Sciaenops ocellatus

Class: Actinopterygii

Geographic Range

The red drum, *Sciaenops ocellatus*, can be found along the Gulf Coast of the United States from Texas to Florida. It is also found along the United States east coast from Florida northward into northern Maine. The red drum can also be found along the Gulf Coast of Mexico, southward through Central America along the northern coast of Brazil southward to central Argentina.

Biogeographic Regions: Nearctic; Neotropical; Atlantic Ocean.

Other Geographic Terms:

Habitat

The red drum thrives in marine environments with various types of substrates. The red drum inhabits areas with oyster bottoms, unvegetated sand bottoms, and in marsh grasses along the coastline. The species will also inhabit deeper coastal waters, at a depth of up to 40 meters. On average, the red drum inhabits depths of 20 meters, but will be found in shallow waters along land in a depth of about 1 meter. Threat of predation and available food will influence the mean depth of the red drum. In the spawning seasons, the red drum will move into inlets and estuaries, primarily into the marsh grasses, depending on the tidal region, and can also survive in brackish water.

Elevation:

Depth: 1 to 40 m

These animals are found in the following types of habitat: Saltwater or marine.

Terrestrial Biomes:
Aquatic Biomes: Coastal; Brackish Water.

Wetlands: Marsh.

Other: Estuarine.

Physical Description

The red drum is on average 100cm long and weighs 22kg, but individuals in the wild can be as long as 160cm and weigh 42.6kg. The red drum has an amber red and golden body which changes hue upon spawning season to a darker more intense shade, and white underbelly. The exact shades of the colors are dependent on the habitat and geographic region. The red drum is known for the black dot on the rear portion towards the caudal fin, which will have dots on both sides above the lateral line from the dorsal fin back to the caudal fin. Some fish can be found with up to 12 dots, and it is not uncommon to find a different number of dots on each side. The caudal fin has a distinct bluish hue on the tip. The mouth is located inferior on the body, which is an adaptation to retrieve crabs and other bottom-dwelling organisms. The red drum experiences sexual dimorphism, in which the female is typically larger than the male.

Mass: 1.7 to 42.6 kg

Length: 40 to 160 cm

Basal Metabolic Rate:

Some key physical features: Ectothermic; Bilateral symmetry.

Sexual dimorphism: Female larger.

Development

Once the egg is released by the female, it is fertilized externally by the male. Within 22-28 hours post-fertilization, the egg will have hatched, producing a larva that averages 0.18 cm in length. Until around day twenty, the larva feeds primarily on plankton. After two weeks, the
red drum will average 0.64 cm long, and growth will occur rapidly. Growth averages about 1.18 kg a year, until around age five where the rate of gaining mass slows down. Environmental conditions such as water temperature and currents play a major factor in the number of surviving larvae. However once the fish is around ten centimeters in length, its environmental vulnerability decreases significantly due to its increase in size and strength.

**Special features of growth:** Indeterminate Growth.

**Reproduction: Mating Systems**

To attract a female, male red drum produce a croaking sound through the use of muscles along their swim bladder. Males also change color from a lighter hue of red to dark red above their underbelly, which stays white. The red drum is polygynandrous, likely having many partners throughout the mating season.

Drumming occurs primarily at dusk, which encourages spawning at night. The females are attracted to the drumming noises and swim towards the males. The male nudges the female with its head, causing eggs to be released by the female, then fertilized by the male.

**Mating systems:** Polygynandrous (promiscuous).

**Reproduction: General Behavior**

The red drum mates in coastal offshore waters, generally in the vicinity of inlets. However, the red drum has been known to reproduce in water up to twenty meters deep. Spawning occurs at night, in which the female releases eggs, and the male fertilizes the eggs with sperm. The red drum senses suitable environmental conditions for the young red drum, such as an average water temperature of 27 degrees Celsius. Spawning season occurs in the late summer into the early fall, generally beginning around September. Depending on the water temperatures and currents, the red drum can spawn for up to three months. A female is able to spawn every three to five days during the spawning season, and produce up to two million eggs at a time. The fertilized eggs travel from the deep coastal waters via currents and tidal
flow, into shallower inland areas such as marsh grasses, where they will hatch generally within a day. On average the male red drum become mature by age three (range 1-5). Females are generally mature at age six. Female red drum have also been seen as mature as early as age three.

Breeding interval: Red drum breed multiple times in the early fall

Breeding/spawning season: Early fall usually beginning in September

Number of offspring: Approximately 2,000,000 (average)

Time to hatching: 22 to 28 hours

Birth Mass:

Time to independence: Approximately 0 hours (average)

Age at sexual or reproductive maturity (female): 6 years (max)

Age at sexual or reproductive maturity (male): 1 to 3 years

Key reproductive features:  Seasonal breeding;  Sexual;  Fertilization (External);  Oviparous.

Reproduction: Parental Investment

The mature red drum release eggs offshore and coastal waters, allowing tides and currents to transport the eggs into shallow waters and marshes. The parents have no interaction with their young beyond the release and fertilization of eggs.

Parental investment: No parental involvement.

Lifespan/Longevity
The oldest known red drum caught in the wild was found to be 58 years old, but on average, the red drum lives for 35 years. The red drum is found in captivity, but no information reported the lifespan.

Longest known lifespan in wild: 58 years (max)

Longest known lifespan in captivity:

Expected lifespan in wild: Approximately 35 years (average)

Expected lifespan in captivity:

Behavior

Not much is known about the behavior of the red drum. The red drum is known to be active both day and night.

The drumming noises which occur during mating are advantageous, by attracting a female red drum, especially because mating occurs at dusk into the evening.

Home Range

The red drum generally does not defend a territory. Movement of the red drum occurs due to the water temperatures as well as the abundance of food.

Territory Size:

Key behaviors: natatorial; diurnal; nocturnal; crepuscular; motile; migratory.

Communication and Perception

Not much is known about the communication between red drum. However, it is known that during the spawning period, the males make a croaking sound to try and attract nearby
females. There are no publications specifying different frequencies related to different meanings. The croaking noise can also be heard when the fish is under extreme stress, such as being pulled out of the water by an angler. The red drum also communicates while spawning by physical contact with a female through a series of bumping and nudges. Vision is useful, as the dot patterns on other red drum assists with intraspecies recognition.

Communicates with: tactile; acoustic.

Other communication keywords: vibrations.

Perception channels: visual; tactile; acoustic; chemical.

Food Habits

Although the diet of red drum varies by location, one pattern holds true: as the fish grows in size, the size of their food also increases. As a juvenile (around 5 months of age), the red drum will have a diet consisting of mainly small grass shrimp *Palaemonetes*, other small juvenile fish such as spot *Leiostomus xanthurus* and minnows. As they grow to around 15-20 centimeters, red drum will begin to eat small crustaceans such as the fiddler crab *Uca*. Finally, as the red drum continues to grow, their diet will consist mainly of fiddler crabs and small fish, with shrimp as well. However, the volume of shrimp will be much less than the volume eaten as a juvenile.

Carnivore: Piscivore; Eats non-insect arthropods.

Other Diet Features:

Animal Foods: Fish; Aquatic Crustaceans.

Plant Foods:

Other Foods:
Foraging Behaviors:

## Predation

The most common natural predator to the red drum is the bottle-nose dolphin (Tursiops), which is known to attack the red drum of all sizes. The red drum has an adaptation of one or many black dots near the caudal tail. These dots are used to trick the predator into thinking the dots are eyes. If the red drum does encounter injury, it will likely be to the tail instead of vital organs. Finally, humans (Homo sapiens) are a common predator on the red drum. The red drum is a frequent target to both recreational and commercial fisheries.

### Known predators:

- Bottle-nosed dolphin (Tursiops)
- Humans (Homo sapiens)

### Anti-predator adaptations:

#### Ecosystem Roles

The red drum is a host to parasites such as myxozoan (Phylum Cnidaria) worms like *Parvicapsula renalis* and *Henneguya ocellata*. These parasites were found within the gill regions, as well as in the kidneys. *Henneguya ocelleta* have been found within the kidney regions, but no negative effects on the red drum have been noted.

### Key ways these animals impact their ecosystem:

#### Species (or larger taxonomic groups) used as hosts by this species:

- ...

#### Species (or larger taxonomic groups) that are mutualists with this species:
Commensal or parasitic species (or larger taxonomic groups) that use this species as a host:

- Myxozoan worms *Parvicapsula renalis* and *Hennaguya ocellata*

**Economic Importance for Humans: Positive**

The red drum is a target among recreational anglers, being the second most commonly targeted species in the Gulf Coast. Fishermen travel to areas where the red drum is abundant. The revenue brought in by the red drum alone is not reported, but influx of anglers adds to the region’s economy. The red drum is also regularly caught commercially and sold as a food product.

**Ways that people benefit from these animals:** food; ecotourism.

**Economic Importance for Humans: Negative**

There are no studies that indicate the red drum poses a negative economic impact. However, *Henneguya ocellata* can cause health issues to humans when an infected red drum is eaten raw, usually resulting in a day of sickness similar to food poisoning. No hospitalization has been reported due to ingestion of these parasites by humans.

**Ways that these animals might be a problem for humans:** Injures Humans (causes disease in humans).

**Conservation Status**

The red drum is not evaluated on the IUCN Red List and is not protected by CITES. The species is regulated by marine fishery agencies which set statewide laws and regulations specific for species such as the red drum. These laws regulate the size and quantity of the fish...
an angler can keep per day to help limit overfishing. An example of these limits would be in Virginia, fish must be within 46cm and 66cm, with a limit of three fish per angler per day.


References

Web Page

Abbrev: "Regional Summary Gulf of Mexico", 2011 Status: ok

Journal Article

Abbrev: Bohnsack, 2011 Status: ok

Web Resource

Abbrev: Center for Quantitive Fisheries Ecology, 2014 Status: ok

Journal Article

Abbrev: Daniels and Robinson, 1986 Status: ok

Journal Article

Abbrev: Hutton, 1964 Status: ok
**Journal Article**

Abbrev: Landsbrg, 1993  Status: ok

**Journal Article**

Abbrev: Lio, Chen and Shao, 2009  Status: ok

**Edited Book**

Abbrev: Matlock, 1987  Status: ok

**Journal Article**

Abbrev: McGoogan and Gatlin, 1998  Status: ok

**Journal Article**

Abbrev: Patterson, McBride and Julien, 2004  Status: ok

**Journal Article**

Abbrev: Peters and McMichael, 1987  Status: ok

**Journal Article**

Abbrev: Powers et al., 2012  Status: ok

**Journal Article**

Abbrev: Rooker, Holt and Holt, 1998  Status: ok
Journal Article

Abbrev: Ross and Stevens, 1995  Status: ok

Journal Article

Abbrev: Scharf and Schlight, 2000  Status: ok

Journal Article

Abbrev: Smith and Fuiman, 2004  Status: ok

Journal Article

Abbrev: Stunz and Minello, 2001  Status: ok

Journal Article

Abbrev: Stunz, Minello and Levin, 2002  Status: ok

Journal Article

Abbrev: Tomasso and Kempton, 2000  Status: ok

Journal Article

Abbrev: Turner, Wares and Gold, 2002  Status: ok

Journal Article

Abbrev: Wenner, 1992  Status: ok
Journal Article

Abbrev: Wilson and Nieland, 1994  Status: ok