

Red Lionfish (*Pterois volitans*) Control Strategies in the Caribbean UK Overseas Territories (Cayman Islands, Virgin Islands, and Turks and Caicos)

KEY WORDS: Lionfish, Caribbean, control

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El Pez León Rojo (*Pterois volitans*) Estrategias de Control en los Territorios de Ultramar del Reino Unido el Caribe (Cayman Islands, Virgin Islands y Turks y Caicos)

PALABRAS CLAVE: Pez león, Caribe, control

Red Lionfish (*Pterois volitans*) Stratégies de Lutte dans les Territoires d'outre-Mer des Caraïbes au Royaume-Uni (Cayman Islands, Virgin Islands et Turks et Caicos)

MOTS CLÉS: Rascasses volantes, Caraïbe, stratégies de lutte

ABSTRACT

The Red Lionfish (*Pterois volitans*), native to the Indian and Pacific Oceans, has invaded the Western Atlantic and more recently the Caribbean. While the lionfish has biological characteristics that provide advantages over native Atlantic fish species, and which predisposes it to rapid proliferation, most countries in the region lack the human and financial resources to effectively control this new invader. In 2009, the Joint Nature Conservation Committee (JNCC) offered financial assistance to the Cayman Islands, British Virgin Islands, and Turks and Caicos jointly to assist in their control efforts on this invasive species. In the Cayman Islands, the responsibility for conservation of marine resources lies with the Cayman Islands Department of Environment. The Departments efforts on lionfish control are focused on conservation management, research, raising public awareness, equipment, and volunteer training. This paper will highlight key elements of the efforts currently underway in the Cayman Islands with further examples from the British Virgin Islands and Turks and Caicos.

INTRODUCTION

The lionfish invasion reached the Caribbean in 2004. Specifically, the Turks and Caicos Islands (TCI) in November 2007, the Cayman Islands (Cayman) in February 2008, and the British Virgin Islands (BVI) in March 2010. These are three of the five British Overseas Territories (BOT's) in the Caribbean, and in November 2009, in response to this new threat the JNCC offered financial assistance to these three countries of £20,000 each to assist in their control efforts. This funding was put to use in different ways in each of the countries since each is at a different stage of the invasion. BVI has just started to see lionfish, so their sightings are few and far between, and sizes are relatively small. The Cayman Islands are further along with regular sightings and significantly larger fish, and TCI is the most advanced of the three. Control strategies will be examined for each country with respect to how the JNCC funding has contributed to their advancement.

British Virgin Islands

Since the BVI is at the beginning stages of the invasion, the most important aspect is to ensure all sightings are reported, and an effective and efficient removal process is in place. To aid with this they have adopted a marker system where divers are given small weighted floats made from wine corks that are easily carried and deployed when a lionfish is sighted. The sighting is reported and a trained culler will visit the site, locate the marker indicating the presence of a lionfish, then collect the fish and remove the marker so as not to leave any debris on the reef. A campaign was started to have wine corks donated, and in the first week over 7,000 were received! This marker system was employed in Cayman as well, but with the population becoming so large, it is no longer necessary to report sightings or leave markers as this was creating unnecessary debris on the reef and there were so many reports that not all were being responded to.

As in all countries dealing with the lionfish, a huge part of the response is in raising public awareness about the invasion, and this is no different for any of these three BOT's. The main goal is to get people aware of the problem,

including its venomous nature, and to be on the look-out for lionfish. BVI are asking that only trained responders attempt to collect the fish, since they are easily spooked and are very difficult to capture afterwards. These responders do not need special licensing, though their counterparts in TCI and Cayman need to be licensed to enter any MPA.

Training of personnel is also a high priority as proper capture technique and first aid treatment is critical to ensure safety. BVI have met with the Caribbean Oceanic Restoration and Education (CORE) Foundation's Joe Gulli as well as officials from the USVI for training whereas TCI and Cayman have participated in REEF's training and education program.

Taking the message to the people is also on the agenda, and visits to schools and businesses are a regular part of the control program in all three countries. Since the most effective way to get peoples attention is to show them an actual lionfish, these visits either include a live fish or a preserved specimen, both of which generate lots of discussion.

Having the right equipment for the job is essential, and BVI benefitted by being able to use the JNCC funding to purchase 40 sets of capture gear and donate them to their first responders. The capture gear includes one pair of Hex-Armor puncture proof gloves, one dry bag, and a pair of clear vinyl collection nets. TCI and Cayman had already purchased capture gear since they had both been dealing with the invasion for sometime before, but were able to purchase additional sets as well as other tools with the funding.

Turks and Caicos Islands (TCI)

With TCI having larger lionfish and more of them than Cayman and BVI, they were already at the stage where control by culling was not enough to reduce the impact on the reef. TCI are promoting them as a food item and trying to get as many locals to start eating them as possible. To this end they are focusing a large part of their resources on tasting events anywhere from supermarkets to public functions and one restaurant is even making lionfish pizza. They have also started a Restaurant Initiative to assist in this promotion and have setup monthly workshops to educate chefs on how to prepare the fish and promote it in their menus. Cayman is almost at the stage where the fish are large enough to support a food fishery, so the promotion has started by using the catch from tournaments to serve as appetizers at the prize giving. This has proven extremely successful and is becoming a standard at all the tournaments.

There was some hesitation from the commercial fishermen to start capturing the lionfish, mainly due to the venom in the spines, so effort was made to show local fishers how to safely clean the fish and that they were safe to eat as well. A year long tournament was started in October 2009 with the grand prize of \$3,000 going to the

first person to catch 3,000 fish, but unfortunately, that tournament had to be cancelled shortly afterwards.

Cayman Islands (Cayman)

When lionfish first showed up in Cayman, there was already knowledge of their impact on other reef ecosystems, so there was already plans underway to gain the proper training and expertise necessary to establish an effective management program. REEF was contracted to assist with developing this program which started in March 2009. It was necessary to license individuals to catch lionfish since there were laws in place which prevented them from effectively catching lionfish. In order to become licensed it, was necessary to attend a short course, which was developed by REEF, which gave the applicant as much knowledge about the lionfish as possible. After completing this course the licensed culler could now: take lionfish while on SCUBA; take lionfish from Marine Parks and Replenishment Zones (two types of MPA's); wear gloves while catching lionfish; and catch lionfish under eight inches total length. No lionfish were to be kept alive, and no spearing devices were to be used, the preferred capture technique was the clear vinyl nets.

There was a tremendous response from the public to get involved with this program, and over 600 people have been licensed through November 2010. Residents participated mainly because it gave them a sense of purpose on their dives and a sense of enjoyment. It also helped to raise environmental awareness with certain sectors that may not have been as keen to get involved in other projects simply because of the obvious impact the lionfish has on our reefs.

The dive companies were the strongest supporters of the control program from the beginning even without any appropriate capture gear. Innovative capture techniques were found using materials ranging from 2-gallon Ziploc bags to mask boxes to bed comforter bags. As the lionfish invasion continued, the dive companies began having problems with their techniques, even after the proper capture gear was purchased. There were more and more fish showing up, and they were getting larger and harder to catch in the nets. This was compounded with the time and depth constraints of diving and proved that the current capture technique was no longer practical. The nets were also very bulky to carry, and there was a responsibility to their paying customers first which very often prevented them from culling as often as they needed to.

To this end, they made a formal request to the Department of Environment (DoE) to allow them to cull using pole spears. This was a very difficult decision to make because spear guns and such like have been heavily controlled for years with the intention to eventually ban spear fishing completely. Currently, all spear guns have to be licensed, it is illegal to import spear guns and parts and the legal definition of a spear gun includes pole spears and a range of other devices. With no other practical solution

to the problem the DoE agreed to license the dive companies to spear lionfish with special pole spears that had to be manufactured locally and attached the following conditions to the license:

- i) Only dive staff that are already licensed cullers may use the spears,
- ii) Only DoE issued pole spears may be used
- iii) Staff are only allowed to spear while leading dives, and
- iv) Each pole spear will be tagged and licensed to one company and boat.

Each company will provide DoE with a list of all employed licensed cullers

This program is working well, and there are plans to expand the spearing program to residents who are actively culling and supplying catch data to DoE. There are also plans in place to hold culls supervised by DoE where the spears remain with DoE after the cull. The manufactured pole spears did have some draw backs, and DoE is now looking into obtaining permission to import professionally manufactured pole spears from a company in the United States.

Culling tournaments are becoming a popular method to raise awareness on the lionfish issue and help reduce their population on reefs. The DoE has taken a position to assist private companies who are interested in organizing culling tournaments by creating official Tournament Guidelines and acting in an advisory role overseeing the weigh-ins and training chefs on safe handling practices for preparing lionfish to serve. This position requires less time from DoE, as there is no involvement with the background organizational work leading up to the tournament but still allows them to obtain all catch data.

The first tournament was held on September 4th & 5th, and with about 100 participants, over 500 lionfish were caught in those two days. The prize giving on the 6th was equally successful with Mezza Restaurant serving lionfish to the participants as fritters, chowder, fingers, and pan seared.

All three countries are actively pursuing various methods of dealing with the lionfish invasion, and each must work within their own legislation to create a program that is sustainable and that does not endanger other areas of the reef ecosystem while controlling lionfish.