

Narcine bancroftii (Caribbean Electric Ray)

Family: Narcinidae (Numbfish)

Order: Torpediniformes (Electric Rays)

Class: Chondrichthyes (Cartilaginous Fish)



Fig. 1. Caribbean electric ray, *Narcine bancroftii*.

[http://www.fishnshrimpflorida.com/florida_rays.html, downloaded 28 March 2015]

TRAITS. The Caribbean electric ray is also known as the lesser electric ray or torpedofish, and can reach a total length of 45cm. It has a circular, flattened body with the two pectoral fins fused to it (Arkive, 2015), and is characterized by a moderately long snout, which distinguishes it from other species (Wild Earth Guardians, 2010). Behind the rounded body are two equal dorsal fins which attaches to a relatively short tail with a triangular caudal (tail) fin. There is no spine in the tail. Soft smooth skin without scales, upper surface is usually brownish to reddish -orange in colour covered with dark brown patches (Fig. 1). Small gill slits and teeth are located on the white to grey underside. It possesses a pair of electric organs that are shaped like kidneys and extend from the front of their eyes to the rear edge of the body (Press, 2007). These organs generate electricity and paralyze their prey and predators.

DISTRIBUTION. It is widely distributed along the coast of the western Atlantic from North Carolina in the USA through the Gulf of Mexico and the Caribbean Sea and along the northern coast of South America (Carvalho, 2007). Countries include Trinidad and Tobago, Jamaica, and Venezuela (Fig. 2). Separate southern populations of electric rays in Brazil used to be included in *Narcine bancroftii*, but are now regarded as a different species, *N. brasiliensis*.

HABITAT AND ACTIVITY. *Narcine bancroftii* is nocturnal and usually dwells at the bottom of shallow marine water of up to 35m in depth. It lives on soft sandy sediments and buries itself below mud. They are typically found in coral reefs, close to shady beaches and gulfs, or off river mouths, on upper continental shelf slopes (Press, 2010). They swim at a slow rate among sea grass and live in small localized areas close to barrier beaches and sand bars during hot weather, and travel offshore during the cold. They refrain from entering fresh water and are not found in rivers. They may be encountered by divers because of their sluggish movement. They develop monogenean infestations (flukes) on their gills when kept in captivity. Sharks and other large fish are predators. It defends itself by generating an electric shock that can be 17-34 volts.

FOOD AND FEEDING. *Narcine bancroftii* is carnivorous and its diet consist of mostly polychaete annelids (worms). Feeding is done at night at the bottom of the sea floor. They also consume small bony fish, benthic worms, juvenile snake eels, anemones, and small crustaceans. They use their electric organs to stun prey before consumption.

POPULATION ECOLOGY. It is extensively distributed but the population trend is currently unknown. According to IUCN reports, populations of this species have been rapidly decreasing on a large scale in United States waters (Carvalho et al., 2007). Since 1972 the *Narcine bancroftii* population has had a 98% drop in the northern Gulf of Mexico.

REPRODUCTION. The mode of reproduction is ovoviviparous which means that the mother produces eggs that hatch within the body. The young are born alive but there is no placental attachment (Merriam-webster.com, n.d.). In their development the young first use the yolk in the egg, then a protein-rich liquid secreted from the mother ray's uterus lining for nourishment. Gestation lasts for 3 months but researchers say that it is possible for it to last 11-12 months if the mother goes through a diapause period where development is paused until suitable conditions are met. Approximately 4-20 pups are born (Press, 2015).

BEHAVIOUR. Juvenile lesser electric rays can produce electrical discharges right after birth. *Narcine bancroftii* are nocturnal and sluggish swimmers. When pregnant females are captured they abort embryos so even if the captured individual is released the population's reproductive output is reduced (Fowler, 2007).

APPLIED ECOLOGY. According to IUCN, *Narcine bancroftii* was listed in 2007 as critically endangered in the Caribbean and has the highest risk of extinction. Reports from the Reef Environmental Education Foundation (REEF) showed that only five were spotted out of thousands of dives annually. However the lesser electric ray does not have protection in the Caribbean. There is no direct overutilization in connection with the drop in numbers. Although the tail of *Narcine bancroftii* is eaten it is not very popular in commercial fishing. It is not

targeted but is captured along with other fish, which decreases its numbers especially if the individual is a pregnant female.

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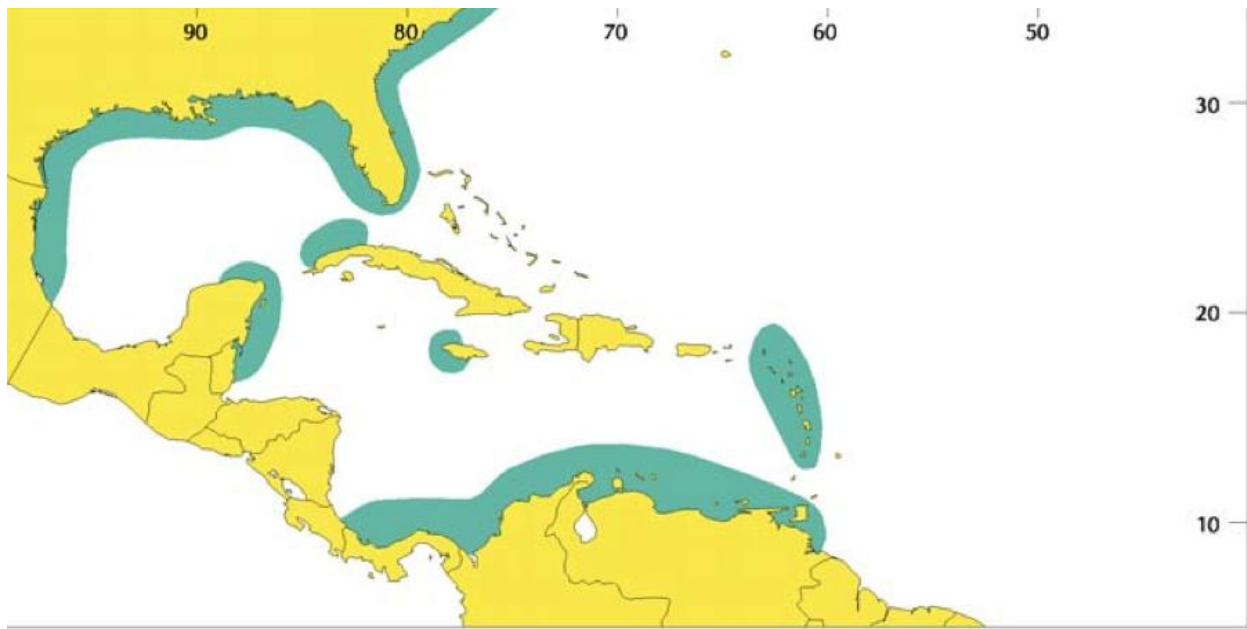


Fig. 2. Geographic distribution of *Narcine bancroftii* (green areas).

[<http://www.iucnredlist.org/details/63142/0>, downloaded 30 March 2015]