

Lachnolaimus maximus (Hogfish)

Family: Labridae (Wrasses)

Order: Perciformes (Perch and Allied Fish)

Class: Actinopterygii (Ray-finned Fish)



Fig. 1. Hogfish, *Lachnolaimus maximus*.

[<http://www.abysdivecenter.com/fish-spot-hogfish/>, downloaded 7 March 2016]

TRAITS. *Lachnolaimus maximus* or hogfish have a distinct pointed snout, are oval shaped and very flat compared to other fish, and possess distinct red irises (Fig. 1). The colour of the body varies from uniformly grey in juveniles to a pink salmon colour when mature, with a distinct dark maroon coloured bar on the snout (Carpenter, 2002). They possess three long spines at the front of their dorsal fin which become erect when it is threatened (Fig. 1), as well as a dark circular blotch that is observed under the dorsal fin. *L. maximus* can grow to 0.9m in total length and as heavy as 10kg in weight (Bester, 2016). They are protogynous hermaphrodites, similar to other species of wrasses, where its life cycle starts with an individual being female and then converting to a male as it matures.

DISTRIBUTION. The distribution of *L. maximus* is mainly in the western Atlantic Ocean, ranging from North Carolina and Bermuda, throughout the Caribbean Sea including the northern coast of South America and the Gulf of Mexico (Fig. 2). They commonly found off the coast of Florida with juveniles in seagrass beds and in the shallow waters of some Caribbean islands including Trinidad and Tobago (Lieske and Meyers, 1999).

HABITAT AND ACTIVITY. *L. maximus* can be easily found in coral reefs or open trenches where gorgonians are abundant, at depths that vary between 3-30m (Lieske and Meyers, 1999). The hogfish is typically widely distributed along the edges of the reef in small groups. Locations with hard sand and rock bottoms in and around shallow patch reefs are typically preferred by the hogfish, just inshore and offshore from the main reef system. Larger hogfish tend to occupy the main reef area while the juveniles populate patch reefs.

FOOD AND FEEDING. During the day, *L. maximus* forages using its snout to search the sand. Hogfish prey mainly on sand-dwelling molluscs (Randall and Warmke, 1967) but will also feed upon small fish and crustaceans, sea urchins and hermit crabs, despite their hard shells (Evermann and Marsh, 1902), being able to crush prey with strong pharyngeal jaws.

POPULATION ECOLOGY. Typically *L. maximus* is a solitary species however it can be seen in small groups of several individuals where the members are generally of the same size (Lieske and Meyers, 1999). Hogfish have a lifespan of approximately 11 years which is varied based on the rate of harvesting, due to its flesh being highly valued as a food (Bester, 2016).

REPRODUCTION. Hogfish are protogynous hermaphrodites. The female, by exhibiting social dominance and increased size, gains the ability to successfully transform into a fully functional male. This conversion usually takes place at an age of 3 years with corresponding length of approximately 35cm. Peak spawning occurs off the coast of south Florida between February and March. Schools of hogfish include many smaller females that are all dominated by a larger male, the group is referred to as a harem (Bester, 2016). This harem is guarded exclusively by the male, which spawns with the females present within. Peak time for spawning is usually late afternoon or early evening. Male courtship of a female hogfish is then followed by a rush toward the surface (Evermann and Marsh, 1902). Male and female gametes are both released into the water in close proximity, where the fertilization process would occur. Larvae rapidly develop from the fertilized, pelagic eggs, and start hatching about 24 hours after fertilization. The larval stage lasts for a period of several weeks, when they then settle out of the water column onto a suitable habitat where they grow into juveniles.

BEHAVIOUR. The male hogfish exhibits aggressive behaviour to initiate courtship with any female encountered (Colin, 1982). Male *L. maximus* are territorial and as a result aggressive interactions occur that are associated with territorial boundaries (Warner, 1988). Generally, aggressive behaviour is rarely observed outside of the spawning period between males and females and males do not defend their territories regularly. Spawning activity is characterized by an event known as 'spawning rush', this involves a sequence of events that must be carried out by the male in order to reproduce. When threatened, they possess the ability to camouflage themselves by changing colour to match its environment (Saleem, 2016).

APPLIED ECOLOGY. *Lachnolaimus maximus* is listed by the IUCN Red List of threatened species as “vulnerable”. Despite the wide distribution of this species, recreational spear fishing has been estimated to cause a global 30% decline in its populations with Florida having a localised decline as high as 60% (IUCN, 2016). This decline has been assessed as one which has been occurring over three generations and as such granted *L. maximus* this status. Regulations and gear restrictions have been implemented across the Caribbean, however the exploitation of this species has yet to cease. They are captured and are sometimes kept in aquariums because of their diverse range of colours and high resistance to diseases.

REFERENCES

- Bester, C. (2016). *Lachnolaimus maximus*, Hogfish. <https://www.flmnh.ufl.edu/fish/discover/species-profiles/lachnolaimus-maximus/>, accessed 7 March 2016.
- Carpenter, K.E. (2002). The living marine resources of the Western Central Atlantic. Volume 3: Bony fishes. Part 2 (Opistognathidae to Molidae), sea turtles and marine mammals. Food and Agriculture Organization of the United Nations, Rome.
- Colin, P. L. (1982). Spawning and larval development of the hogfish, *Lachnolaimus maximus* (Pisces: Labridae). Fish. Bull. 80: 853–862.
- Evermann, B.W. and Marsh, M.C. (1902). The fishes of Puerto Rico, Bull. U. S. Fish. Comm., 20 (part 1) : 49-350, 49 col. pls., 112 text-figs., 3 charts.
- IUCN (2016). *Lachnolaimus maximus*. <http://www.iucnredlist.org/details/11130/0>, accessed 7 March 2016.
- Lieske, E., and Myers, R. (1999). Coral Reef Fishes. Princeton: Princeton University Press.
- McBride, R.S. and Richardson, A.K. (2007). Evidence of size-selective fishing mortality from an age and growth study of hogfish (Labridae: *Lachnolaimus maximus*), a hermaphroditic reef fish. Bull. Mar. Sci. 80(2):401-417.
- Randall, J. E. and Warmke, G.L. (1967). The food habits of the hogfish (*Lachnolaimus maximus*), a labrid fish from the Western Atlantic. Caribb. J. Sci. 7: 141–144
- Saleem, M. (2016). Hogfish facts with pictures. <http://www.liveanimalslist.com/fish/hog-fish.php>, accessed 7 March 2016.
- Warner, R. R. (1988). Traditionality of mating-site preferences in a coral reef fish. Nature 335: 719–721.

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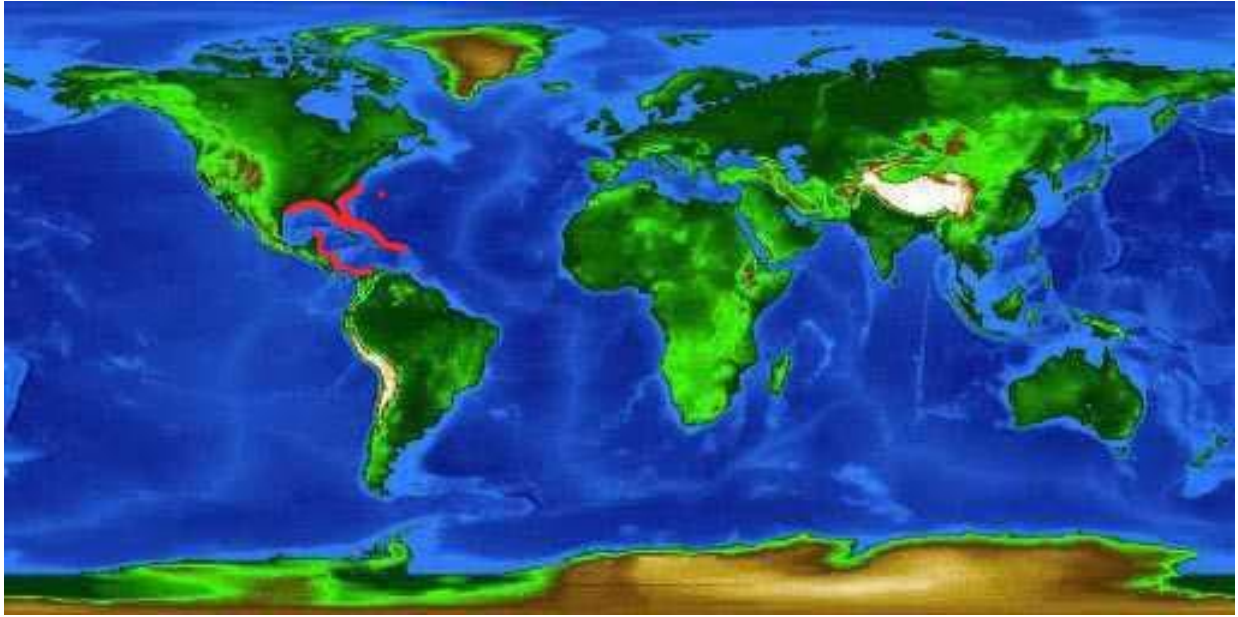


Fig. 2. Map showing the distribution of *Lachnolaimus maximus*.

[<http://www.flmnh.ufl.edu/fish/discover/species-profiles/lachnolaimus-maximus>, downloaded 7 March 2016]

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