

## Field Characteristics

Three species of fiddler crabs live in Virginia. You can easily tell them apart in the field...

*Uca minax*, the red-jointed fiddler, has a yellowish-brown

carapace (shell) and reddish joints between the segments of its limbs. The males have a well-developed ridge on the inside of their major

claw. The red-jointed fiddler is found in muddy, brackish and freshwater marshes and stream banks. It prefers the lower intertidal area among the taller forms of the smooth cordgrass, *Spartina alterniflora*. It is the only fiddler capable of spending its entire adult life in fresh water. It eats detritus, but also scavenges larger items, including other fiddlers. Adult red-jointed fiddlers can reach a carapace width of 38 mm (1.5 inches).

*Uca pugilator*, the sand fiddler, has a light brown carapace that occasionally bears a purple splotch of color. The males lack a ridge on their major claw. Sand fiddlers, as the name implies, live in sandy, brackish-water *Salicornia-Distichlis* (saltwort-saltgrass) high marshes. Their mouthparts have evolved for feeding on detritus on the coarse sand. Sand fiddlers grow to 26 mm (1.0 inch).

*Uca pugnax*, the marsh fiddler, has a blue tinge to the top of its carapace and eyestalks. The males have a slightly-developed ridge on their major claw. Marsh fiddlers are found in muddy, brackish-water marshes. They prefer the drier, upper intertidal area, among the shorter forms of smooth cordgrass and saltmeadow hay (*Spartina patens*). Their mouthparts have evolved to scrape detritus from the fine sediments in mud. The marsh fiddler can be found living with either the red-jointed fiddler or the sand fiddler, the latter two rarely mingle. Marsh fiddlers grow to 23 mm (0.9 inches).



## Crab Watching Checklist

Watching fiddler crabs can be enjoyable, entertaining and educational. Territorial and mating displays can easily be seen by the casual observer using low power binoculars. Sit quietly for a few minutes, and they'll begin to perform a variety of fascinating movements and behaviors.

### Fiddler Crab Behaviors:

- Droving
- Stridulations
- Waving displays
- Combat
  - Pushes
  - Grips and flings
  - Claw rubs
- Stances
- Tapping
- Down pushes
- Lunges
- Construction Activities

### Species:

- Uca minax*
- Uca pugilator*
- Uca pugnax*

### Related Features:

- Density of burrows
- Size of burrow openings
- Hoods or pillars
- Species present

### Habitat & Environment:

- Type of vegetation
- Tidal height
- Marsh type
- Type of substrate
- Salinity
- Temperature
- Weather conditions

## The Reserves

The York River sites of the Chesapeake Bay National Estuarine Research Reserve in Virginia span the estuary from fresh water to the salty Bay, representing the diverse plant and animal communities found along this environmental gradient. The Reserve is a cooperative program of the National Oceanic and Atmospheric Administration and the Commonwealth of Virginia and is managed by the Virginia Institute of Marine Science of the College of William and Mary.

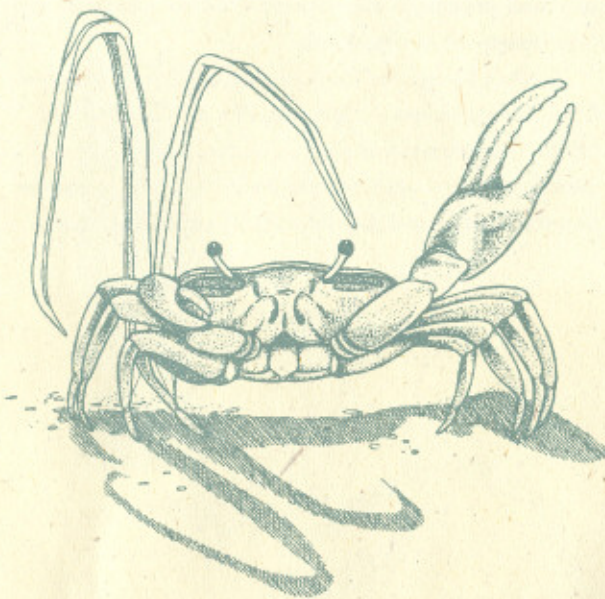
## Acknowledgements

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# Fiddling Around with Fiddler Crabs

## Fiddler Crabs of Virginia



*A field guide for  
understanding, observing and enjoying  
fiddler crabs.*



CHESAPEAKE BAY  
NATIONAL ESTUARINE RESEARCH RESERVE  
IN VIRGINIA

**F**iddler crabs play an important role in the ecology of the marsh. Through their feeding activities, fiddlers are regulators of primary production and decomposition. Because of their biomass and position in the food web, they are an important component of the diets of larger animals such as blue crabs, rails, egrets, herons and raccoons. The biomass of these crabs is so large it is hard to imagine. At the Goodwin Islands component of the Research Reserve, a one hectare (2.5 acre) marsh has an estimated population of 500,000 adult fiddler crabs! The high population density of the crabs, coupled with their role in marsh processes, is an example of the tremendous productivity of our wetlands.

Fiddlers forage for food as soon as the tide recedes from their burrows. At low tides the marsh and sand fiddlers sometimes congregate in large clusters, or droves, on open mud or sand flats. There they feed on the microorganisms and detritus (disintegrated plant



and animal matter). Droving is analogous to schooling in fish; a behavior that provides protection. At high tide, the crabs hide in their burrows to avoid swimming predators.

Fiddler crabs have interesting behavior patterns. Males are territorial and will fight over burrows. Their combat has a forceful component of pushes, grips or flings, and a ritualized component of claw rubs, aggressive stances and lunges. Threats are occasionally made by sounds like ground tapping, stamping and by rubbing the legs together, like the stridulation (chirping) of crickets.

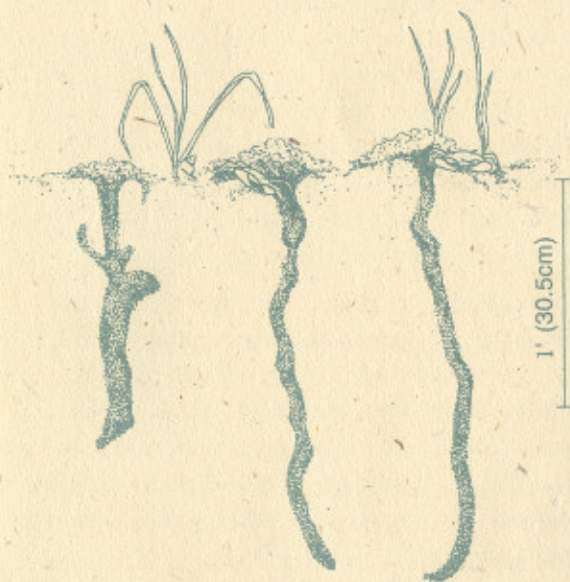
Male fiddlers will wave their big claw to show off and attract possible mates. Each species has a slightly different type of display.

Marsh and red-jointed fiddlers often make a mud hood, or pillar to mark their territories and attract females. Hoods can be several inches long. Presumably these structures give the crabs visibility, hence dominance over other crabs.

In the Chesapeake Bay, female fiddlers spawn from June through August. Each female carries from 10,000 to 300,000 eggs depending on her species and size. About two weeks after spawning, the eggs hatch as planktonic larvae called, zoeae. The zoeal stage larvae are carried by winds and currents into the main stream of the Chesapeake Bay, here they molt five times, over three to four

weeks, before developing into megalopae, the final larval stage. The megalopae ride the wind and tide currents back into the rivers, where after molting they become juvenile crabs. Juveniles move into the marsh and hide in burrows and shells where they molt several more times to become adults.

Fiddlers are avid burrowers. Burrows are either straight, or J-shaped, and may reach up to 60 cm (almost 2 feet!). A crab can take several days to construct a burrow, which when maintained, can last indefinitely. Each burrow usually houses one crab, except during mating season.



Crab burrowing and feeding activity continuously bring nutrient-enriched sediments to the surface. These sediments act as fertilizer for the plants. The burrows also allow oxygen to travel down into the sediments facilitating oxygen exchange with the plant roots, which is important in this oxygen-depleted environment.

Crab burrows also increase the biodiversity of the marsh because they provide habitats for other marsh invertebrates and microorganisms.

