

## *Hoplosternum littorale* (Cascadu)

Family: Callichthyidae (Plated Catfish)

Order: Siluriformes (Catfish)

Class: Actinopterygii (Ray-finned Fish)



**Fig. 1.** Cascadu, *Hoplosternum littorale*.

[<http://picssr.com/tags/cascade>, downloaded 1 March 2016]

**TRAITS.** The cascadu, cascadura or brown hoplo has a body covered with tough armour which appears as long rows of bony scales, neatly packed along its sides as though they are intersecting each other for protection (Fig. 1). Hence, the name armoured catfish is also given (Masterson, 2007). It has typical catfish appearance as well with a broad head and two pairs of barbels projecting outwards from the chin area. The colour range of this species is from dark brown to completely black. There are teeth on both the upper and lower jaws. The cascadu exhibits sexual size dimorphism, such that the males and females differ in size from each other. The males typically grow much larger than females and the enlarged pectoral spines are hook-shaped at the tips and bright red in breeding males (Nico et al., 1996).

**DISTRIBUTION.** *Hoplosternum littorale* is a native species to Trinidad. It is also native to the tropical Americas area and is widely distributed in South America (Fig. 2). It is also introduced and invasive to some places such as Florida (Nico et al., 2016).

**HABITAT AND ACTIVITY.** The cascadu thrives in freshwater habitats and prefers swamps and marshes which are ideally 1m in depth. Residing in marshlands and swamps can prove difficult for breathing and surviving. Most of their activity once they are located in the wild, takes place at night which makes them nocturnal organisms. However the cascadu carries out bimodal respiration; it can use both water and air as respiratory mediums. This is an adaptation which allows the fish to survive and use atmospheric oxygen when required (Luquet et al., 1989). They utilize their posterior intestine as the respiratory organ by which the air passes through and exits through the anus (Persaud et al., 2006). This gives them the chance to function normally when placed in disturbed environments with low dissolved oxygen levels as well as high salinity among other factors.

**FOOD AND FEEDING.** Both the young and the mature cascadu are omnivores and scavengers which usually hunt for small food items in the water and soft mud. The majority of their diet consists of aquatic micro-crustacea as well as insects, insect larvae and detritus (Winemiller, 1987). As mentioned before, cascadu are nocturnal organisms with feeding at maximum during the hours of 2-5 a.m. Almost 40% of their intake occurs at this time period (Luquet, 1989).

**POPULATION ECOLOGY.** Socially, the cascadu are usually naturally occurring in large groups of the same species. They have a life span of approximately 4 years, and are seasonally abundant (Luquet et al., 1989).

**REPRODUCTION.** *H. littorale* are not viviparous but instead egg-laying fish. Sexual maturity arrives once the cascadu is at least 8cm in length, which is approximately 6-7 months old. Mating usually occurs simultaneously with the rainy season (Masterson, 2007). Reproductive behaviour occurs in stages, firstly the male and female pair together (pair formation). The male builds a nest for the eggs by using vegetation litter as well as froth (nest building). Spawning occurs the day after the nest is built, which is then followed by fertilization and guarding by the males (Luquet et al., 1989). A nest contains about 3100 to 51,500 eggs in total because a female can spawn more than once in a single nest (Masterson, 2007). The eggs hatch rapidly as development of the embryo is quick, and the eggs hatch within 4-5 days after spawning. Larval growth then occurs which causes the fingerlings to grow up to 4cm in 2 months. As they are born, they begin feeding for survival (Ramnarine, 1994).

**BEHAVIOUR.** The cascadu feed at night to avoid predators as they are not at the highest trophic level on the food chain. In addition to their nocturnal behaviour, the males also have defence mechanisms which allow them to protect their offspring from harm. The enlarged pectoral spines act as weapons since the tip is hook-shaped and the breeding males may also use this aggressive behaviour towards other males (Nico et al., 1996). As mentioned previously, the cascadu is known to carry out bimodal respiration. However, the juvenile or young cascadu typically carries out aquatic respiration for some time until their posterior intestine develops (Chargas and Boccardo, 2006).

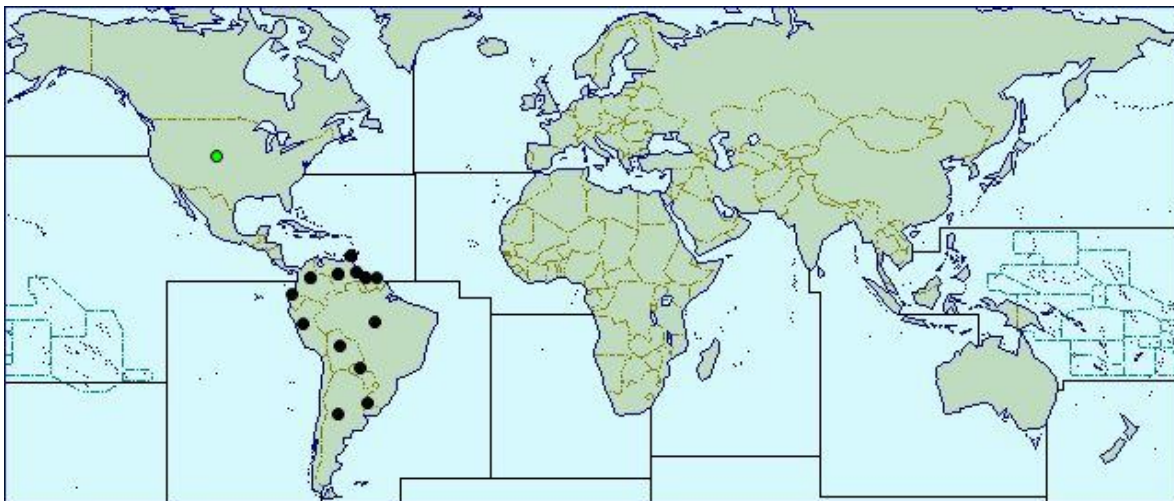
**APPLIED ECOLOGY.** In Trinidad and Tobago, and other countries, *Hoplosternum littorale* can have many ecological uses. Firstly, they can be used as pets because they can be aquarium fishes, however this may shorten their life span. They are no threat to humans with respect to diseases, this being the reason humans used them for experimental purposes, for personal and commercial aquaculture and a very much popular fish used for consumption (Wikipedia, 2015).

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**Fig. 2.** Distribution of *H. littorale* by countries (native, black dots; invasive, green dot).

<http://www.cabi.org/isc/datasheet/79822>, downloaded 1 March 2016]

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