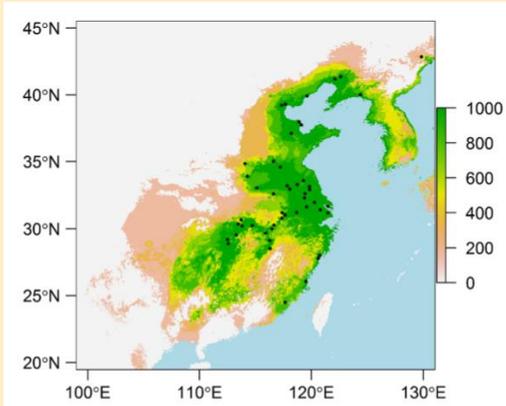


Chinese mitten crab, *Eriocheir sinensis*, Single crab on mud, River Thames, London, October 2009. (Lane 2009).

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Distribution and Morphology:

The Chinese Mitten Crab (*Erocheir sinensis*) is a light-brown colored crab native to China and Korea.



Distribution of *Erocheir Sinensis* within their natural habitat (Zhang Z. et al. 2019)

It has characteristic white-tipped furry claws and can grow up to 3 inches in width. They are catadromous and spend most of their time in freshwater estuaries (Benson & Fuller 2020). They burrow in intertidal regions of freshwater streams (Rudnick et al. 2005).



Chinese Mitten Crab (*Erocheir sinensis*), (Zeiber 2016)

History of Invasions:

The Chinese Mitten Crab is known as one of the 100 worst invaders on the planet. (Lowe et al. 2000) Here is a small list of all of the places that it has invaded:

- Europe- 1912 (Now spread to 19 countries) (Clark 2011)
- Lake Erie and the other Great Lakes- 1960s (Cohen and Carlton 1997).
- San Francisco Bay and Chesapeake Bay - Early 1990s. (Cohen and Carlton 1997).

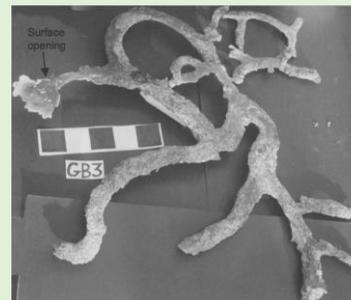
The most probable way that these crabs invaded Europe and North America was through ballast water in ships. It is also possible that they were intentionally let into the environment as a method to establish a fishery there. (Cohen and Carlton 1997).

Ecological and Economic Impacts:

Chinese Mitten Crabs are generalist omnivores who will eat animals, plants, and detritus. They will eat what is available in their environment. Within the stomachs of mitten crabs was found bivalves, amphipods, gastropods, polychaete worms, and many others. (Wójcik-Fudalewska 2019).

Mitten crabs make burrows along the riverbed which can lead to costly erosion. They remove an average of 3% of the sediment to create their burrows. In two kilometers, they could remove up to 90 cubic meters of sediment! (Rudnick et al. 2005).

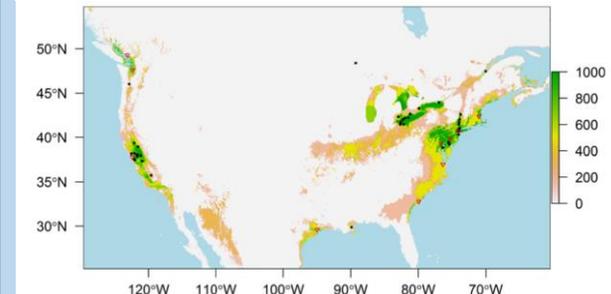
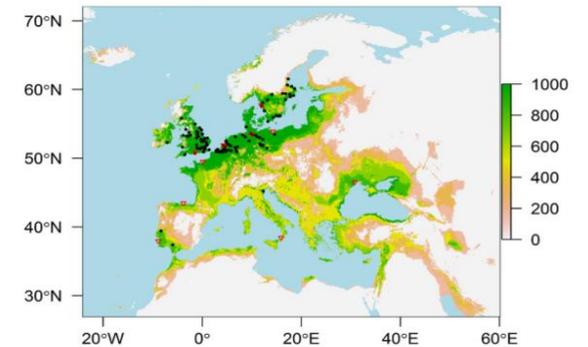
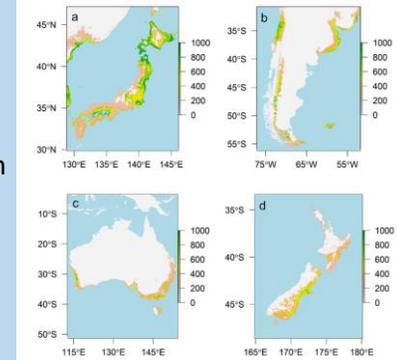
Right: Resin cast of a Mitten Crab burrow. Each square represents 10cm. (Rudnick et al. 2005).



Global Spread:

Mitten Crabs have spread throughout the world. However, there are still places where they are likely to invade, like Japan, New Zealand, or the Baltic sea. The most important factor in what habitats the crab can invade is the average temperature of that area. (Zhang Z. et al. 2019).

Key: These maps indicate the potential areas where mitten crabs could live. The darker green shows the best possibility for invasion. Dots are confirmed sightings.



Global Forecast of the Distribution of Mitten Crabs. (Zhang, Z. et al. 2019)