

---

---

*SYNOPSIS OF THE BERMUDA  
LIONFISH CONTROL PLAN*



*Photo by Ryan Craig*

*Prepared by the Bermuda Lionfish Task Force  
February 2014*

---

---



## SYNOPSIS OF THE BERMUDA LIONFISH CONTROL PLAN

### Introduction

The Lionfish Control Plan is a working document written by coalition members of the Bermuda Lionfish Task Force and is intended to guide those responsible for its implementation.

The aims of the Lionfish Control Plan are to formulate an action strategy and provide a framework to coordinate activities among organizations and individuals with the overall goal of controlling the number of lionfish in Bermuda waters.

The Lionfish Task Force was established as the result of a Lionfish Control Plan Workshop in October 2012, attended by representatives from government, environmental, scientific and education organizations, fishermen, the dive community and other island stakeholders.

The Lionfish Control Plan will be updated to reflect new information and to include the future results of activities within the Plan.

### Background to the Lionfish Problem (for more detail, see Section 3 of the Control Plan)

The invasion of lionfish has been recognized as potentially one of the worst environmental disasters ever faced by the western Atlantic region. This venomous invader has put Bermuda's marine ecosystem and associated economic activities in jeopardy.

The major risks are:

- the risk to public health
- reduction of commercial fish stocks
- negative impact on the diversity of native reef fish
- a potential cascading impact on the biodiversity of Bermuda's reefs.

The challenges in managing the lionfish population are complex and diverse, but centre around the current lack of experience to draw from and lack of resources outside of a current core group of volunteers.

This section of the Control Plan includes an excerpt from *Invasive Lionfish: A guide to control and management*. (2012. Ed: J.A. Morris Jr.), entitled, THE LIONFISH INVASION: *Past, Present, and Future*. The guide from which this is taken is currently the most up to date information on lionfish in the Western Atlantic and is serving as a guide for jurisdictions to shape their control plans.

### Scope of the Lionfish Control Plan

During the October 2012 workshop, five priorities for the Control Plan were established:



1. Education, outreach and training
2. Research and assessment
3. Detection and removal
4. Monitoring and data gathering
5. Data management

The workshop also identified current assets that exist in Bermuda for lionfish control, and additional resources that will be required for the plan to succeed. The priorities identified above are those that were considered the highest priority, being the most likely to have the greatest impact and with potential assets available for their implementation.

Members of the Bermuda Lionfish Task Force are responsible for developing the plan around these priorities.

A Darwin Plus grant of nearly £170,000 was awarded to the Task Force in April 2013 to support key research components of the plan.

### **Control Plan Priorities (for more detail, see Section 5 of the Control Plan)**

This part of the Control Plan involves working guidelines for Task Force members as plan components relating to the five priorities identified above are implemented. It starts with a brief statement of the intent of the Bermuda Lionfish Task Force as a mechanism for coordinating the elements of the Control Plan. This section of the plan will be modified over time to reflect how the plan will be coordinated and implemented.

Within this section of the Control Plan, the major goals relating to each of the five priorities are identified.

#### Priority I: Education and Outreach

Education and outreach is essential to bring the message of the lionfish invasion to stakeholder groups and the general public. This part of the plan is subdivided into four major goals:

- reduce local populations of lionfish through creating an awareness of sighting and spearing procedures
- increase public awareness of lionfish to generate support for effective management
- minimize health risks to the general public from handling and collecting lionfish
- prevent future introductions of additional lionfish and other non-native species

Detail is provided for each of these goals regarding target audience, message, deliverables, evaluation, and future and continued efforts.

#### Priority II: Research and Assessment

The initial research and assessment components of the plan are focused on the following:



- lionfish population density
- feeding ecology
- demographics and recruitment
- assessment of fish communities

These are discussed in turn along with intended methodology.

### Priority III: Detection and Removal (Control Mechanisms)

Control mechanisms will focus on both shallow water culling and deep water culling efforts. This section explores the available resources in support of these efforts including the current and future involvement of commercial fisheries.

This section also outlines the criteria and processes for prioritising areas and resources for culling.

### Priority IV: Monitoring and data gathering

The key areas of focus for initial monitoring and data gathering will be:

- local lionfish populations
- native species
- ecological impacts
- organismal monitoring through dissection
- socioeconomic impacts: fisheries, tourism and human health

These are discussed along with intended methodology.

### Priority V: Data Management

Each component of the lionfish control plan will generate significant data and it is important to establish the capacity to store, analyze, and share data both between Bermuda's stakeholders and the greater regional lionfish effort.

There is no central depository for lionfish related data currently available and the plan recognizes the importance of developing from the beginning a coherent action plan for identifying sources, mechanisms and analytical resources so that data is collected in a standardized method.

The Lionfish Task Force will work with each organization involved with the programme to ensure that great care is taken to establish data protocols and data archiving at the start of each project.

### **Public Health and Safety (for more detail, see Section 6 of the Control Plan)**

Minimising health risks through health and safety messages to all sectors of the community is of the utmost importance.



Messages will be delivered through the Task Force's Education and Outreach programmes. Key issues to be addressed, as appropriate to each audience, may include:

- first aid for treating a lionfish envenomation. Here, the key message is to use safe sources of heat to denaturise the venom
- safe lionfish handling practices - how to avoid envenomation when handling lionfish above water
- safe diving practices for scuba divers and snorkelers, including planning and preparation, diving, spearing and emergency response
- safe boating practices, taking into account the type of boat trips that may be made when hunting for lionfish
- further advice for the treatment of lionfish envenomations, and considerations for hospital personnel and first responders. Important data could be collected through completion of reports on envenomation incidents.

**Legal and Regulatory Considerations for Lionfish Management (for more detail, see Section 7 of the Control Plan)**

The two main methods identified in this Control Plan for managing lionfish are culling with spears in shallow water (<60ft) and trapping of lionfish in deep water (>150ft). The legislation and policies dealing with these two areas are detailed in this section of the Plan.

In the second part of this section, an assessment is made of modifications that may be required for the full implementation of the Bermuda Lionfish Control Plan. Considerations to allow successful culling of lionfish need to be balanced with the need to protect the environment and fishery stocks, and prevent illegal fishing. Consideration is also being given by the Department of Conservation Services to introducing a new Invasive Species Act that would include provision to prevent the care for, support, or breeding of lionfish other than for research and public education purposes.