

Port Canaveral Lionfish Project

2015



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**Prepared for
Carol Noble
Director, Environmental Plans and Programs
Canaveral Port Authority
445 Challenger Road, Suite 301
Cape Canaveral, FL 32920**

Prepared by
InoMedic Health Applications LLC
6141 N. Courtney Parkway, Suite A
Merritt Island, FL 32953

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Principal Investigator
Douglas M. Scheidt
InoMedic Health Applications LLC
6141 N. Courtney Parkway, Suite A
Merritt Island, FL 32953



INTRODUCTION

Two species of invasive Indo-Pacific lionfish (*Pterois volitans* and *P. miles*) have spread rapidly in the tropical western Atlantic Ocean since their first confirmed sighting in southeast Florida in 1985. These species have no effective natural controls in their invaded range and have achieved extremely high densities in many areas. Lionfish are generalist carnivores with the potential to dramatically alter the fish fauna where they are common; reductions of fish recruitment up to 80% have been reported from certain locations. Recently, lionfish have become established in estuarine and riverine waters of the southern Indian River Lagoon (IRL) as well as all five IRL ocean inlets and in Port Canaveral. This invasion has the potential to quickly and irreparably damage the IRL fish fauna (widely regarded as the most diverse ichthyofauna in continental North America), with serious economic repercussions to our regional recreational and commercial fisheries.

The expansive rock revetments, seawalls, and pilings within Port Canaveral collectively function as the largest artificial reef in Brevard County, habitat that currently supports a rich marine fauna but may also eventually sustain high lionfish densities. Moreover, the Canaveral Lock provides the most likely corridor for lionfish to recruit to the nearby Banana River Lagoon.

Since 2013, four surveys have been conducted within Port Canaveral. The overarching goal of this project was the continuation of previous efforts to monitor the extent of lionfish colonization within Port Canaveral, document lionfish habitat preferences within the Port, and continue lionfish removals from habitat of highest value to native Florida fishes. For 2015 our task was to conduct two lionfish removal surveys within Port Canaveral in spring and fall.

METHODS

Port Canaveral was divided into four basins: Locks, West, Middle, and Trident, and the habitat was classified into four basic types (shown in Figures 1 and 2), including Vertical/Seawall, Sand/Bare, Rocks/Revetment, Pilings/Piers. Each basin was stratified by habitat types and representative sections of each habitat type per basin were selected. Some areas were excluded from the survey for safety reasons such as high boat traffic around marinas, large ships moored at cargo berths, active fishing areas with chance of entanglement and construction activities.

SCUBA divers swam predetermined patterns depending on habitat types. For rocks, divers swam along in a zig-zag to cover shallow to deeper areas. Along pilings/piers divers swam up and down each structure, and for vertical walls divers swam along in a zig-zag to cover shallow to deeper areas. During the SCUBA survey lionfish counted and culled using a pole spear.

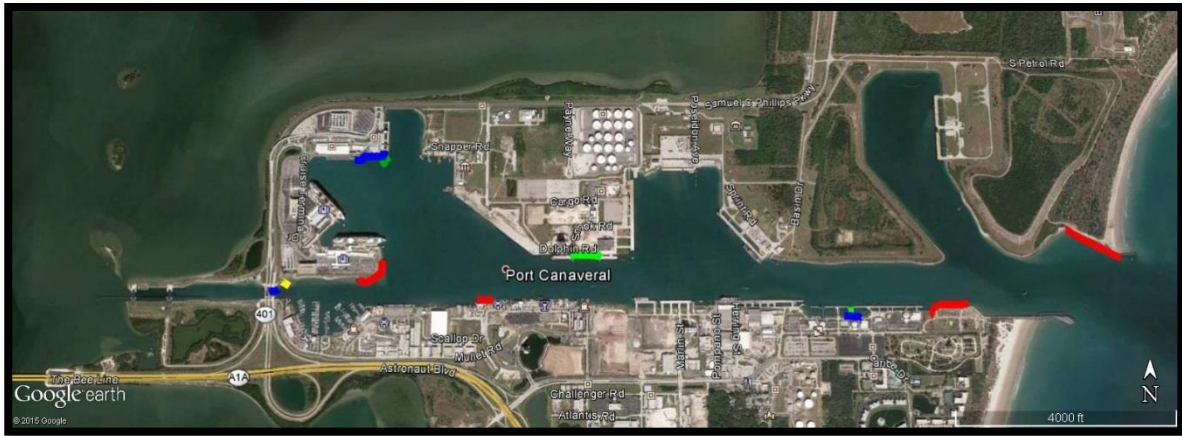


Figure 1. Aerial view of Port Canaveral, Florida with location of lionfish survey transects for 2015. Colored lines indicate habitat types: blue = vertical/seawall, green = pilings/piers, yellow = sand/bare, and red = rocks/revetments.

RESULTS

Two surveys were conducted in 2015, covering all four habitat types, starting at the Port Canaveral entrance and extending to the bridge area east of the Port Canaveral Locks (Figures 1 and 2). When compared to previous surveys (Scheidt 2014) the total area covered was substantially reduced, especially in regards to rock habitat. The reduction in rock habitat surveys resulted from on-going construction activities in those areas (Table 1, Figure 3).

The first survey was conducted on May 19, 2015. Water clarity varied by location with poorer visibility in areas distant from the ocean entrance. The second survey was conducted on September 30, 2015. This survey covered the same areas as the spring survey but the water clarity was markedly better in all areas. No lionfish were observed during either survey in 2015.

Table 1. Comparison of linear distance (meters) of habitat type surveyed during fall 2014 and spring and fall 2015.

Habitat	Fall 2014	Spring 2015	Fall 2015
Rock/Revetment	2728	887	887
Vertical	310	360	360
Pilings/Piers	851	357	357
Sand	47	48	48
Total	3936	1652	1652



Figure 2. Examples of habitat types surveyed. Top) Pilings and piers with rocks in background; Middle) Rocks; Bottom) Rocks and adjacent sand bottom.



Figure 3. Example of construction activities in the area.

SUMMARY

The major objective of this and previous surveys was to determine the distribution and relative abundance of lionfish in Port Canaveral. Since the initial 2013 survey, the number of lionfish observed and culled on subsequent diver surveys has declined drastically as evidenced by the 2015 surveys which produced no lionfish whatsoever. The lack of observations should be interpreted with caution since a large portion of the rock habitats, where most lionfish were previously observed, were not surveyed in 2015 because of ongoing construction activities. Regardless, the scarcity of lionfish would suggest that Port Canaveral does not currently sustain the high lionfish densities that characterize nearby offshore reef habitats within the region.

An interesting point to consider is that the shoreline where most of the lionfish have been found, the rocks on the North side of the channel between the Trident and Poseidon basins, have been recently removed and then reestablished as part a channel-widening project. If future surveys focus in this newly available rock habitat, the data collected may lend insight into habitat colonization by native flora and fauna as well as lionfish.

LITERATURE CITED

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