

Section 6. Public Health and Safety

(Of the Bermuda Lionfish Control Plan see homepage for full document)

Lionfish have venomous spines capable of inflicting a painful sting and sometimes more serious symptoms. As the lionfish population continues to grow, so does the likelihood of injuries through envenomation, to fishermen, divers, snorkelers, swimmers, and people whom otherwise handle or come into contact with lionfish.

It is essential that health and safety messages be provided to all sectors of the community. The Lionfish Control Plan will use its Education and Outreach programmes to provide people with information about safety practices to help minimise envenomation.

6.01 COMMUNITY HEALTH RISK

Lionfish have 13 dorsal spines that run the length of the fish's spine, 3 anal spines, and 2 pelvic spines, all capable of causing envenomation (coloured red in the Figure 1 below). Each spine is covered by a thin sheath of skin which, when depressed, compresses a small pair of venom glands near the base of the spine (See Figure 2 below). The venom then travels from the glands through small depressions in the spines towards the wound. Aside from the extreme pain caused by the venom, a person risks serious secondary infections as a result of a spine puncture, which may require aggressive antibiotic treatment and if the person has other health issues, envenomation may cause more severe reactions

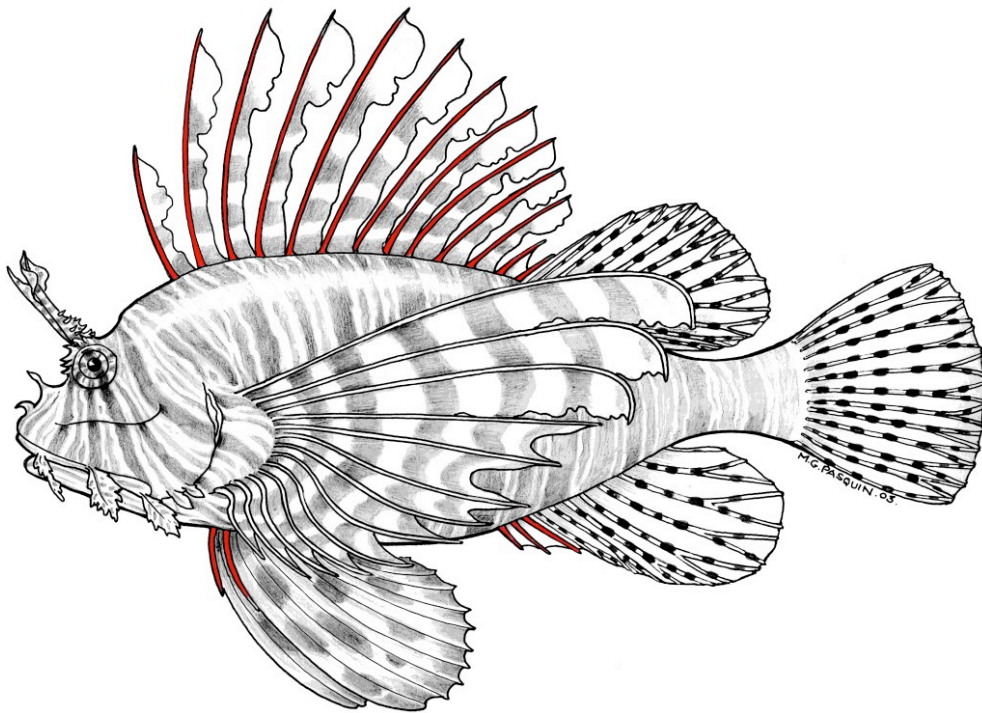


Figure 1 *Illustrated by Michelle G. Pasquin*

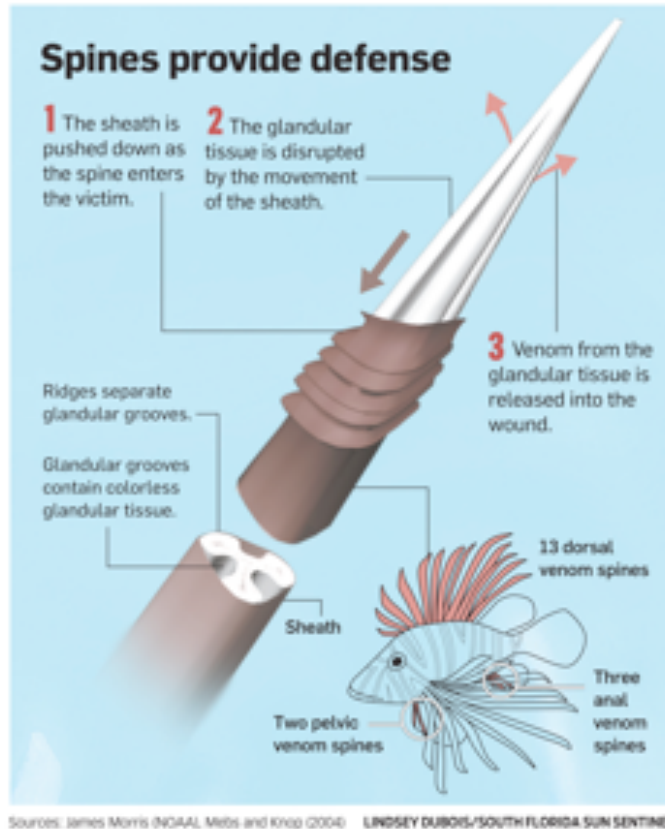


Figure 2 James Morris (NOAA), Mebs and Knop (2004) Courtesy of Lindsey Dubois/South Florida Sun Sentinel

6.02 FIRST AID

Lionfish venom is a proteinaceous neurotoxin, and heat will denature the venom quickly. The sooner a sting victim receives first aid treatment the better. The key to suppressing the sting is to find safe sources of heat, as this will relieve the pain and begin to denature the venom, possibly reducing more severe effects or complications. If possible, submerge the effected area in hot water for up to 90 minutes. Remember not to scald! A burn may be worse than the sting itself. Since numbness can be a sting symptom, so be sure to test the water temperature with an unaffected part of the body first, to prevent scalding. If in the field, potential heat sources may include:

- Bring a thermos of hot water when collecting lionfish.
- Nearby restaurants, marinas, or residences can usually heat water in an emergency.
- Vessel exhaust water or engine coolant systems may be a source of heat.
- Lay a wet shirt or towel over an engine block for heating, and then wrap affected area.

- Heat packs do not reach high enough temperatures to be effective, however, the reusable packs may provide relief for short periods (5-10 minutes).
- [Note: - Urine is body temperature and is therefore not effective.]

Lionfish spines are very sharp, but are not brittle and seldom break off when they enter and exit their victim. But if a fragment of the spine is present, remove it completely. As with any wound, the area should be cleaned, checked for possible debris, and always treated by a qualified medical professional.

Secondary treatment should be sought as soon as possible to reduce the risk of infections or deal with potential allergic reactions.

Over the counter painkillers can also be considered for additional pain relief (but ask your physician first before using them).

6.03 SAFE LIONFISH HANDLING PRACTICES

The single most important rule in approaching and handling lionfish is AWARENESS. People must be made aware that lionfish are now a part of our marine environment and that there is always the potential to encounter them not only in the water but also on boats and on shore after they have been captured.

The only proper way to handle lionfish is CAREFULLY!! The use of puncture proof or heavy gloves is advised. This will also protect your hands from the irritation the fleshy tentacles on the head may cause.

Puncture-resistant gloves are one of the most important tools in a lionfish collector's toolkit when considering the handling of fish above water. In contrast to standard working gloves, or even Kevlar gloves, which are designed to protect against cuts, specially designed and manufactured puncture-resistant gloves provide an added measure of protection against extremely sharp lionfish spines. While not 100% foolproof, use of these gloves will minimise stings and provide safer handling of fish during handling above water, and in preparing the fish for end-use.

If moving the fish, for example from a cooler, holding it by the head or lips will help avoid all spines. However, never assume the fish is dead so be extremely careful if you choose to grasp the lionfish by the head or lips as they may thrash about and potentially stick you.



Because of the potential for immediate swelling to any part of the body that is stung, rings should be removed first as a precaution before handling lionfish. You do not want to have a ring on with an inflamed hand. When preparing the lionfish for cleaning, wear heavy or puncture-resistant gloves, use a knife, and use a killing stab to the head in an attempt to kill the lionfish before handling. While the fish may appear dead, their spines may continue to pose a hazard, and you should not assume that the fish will remain immobilised.

Improper storage of lionfish can also provide an opportunity for severe stings. Storing fish in a well-marked and puncture proof container can help reduce these unnecessary risks.

When cleaning and filleting lionfish, the first order of business is to remove all the spines from the fish. Lay the fish flat on an appropriate cutting surface. With a pair of scissors or sharp knife, cut the spines off at the junction of the spine and the body of the fish along all rows of spines moving from the tail to the head. Place the removed spines carefully in a puncture proof container for safe disposal in a manner that does not present a hazard to others as these can still sting anyone that comes in contact with them. Once these spines are removed, the lionfish no longer poses a hazard, and can be filleted and cleaned as normal.

6.04 SAFE DIVING PRACTICES

This sub-section is not intended to provide or explain protocols for culling of lionfish at any water depth. They are general guidelines for safe scuba diving and snorkelling. In no way are these presented as protocols. Further, while this sub-section relates to both snorkelers and scuba divers, it is assumed that any scuba diving is always done by properly trained and certified divers.

Training is essential. All divers and snorkelers should be trained and certified to the target environment of the culling mission. All divers and snorkelers should only dive and snorkel at their level of training.

Planning is essential. Safe thorough, complete dive planning and briefing for both dive safety and dive mission are critical.

Communication is key. As with any dive activity, communication is absolutely essential, particularly when handling hazardous marine life. Be sure to actively communicate with your buddy every step of the way. Brief the dive before entering the water with the entire dive team present, including any surface support personnel. Prior to diving, discuss hand signals relevant to your activity, including signals for handing off lines or collection bags and alerting your buddy to an injury. Effective communication is always a fundamental element of safe diving.

Be prepared. If you have little or no experience catching lionfish, make sure you go through the appropriate instruction on how to safely capture and handle them. Consider going with an experienced culler of lionfish for your first outings.

Know your gear. Ensure that all your gear is in good working order prior to entering the ocean. Be very familiar with your gear's operation and that of your buddy. In addition, use appropriate collection equipment and adhere to any safety precautions particular to that equipment. For instance, if you are using a spear, follow established safety protocols; do not deviate as it may result in injury. The use of gloves in the water when spearing lionfish is not recommended, in order to discourage physical handling of lionfish in the water. However, if you are planning to net lionfish, the use of gloves is recommended.

Know your limits. Do not dive beyond your training or physical abilities. Do not push the boundaries or ignore decompression limits; no prize is worth risking your safety. For scuba divers, keep an eye on your gas and depth gauges; make sure you follow your dive computers or tables and that your surface intervals are sufficiently long.

Maintain a healthy respect. Do not forget that lionfish are hazardous marine life. Many people underestimate the threat of a lionfish envenomation. While rarely fatal, lionfish envenomation can cause extreme pain.

Know how to respond. Be prepared to handle a potential sting; should a sting occur while diving, do not panic. Make a controlled, safe ascent to the surface and administer first aid on the boat.

Maintain awareness. Always be aware of where your catch is, particularly when coordinating with your buddy. Be conscientious of the marine habitat, so as not to cause any damage to reefs. Maintain awareness of where lionfish are to avoid incidental contact. When approaching the lionfish, do so cautiously.

When spearing, a 3-prong "paralyzer" spear, no longer than 5 feet is the only spear that is currently permitted to use in Bermuda waters. Lionfish are generally not afraid of being approached, so smooth deliberate movements are called for. They will allow you to get to a close range, so get as close as possible to them without touching the fish and release the spear. Once speared, place each catch into an appropriate containment unit (underwater), or bucket or cooler, above water, i.e. on the shore or boat, using the lid of the containment

unit or sides of the bucket to pull the fish off directly into the container, and thus not touching them by hand. If free diving/snorkelling it would be beneficial to have surface support with whom the spear and the catch can be passed directly to for depositing in the on-board container. This will eliminate the need for in-water containment devices.

When considering underwater containment devices and removal equipment, most can be obtained commercially, however inventiveness and creativity in local and personal devices should not be dismissed. However, consideration for safety and effectiveness should always be exercised in the manufacture of personal devices.

6.05 SAFE BOATING PRACTICES

It is assumed that all watercraft will be operated in a safe and prudent manner and in accordance with Bermuda laws and standards, and that all vessels are seaworthy and safe.

While not required, it is prudent to carry cellular phones if available and special consideration should be given for the use of up-to-date commercially available navigation systems, such as GPS.

When going out for lionfish, there should be a minimum of two persons onboard.

Other important gear and supplies to consider having on board should be fresh drinking water, thick gloves, a knife, scissors, a pole or spear or stick, a bucket and if possible a cooler with ice (putting lionfish on ice will speed up their death and make for easier handling).

Ensure that your lionfish flag, provided by the DEP, is properly displayed.

Particularly when travelling at high speeds, ensure that any equipment and especially any containers with lionfish are secure as these pose a hazard if moving around the boat.

6.06 FURTHER ADVICE AND CONSIDERATIONS REGARDING STING TREATMENT

Although many injuries caused by lionfish can be non-life threatening, some injuries can develop into serious problems. Therefore, it is recommended that all lionfish injuries receive medical treatment by a physician as soon as possible. First Responders should be trained and equipped in the treatment and management of lionfish punctures and envenomation.

Training of hospital personnel and first responders will be a recommendation presented to the appropriate organizations on the island to ensure that appropriate treatment is administered. Incident data logging protocols should include envenomation events. Forms to be filled out should be considered for envenomation data logging. For Bermuda, the “appropriate authorities” need to be determined and how the data will be used.