Hoplias malabaricus (Guabine)

Family: Erythrinidae (Trahiras)
Order: Characiformes (Characins and Allied Fish)
Class: Actinopterygii (Ray-finned Fish)

Fig. 1. Guabine, *Hoplias malabaricus.*

[http://upload.wikimedia.org/wikipedia/commons/thumb/3/34/Hoplias_malabaricus1.jpg/800px-Hoplias_malabaricus1.jpg , downloaded 13 November 2012]

TRAITS. The guabine, *Hoplias malabaricus*, is also known as wolf-fish or tahira in Trinidad and Tobago (Phillip & Ramnarine 2001). This freshwater fish can grow up to 40 cm in length and can weigh more than 1.5 kg (Kenny 2008). The shape is cylindrical and it has a large mouth since it is a predatory creature. The name wolf-fish was given to the guabine due to the presence of the dog-like teeth. When bitten, the jaws of this fish are locked onto the prey (Kenny 2008). The coloration of the guabine fish is usually dark brown or grey as seen in Fig.1 above with either darker vertical stripes or a single horizontal stripe on the body (Wikipedia, 2012) so that they can camouflage and hunt better. The fish can be identified and distinguished from other species by the shape of the under-jaw where a V-shape is formed when the inside jaw lines come to the front of the fish (Cousins 2011). The juvenile stages of the guabine resemble the adult forms with the exception of the size where the juveniles are more slender than the adults. According to Cousins (2011), the females have a bigger build than the males.

ECOLOGY. *Hoplias malabaricus* is a mid-water fish commonly found in freshwater streams (which can be black water or white water) and drainage systems (Kenny 2008) in a temperature of 23- 30 ^{o}C (Cousins 2011). Therefore the fish has a tendency of thriving in slow-flowing waters or still waters. Guabines are more active in the night than in the day so they rest during the daytime and predate in the night-time. They are nocturnal. In the day, the fish are hidden in vegetation in the water such as algae and plants (Wikipedia 2012; Cousins 2011) as seen in Fig. 2 below. Their habitats are usually nearby forests, where vegetation is available on the edges of pools or puddles. In some cases, the juveniles are accustomed to waiting in these muddy puddles for a larger water source, such as floods, to wash them away so that they can move on to a better living and hunting environment. The adults usually feed on other fishes and crustaceans like shrimps, crayfish and mussels while the juveniles feed on smaller 'meats'. Since they are predatory fishes, they prefer meaty food sources to provide good health and protein formation and they are not fussy eaters (Cousins 2011). As such, they are piscivorous fish (meaning they feed on other fishes). The guabine fish is distributed and native in the southern and central parts of America to Argentina and also in most of the Caribbean region including countries like Suriname, Guyana, Colombia, Venezuela and of course, Trinidad and Tobago.

SOCIAL ORGANIZATION. The juveniles can stay together with the adults but this sometimes leads to cannibalism. The population of guabines usually has a sex ratio of 1:1 with deviations based on seasonality (Nikolsky 1963). This population size however changes, since the females lay her eggs in the nests and the males are the guards of the territory. This leads to a greater chance of the females being caught by fishermen. The males also tend to be more territorial than the females.

FORAGING BEHAVIOUR. Being nocturnal predators, *Hoplias* go out during the night time to find food. In a study done by Botham and Krause (2005), it was observed that the wolf-fish unlike other predatory fish would attack a shoal of fishes, in the example used which were guppies (*Peocilia reticulata)* as prey, rather than a single fish prey. The reason for this is that usually fish predators aim on attacking a lone prey to avoid confusion and a negative effect of capture success that would happen if attacking a shoal but as the guabine are nocturnal they tend to attack the shoal as it is easy to detect the group because of their conspicuousness. The frequency and number of attacks were also greater in the study conducted in different pools of the Arima River in Trinidad. In the choice given to the predators in the form of a single guppy and a group of 10 guppies, the predators attack the largest group first. The predators limit their failure by attacking co-operatively and congregating themselves where shoals are available (Botham et al. 2005). In the wild, the guabine ambushes the prey at night. They remain hidden amongst the vegetation quietly until the prey comes into proximity for the fish to release its aggressive behaviour and powerful bite.

SEXUAL/REPRODUCTIVE BEHAVIOUR. There is a sex reversed role played by the reproductive guabines where the females lay the eggs and the males are the care-takers and protectors of the eggs and the nest as seen in Fig 3 below. The nest construction is usually at shallow sites to reduce egg mortality. The females spawn and deposit the eggs in depressions such as under tree trunks and leaves and then they leave the nest site (Novaes & Carvalho 2011). The reproduction period of the *H. malabaricus* is over a long time period between spring and

summer (in Brazil) but is affected by temperature and rainfall. It was found in the study in Brazil by Novaes and Carvalho (2011) that rainfall led to an increased reproductive rate of the fish.

JUVENILE BEHAVIOUR. Juvenile stages of the *Hoplias* are usually found in the shallow environments and among vegetation, as opposed to the adults which are found in pools. They also feed on smaller meats and invertebrates such as shrimps and insect larvae. The adults feed on fish. Juveniles are obviously smaller in size and length, with a standard of about <5 cm in length (Winemiller & Jepsen 1998). The colour of the juveniles is also different from the adults where they are a brighter/lighter colour or shade than the adult *Hoplias.* After the juveniles have grown into adult, they then move downstream into the deeper waters where they can join the pool of other adults. They become sexually mature at about 20 cm (Lucanus 2011).

ANTIPREDATOR BEHAVIOUR. In the Amazon, the predators of *Hoplias malabaricus* are usually piranhas where they clip off piece of the *H. malabaricus* fins, as seen in a study of Piranhas in Brazil. The *Hoplias* would then go into hiding in vegetation to avoid the piranhas as its defense mechanism. Since the guabine itself is a predatory fish, there are not many predators of the fish other than bigger piscivorous fishes. Predatory birds are not a problem since they are nocturnal fishes that are in hiding during the day, which is its main antipredator behaviour.

AGGRESSIVE BEHAVIOUR. Territorial fights among the wolf-fish lead to minor injuries but can also be as serious as deformed jaws and missing fins (Lucanus 2011). They are usually lazy moving and only when there is prey or food around they become very active. There are cases where humans received injuries in the form of bites when fishing for these piscivorous fish. Since the fish is in hiding and waits to ambush the prey, humans coming into their natural environment would be seen as a prey also. There is a larger species of the *Hoplias* known as the Traira (*Hoplias aimara)* which is also known as the "king of the wolf-fish" and is much larger and more aggressive than the others. It preys on any moving creature. Because of the aggressive nature of these fishes, it is a preferred choice for tanks systems by fish keepers and is a known aquarium trade species, even though it may be dangerous to handle and are known to jump also.

REFERENCES

Botham, M. S. and Krause, J. (2005). Shoals Receive more Attacks from the Wolf-Fish (*Hoplias malabaricus* Bloch, 1794). Ethology, 111: 881–890.

Botham, M.S., Kerfoot, C. J., Louca, V., Krause, J. (2005). Predator choice in the field; grouping guppies,*Poecilia reticulata*, receive more attacks. Behavioural Ecology and Sociobiology, 59: 181-184.

Cousins, S. (2011). *Hoplias malabaricus* – The Wolf Pack. (http://hoplias.webs.com/hopliasmalabaricus.htm) Accessed November 13, 2012.

Kenny, J. (2008). The Biological Diversity of Trinidad and Tobago: A Naturalist's Notes. Trinidad and Tobago, Prospect Press.

Lucanus, O. (2011). Predators: Hoplias, Wolves of the Water. Practical Fishkeeping. (http://www.practicalfishkeeping.co.uk/content.php?sid=4638) accessed November 13, 2012

Nikolsky, G.V. (1963). The Ecology of Fishes. Academic, London, Great Britain

Novaes, J. L. C. & Carvalho, E. D. (2011). Population structure and stock assessment of*Hoplias malabaricus* (Characiformes: Erythrinidae) caught by artisanal fishermen in river-reservoir transition area in Brazil. Revista de Biología Tropical. Vol. 59.

Phillip, D.A.T. & Ramnarine, I.W. (2001). An illustrated guide to freshwater fish in Trinidad and Tobago. University of the West Indies, St. Augustine, Trinidad and Tobago.

Wikipedia (2012). Hoplias malabaricus. (http://en.wikipedia.org/wiki/Hoplias_malabaricus) downloaded November 13, 2012.

Winemiller, K.O., Jepsen, D. B. (1998). Effects of seasonality and fish movement on Tropical river food webs. *Journal of Fish Biology.* 53: 267-296.

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Fig. 2. *Hoplias malabaricus* hiding among vegetation underwater.

[http://www.aquatic-experts.com/AQUATIC-EXPERTS%20IMAGES/FRESHWATER/FRESHWATER%20FISH/Hoplias%20malabaricus/Picture%20074%20cw.jpg, downloaded 13 November 2012]

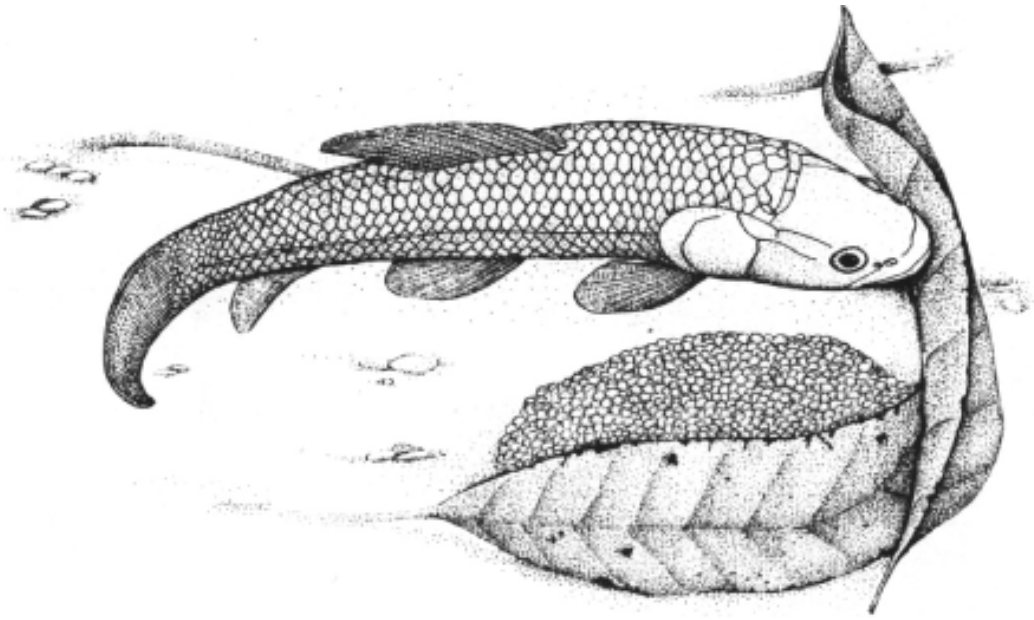

Fig. 3. Male *Hoplias malabaricus* guarding eggs deposited in a basin.

[http://www.scielo.br/img/revistas/bjb/v66n2b/30157f1.gif, downloaded 16 November 2012]