



Redlip Blenny (*Ophioblennius atlanticus*)

## Territorial Behavior in the Redlip Blenny

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## **Abstract**

The Caribbean waters of Dominica are home to many different species of reef fish. One of the most common fish in Dominican reefs is the Redlip Blenny, *Ophioblennius atlanticus*. The purpose of this project is to study the territorial behavior of *O. atlanticus* to define its foraging area. The project also focuses on its aggressive behavior towards fish of its own species and of other species. The distance that the fish would travel from its burrow was used to find its total foraging area. Interactions with other fish were also observed and measurements of aggressive territorial behavior were taken. *O. atlanticus* was found to tolerate almost every species of fish, and only chase away members of its own species occasionally.

## **Introduction**

The Guide to Caribbean Reef Fish by Paul Humann has labeled *O. atlanticus* a territorial fish, but there is no description of just how territorial the species is. This study attempts to describe the territoriality of *O. atlanticus*.

The coral reefs at Rodney's Rock on the island of Dominica provide an excellent site to study *O. atlanticus*. This reef fish can be dark reddish brown to bicolor with gray, or nearly all gray, and the lips often have a reddish tint (Humann 1999). It may have appendages on its head, known as "cirri" (saltwaterfish.com). These appendages may be seen above the nostrils.

*O. atlanticus* prefers rocky inshore areas and shallow coral reefs, and can be commonly found resting on reef crests. Algae are the primary food source for *O. atlanticus* (saltwaterfish.com). They can be seen foraging on algae that grow on the reefs. They may also live in tidal pools and can jump from pool to pool which gives them the nickname, "Rock Skipper" (saltwaterfish.com).

## Methods and Materials

To determine the size of *O. atlanticus*' foraging area, individuals were observed as they foraged on the green algae near their burrow. The territorial radius was measured by using a rope cut to the length of one meter and marked at each quarter meter. The distance from its burrow to the furthest point it would travel to forage was measured and recorded. Twenty individuals were observed, and the foraging area radii recorded.

Territorial behavior towards other fish species was determined by observing *O. atlanticus*' interactions with other species of reef fish. It was found only to chase other species away when they were a certain distance from its burrow. When *O. atlanticus* aggressively chased a fish away, the distance that the fish was from the *O. atlanticus*' burrow was measured. This was observed five times out of the twenty fish studied.

The last aspect of territoriality studied was between *O. atlanticus*. Again they were observed, this time to see if there was any intraspecific aggression. When an *O. atlanticus* chased another away, the distance that the resident would allow the intruder to get from its burrow was measured and recorded. This was observed six times out of the twenty fish studied.

Averages were taken from the data, and numbers for behavior towards its own species and other species were compared.

## Results

The area of twenty individual *O. atlanticus* was calculated using the radius measured.

The following formula was used to determine each area:

$$\text{Area circle} = \pi r^2$$

$$\text{Area} = \pi(1.375\text{m})^2$$

$$\text{Area} = 5.940\text{m}$$

The individual areas for each set of data were then averaged together. The mean foraging area was thus determined to be about 5.424m.

The same calculations were done with the measured radius distances that *O. atlanticus* would allow its own species and other species to get to its burrow before it would chase them away. The area around each individual burrow that other *O. atlanticus* were allowed to approach before initiating aggressive behavior was calculated by:

$$\text{Area} = \pi r^2$$

$$\text{Area} = \pi(0.125\text{m})^2$$

$$\text{Area} = 0.049\text{m}$$

Again these areas were averaged to get a mean area of 0.139m. The area around the burrow that *O. atlanticus* would allow other species to get before chasing them away was calculated for each individual to be:

$$\text{Area} = \pi r^2$$

$$\text{Area} = \pi(0.250\text{m})^2$$

$$\text{Area} = 0.196\text{m}$$

All individual areas were then averaged together to get a mean area of 0.383m.

All measurements taken are recorded on the following page.

## **Conclusion**

The territorial foraging area of the *Ophioblennius atlanticus* was found to be 3.801m.

The foraging areas of *O. atlanticus* were found to overlap with other *O. atlanticus*.

Within these areas *O. atlanticus* was only aggressively territorial towards its own species when it got a certain distance from its burrow. It would allow its own species to get an average of 0.117m closer than other reef fish species. When the fish were outside of these areas they would sit less than a centimeter away from each other at times.

Aggressive behavior towards other *O. atlanticus* was observed only six times. This information shows that *O. atlanticus* is more tolerant of conspecifics.

*O. atlanticus* was also seen to be slightly territorial to reef fish of other species. Fish of other species were not allowed to get as close to the burrows as conspecifics. It was also observed to coexist well with the Dusky Damselfish. The Dusky Damselfish is a very territorial species, but would tolerate *O. atlanticus* in most encounters.

This study shows that *Ophioblennius atlanticus* is not a highly territorial species of reef fish. Further study could be done over a greater period of time to observe all of the species that *O. atlanticus* shows aggression towards.

**Table 1.1**

| <b>Territorial Radius</b> | <b>Territorial Area</b>         |
|---------------------------|---------------------------------|
| 1.375                     | 5.940                           |
| 1.250                     | 4.909                           |
| 0.750                     | 1.767                           |
| 0.625                     | 1.227                           |
| 0.875                     | 2.405                           |
| 0.875                     | 2.405                           |
| 1.125                     | 3.976                           |
| 1.500                     | 7.069                           |
| 1.125                     | 3.976                           |
| 1.500                     | 7.069                           |
| 1.500                     | 7.069                           |
| 1.125                     | 3.976                           |
| 1.125                     | 3.976                           |
| 1.125                     | 3.976                           |
| 0.750                     | 1.767                           |
| 0.875                     | 2.405                           |
| 0.875                     | 2.405                           |
| 1.250                     | 4.909                           |
| 1.125                     | 3.976                           |
| 1.250                     | 4.909                           |
| <b>Radius Average</b>     | <b>Territorial Area Average</b> |
| 1.100                     | 5.424                           |

**Table 1.2**

| <b>Conspecific Territorial Radius</b>           | <b>Conspecific Territorial Area</b>            |
|---|--|
| 0.125   | 0.049  |
| 0.125   | 0.049  |
| 0.125   | 0.049  |
| 0.125   | 0.049  |
| 0.250   | 0.196  |
| 0.375   | 0.442  |
| <b>Average of Conspecific Territorial Radii</b> | <b>Average of Conspecific Territorial Area</b> |
| 0.188   | 0.139  |

**Table 1.3**

| <b>Intraspecific Territorial Radius</b>           | <b>Intraspecific Territorial Area</b>            |
|---|--|
| 0.125   | 0.049  |
| 0.250   | 0.196  |
| 0.375   | 0.442  |
| 0.375   | 0.442  |
| 0.500   | 0.785  |
| <b>Average of Intraspecific Territorial Radii</b> | <b>Average of Intraspecific Territorial Area</b> |
| 0.281   | 0.383  |

## Works Cited

Humann, Paul. *Reef Fish Identification: Florida, Caribbean, Bahamas*. Jacksonville, Florida: New World Publications, Inc., 1999.

Redlip Blenny (*Ophioblennius atlanticus*). Accessed June 7, 2004.  
<http://www.saltwaterfish.com/m-fish/Redlip-Blenny.html>

Cover picture can be found at:

Redlip Blenny Image. Accessed June 8, 2004.  
<http://www.aquacon.com-images-redlipblenny.gif>