

Get to know the Red Mangrove Tree Crab

Mangrove forests are an example of rich ecosystems that are home to many species of mammals, birds, reptiles, amphibians, fish, crustaceans, insects, and more. The red mangrove tree crab, *Aratus pisonii* is one such **crustacean** that inhabits mangrove forests across multiple continents, and can be found in Florida, throughout various Caribbean islands, Nicaragua, Peru, and northern Brazil. Within the Caribbean, the mangrove tree crab population was much greater in Venezuela compared to that of Belize, perhaps positively correlated to **macroalgal** food availability in each location. Of the utmost importance for the survival of mangrove tree crabs is not only the food supply, but also the water temperature. The narrow thermal tolerance of mangrove tree crabs necessitates the tropical and subtropical region they call home. This is especially salient for the crab eggs, which successfully grow and hatch in a water temperature ranging between 24 and 28 degrees Celsius, and an air temperature of 6 to 39 degrees Celsius.



Image of a female crab (different species) brooding her eggs under her carapace.

Shortly after the female molts, copulation occurs and the male crab transfers **spermatophores**. The female holds the eggs in her abdomen until they are ready to hatch, in approximately 16 days. When the eggs are ready to hatch, often during the rainy season, the female tree crab will climb down from the mangrove canopy into the water where she pulsates her abdomen in order to release the thousands of newly hatched larvae. Depending on the female's **carapace** (main upper shell) width, she can hold anywhere between 5,000 and 35,000 eggs. It is especially advantageous that female crabs are able to release so many larvae, as high levels of predation occur. After the larvae are released to the water, factors including water **salinity** and temperature, as well as diet can affect how long or short the larval cycle is.

Once they reach adulthood, a male mangrove tree crab is typically 2 cm wide and will reach their maximum width anywhere from 1 year to 5 years. A female mangrove tree crab is approximately 1.8 cm. The maximum carapace width is 2.7 cm. Size is directly related to the habitat in which the crabs live, with more mature mangrove forests producing larger crabs, and less mature forests producing smaller crabs. These mangroves are located around a wide variety of bodies of water, from river mouths to **hypersaline** lagoons.



And while the mangrove tree crabs most commonly inhabit red mangroves they can also be found in other varieties of mangroves. Within the mangrove, the tree crabs can be found in the canopies of the trees during high tides, and then climbing down to exposed sediments during low



tide. This vertical **migration** is due largely in part to the sharp tips at the end of their legs that allow for scaling vertical surfaces.

In addition to these sharp tips on their brown/mottled legs, the mangrove tree crabs have tufts of black hair on their claws. The carapace of the crab ranges from mottled brown to olive green, and tapers to the back from the front where it is at its widest. The eyes are equally as widespread. Along the carapace are the **branchiostegites** which cover the gills of the crab and have constant thin film of water covering it. As the crabs are not air breathing species, they need to have a thin layer of water on their gills to breathe. Consequently, when the branchiostegites begin to dry up, the crab must descend into the water to keep them wet.

The mangrove tree crab is often referred to as an “**opportunistic omnivore.**” They primarily eat plants, but will eat other animals when the opportunity presents itself. While the crabs rarely prey on other animals, they are often eaten by birds, mammals, other large crabs, and fish, the last of which typically occurs when the crabs jump from the canopies of mangrove trees into the water. In addition, their planktonic larvae are a food source for aquatic predators in the mangrove ecosystem. The mangrove forest depends on the presence of the mangrove tree crab!

Did You Know?

- The red mangrove is the most common food source for the mangrove tree crab.
- their breeding cycles are connected to moon phases. Most of their eggs hatch during the full and new moon.
- The red mangrove tree crab is the only species in its genus! There is not another known organism that share most of its characteristics with it.



Questions? Contact us! education@namepa.net

Follow us



21 Davis Hill Road, Weston, CT 06883 (203)-255-4686

Vocabulary

Brachiostegites

Carapace

Crustaceans

Hypersaline

Macroalgae

Migration

Omnivore

Opportunistic

Salinity

Spermatophores

NGSS

(DCI) Disciplinary Core Ideas

LS1A – Structure and Function

LS1C – Organization for matter and energy flow in organisms

LS2A – Interdependent relationships in ecosystems

LS2B – Energy transfer in ecosystems

LS2C – Ecosystems dynamics and Functioning

LS2D – Social interactions and group behavior

Works Cited:

Sweat, LH. "Indian River Lagoon Species Inventory." *Smithsonian Marine Station at Fort*

Pierce, Smithsonian Institution, 8 June 2009, https://naturalhistory2.si.edu/smsfp/irlspec/Aratus_pisoni.htm.