Ocypode quadrata (Atlantic Ghost Crab)

Order: Decapoda (Shrimps, Lobsters and Crabs)
Class: Malacostraca (Crustaceans: Shrimps, Sand-hoppers and Woodlice)
Phylum: Arthropoda (Arthropods)

Fig. 1. Atlantic ghost crab, *Ocypode quadrata*.

[http://animaldiversity.org/accounts/Ocypode_quadrata/pictures/collections/contributors/jo_okeefe/ghost_crab_100_3035/, downloaded 12 March 2015]

TRAITS. *Ocypode quadrata*, commonly called the Atlantic ghost crab, is about 50mm in width at maturity, with a square carapace, unequal chelipeds (claws), long walking legs and large club-shaped eyestalks (Fisher and Tevesz, 1979). The males are usually larger than the females. Their overall colour varies between a light straw-colour to a grey-white, which provides for effective camouflage on the sand (Fig. 1).

DISTRIBUTION. As its common name implies, the Atlantic ghost crab is found mostly in coastal areas of the western Atlantic Ocean, ranging from North to South America together with the Caribbean and the Gulf of Mexico. This species can be specifically found from the approximate latitude of 40^{o}N to 30^{o}S in eastern South and North America in the supralittoral zone (above tide level) of sand beaches (Rathbun, 1918).

HABITAT AND ACTIVITY. Found abundantly on the sandy shore line of beaches, this not only acts as their source of shelter, but also as a form of protection and source of food to the crabs. When viewing the vast shores of both tropical and subtropical areas, one can notice various holes within the sand signifying the presence of these crabs due to the activity of burrowing where they create holes to reside in. They create these burrows by the constant digging motion of their claws to scoop up the sand and toss it away. Their burrows can be as deep as 1.3m (Knott, 2010), where younger crabs usually burrow closer to the sea than older crabs (Williams, 1984). Within these burrows as well as when they appear above ground, the constant movement of the sea helps with respiration and feeding. When the water splashes upon the crab this splashes onto its gills maintaining the reservoir of seawater it keeps in its branchial (gill) chambers for respiration. The washing up of the water onto the sand also provides organic matter and smaller creatures to feed upon. Its gills can also remain wet from the damp environment of the sand by using the very tiny hairs located at the bottom of its legs to get water onto its gills. Another key role of their habitat is keeping them moist to prevent desiccation so that the internal fluid lost due to evaporation is replaced, it also assists in allowing the removal of waste products of the crab. As a nocturnal animal, burrowing mostly happens during the day; Atlantic ghost crabs are more seen at night. During the night they are much more active as feeding occurs at this period, and their vision works best at night due to the high sensitivity of its eyes to light.

FOOD AND FEEDING. Feeding takes place at night reducing predation by gulls and shore birds (Knott, 2010). The Atlantic ghost crab can be classified both as a scavenger and a predator. The diet of *Ocypode quadrata* as a scavenger consists of decomposing plant and animal material, as a predator they feed on mole crabs and clams as well as the eggs and hatchlings of turtles. The moon lends a great advantage to the crab when seeking its prey, providing just enough light for its sensitive eyes which have excellent 360^{o} vision and can retract on the front of its shell (Mitchell, 2007). With the ability to move along the sand at a speed around 15 km per hour, the ghost crab can run either backward, sideways or forward to snatch prey with its chelipeds which are then used to crush its meal before feeding (Mitchell, 2007). It is the main carnivore of simple filter-feeding based food chains (Wolcott, 1978). They take part in an important role in energy transfer from smaller animals to large predators (Encyclopedia of Life, 2015).

POPULATION ECOLOGY. These crabs have a solitary existence, however very rarely they can be seen in groups of two or three, and achieve a lifespan of about 3 years (Williams, 1984).

REPRODUCTION. Reproduction takes place continuously during the year in tropical and subtropical areas since they provide adequate environmental conditions within which the crabs could successfully reproduce. However, in temperate regions such as North America reproduction occurs only in the warmer seasons. Once *Ocypode quadrata* reaches maturation within a year, they have the ability to reproduce. Male maturity is characterized when reaching a carapace width of about 24mm or more while female maturity is characterized by reaching a carapace width of about 25mm or more (Encyclopedia of Life, 2015). When copulation occurs the male deposits it sperm and semen into the female which hardens preventing the sperm of other males to be able to fertilize the eggs. The female stores the eggs in a flap within the abdomen, care is exhibited for the eggs through efforts made to keep them moist by going into the water and turning upside down so that the eggs are properly ventilated (Encyclopedia of Life, 2015). When the eggs are matured, the female releases the eggs into the water where they hatch

and undergo various stages of development called the zoea larva and megalopa post-larva (Fig. 2) stages (Animal Diversity Web, 2011). Once these stages are complete the young crabs come onto the land remaining close to the shore.

BEHAVIOUR. Juvenile behaviour: When the young crabs emerge from water after development they are found in burrows closer to the water and keep their distance from the more mature crabs as they can be eaten by them.

Anti-predator behaviour: Since the Atlantic ghost crabs are mainly nocturnal and due to their colour are able to seamlessly camouflage with the sand, they are rarely detected by predators like the gull, shore birds, raccoons and owls. However, when they do detect danger they swiftly retreat to the closest burrow by snapping their claws while quickly scurrying along sideways from the threat, staying out of harm.

Communication: *Ocypode quadrata* communicate through a bubbling sound which comes from an action carried out by their gills, scrapping their chelipeds (claws) along the sand, and rubbing their legs together (Encyclopedia of Life, 2015).

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Fig. 2. Megalopa post-larval stage of *Ocypode quadrata*, the size of a pea.

[http://www.dpr.ncparks.gov/photos/fromNRID.php?sciName=Ocypode%20quadrata&pid=3299&source=pub, downloaded 22 May 2015]