



Diving Safety Working Group (DSWG)

LIONFISH SYMPOSIUM

Underwater Intervention 2015

SAFETY FIRST, LAST, & ALWAYS

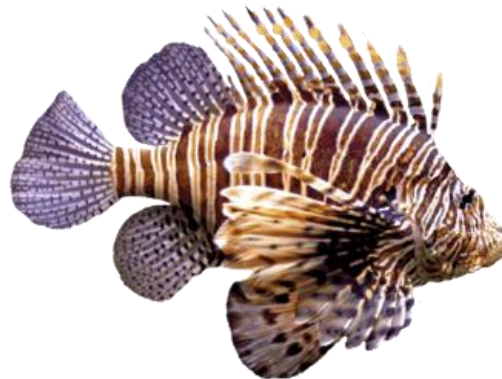
DIVING DIVISION
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INTRODUCTION & APPRECIATION



Appreciation to Diving Safety Working Group & UI 2015

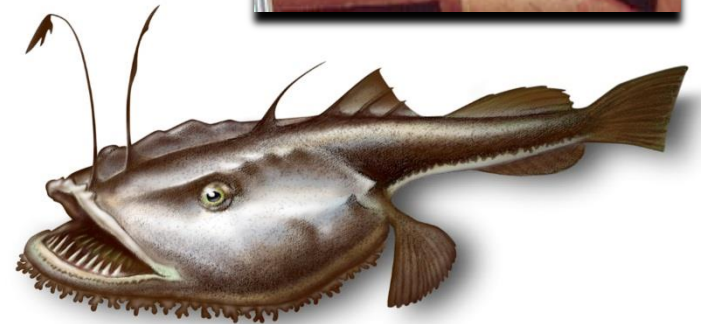
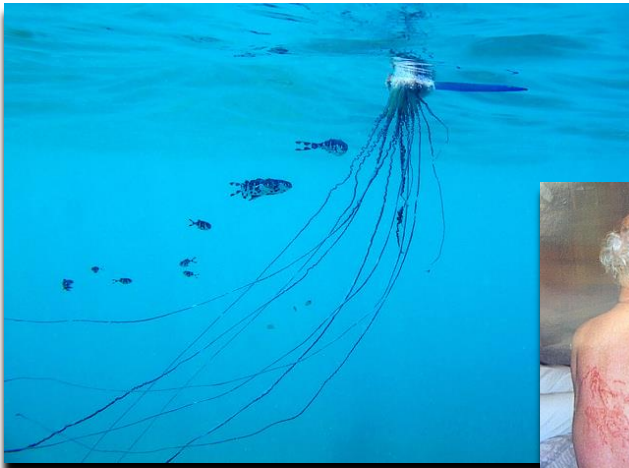
- **Mark Lonsdale**
 - *Diving Operations Manager*
- **Lionfish**



“DENIZENS OF THE DEEP”

SOME MYTHICAL – SOME REAL

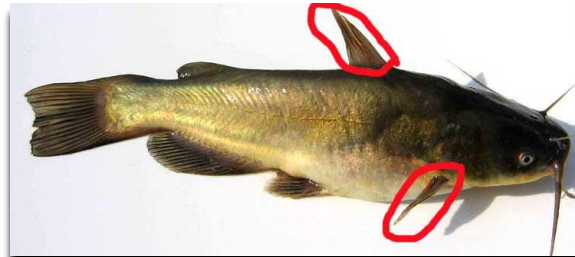
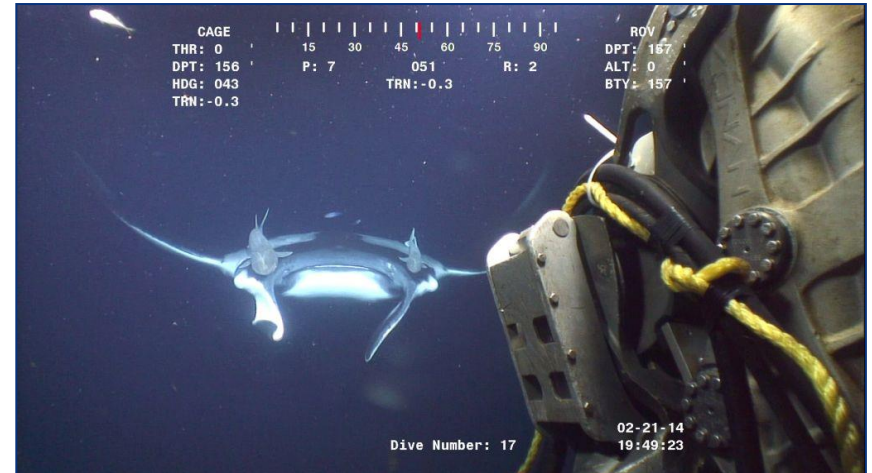
- Giant octopus
- Great white sharks
“Jaws”
- Conger eels
- Monk fish
- Portuguese Man of War



HAZARDOUS MARINE LIFE

OFFSHORE & INLAND DIVING

- Lionfish / Stonefish
- Moray eels
- Stingrays
- Manta rays
- Alligators
- Catfish barbs
- Fire coral
- Sea urchins
- Bristle worms
- Crown of Thorns

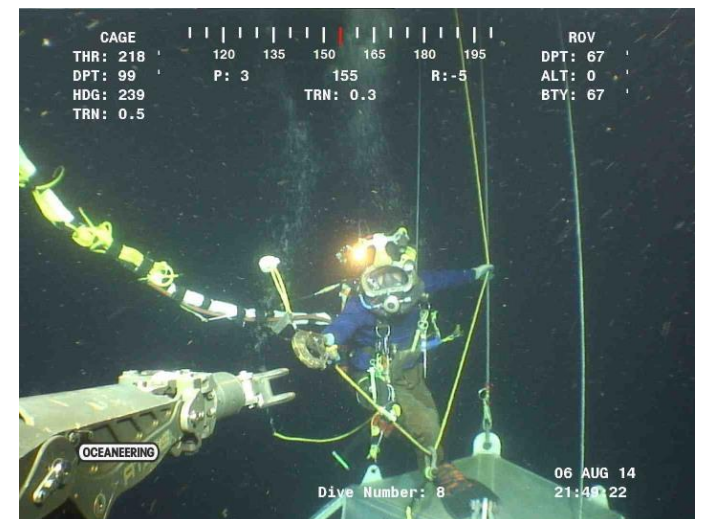
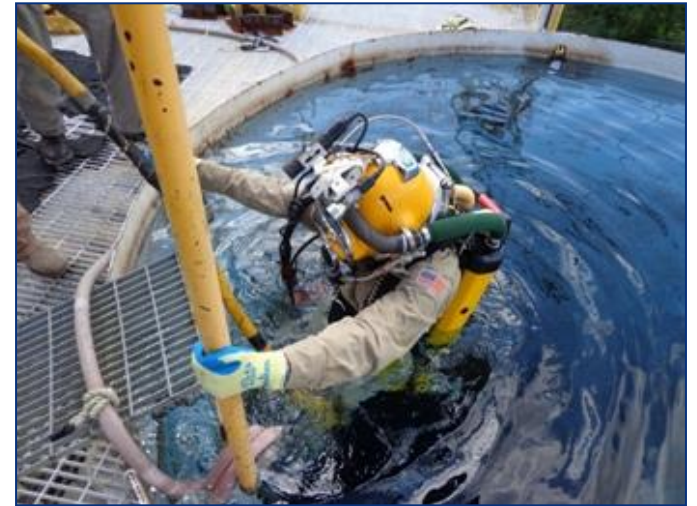


GOM DIVING INDUSTRY'S WELL DEVELOPED SAFETY CULTURE

“Safety First – Last – Always”



BASIC U/W PPE w/ ATLAS KEVLAR GLOVES



GLOVE MATRIX (2014):

Atlas Kevlar KV300 CE & ANSI certified as **Level 4** puncture resistance



USE THE RIGHT GLOVES FOR THE JOB!



GRIT BLASTING GLOVE

Use for handling blasting sand and when grit blasting during cleaning operations. These gloves provide thick protection and are used when working in heavy marine growth or if additional protection is needed. May also be used for underwater burning applications.



BLUETTE UNDERWATER BURNING/WELDING GLOVES

These gloves are to be used over the yellow latex gloves in underwater burning applications and may also be used in wet welding applications. DO NOT USE for grit blasting or subsea cleaning operations.



KEVLAR DIVING GLOVES

To be used for general diving operations. Tenders should use these while tending a hose or working with wet equipment on deck. These gloves may also be used over the yellow latex gloves for wet welding applications.



YELLOW LATEX GLOVES

Wear these gloves under the burning / welding gloves to protect from electrical shock. They should also be worn under the diving gloves in wet welding applications.



COWHIDE LEATHER GLOVES (Leather Driving Gloves)

These are wrist length protective gloves used topside while rigging or for handling sharp materials, wire rope, steel, etc. DO NOT USE for topside burning and welding applications.



LEATHER WELDING / BURNING GLOVES

These gloves have long cuffs to protect the wrists and lower forearms. Use these gloves for topside burning and welding applications or for subsea welding inside the habitats. These gloves are not designed for rigging.



Item No.	Size	Packaging	Case lbs
KV300-07	Small	12 dozen per case	38
KV300-08	Medium		40
KV300-09	Large		44
KV300-10	X-Large		48



EN 388



Abrasion

0 1 2 **3** 4

Tear

0 1 2 3 **4**

Blade Cut

0 1 2 3 **4** 5 0 1 2 3 **4**

Puncture

ANSI/ISEA 105-2005 Performance

Abrasion Resistance

0 1 2 3 **4** 5 6

Cut Resistance

0 1 2 **3** 4 5

Puncture Resistance

0 1 2 3 **4** 5

REALITY FOR THE WORKING DIVER

Often: *Limited Visibility – Limited Peripheral Vision – Often at Night – Focused on the Task – Climbing the Structure*



DANGERS FOR THE WORKING DIVER

1. Low to Zero Visibility
2. Lionfish gravitating to structures, pipelines, and underwater debris (artificial reef)
3. Reaching under objects, debris, pipes, etc
4. Debris Clearing / Scrapping on bottom
5. Climbing the structure / Reaching up to the next elevation
6. Lionfish are unafraid of divers and territorial
7. Spines will penetrate steel-toed rubber boots, wetsuits, coveralls, and all work gloves currently in use



INVASION OF THE LIONFISH: 2009-2013



the **Lionfish**

Diet: Carnivore
Origin: Pacific Ocean
Lifespan: 10-18 Years
Colors: Red, White, Black, Brown, Orange
Habitat: Tropical Reefs & Rocky Crevices

lionfishhunter.com



LIONFISH OBSERVATIONS

- Inspection campaign on the ***Ocean Quest*** in the Main Pass and South Pass fields (July 2014)
- “We see approximately 20 lionfish on every platform; 4 to 5 on every elevation” – *Oceaneering Diving Supervisor*
 - *Commonly at the ± 100 fsw elevations*

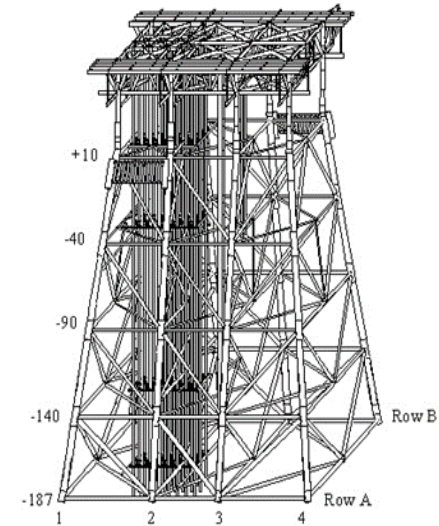


Figure 1 South Pass 60 D Platform

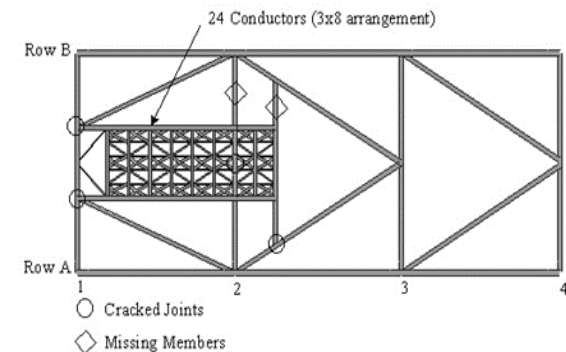
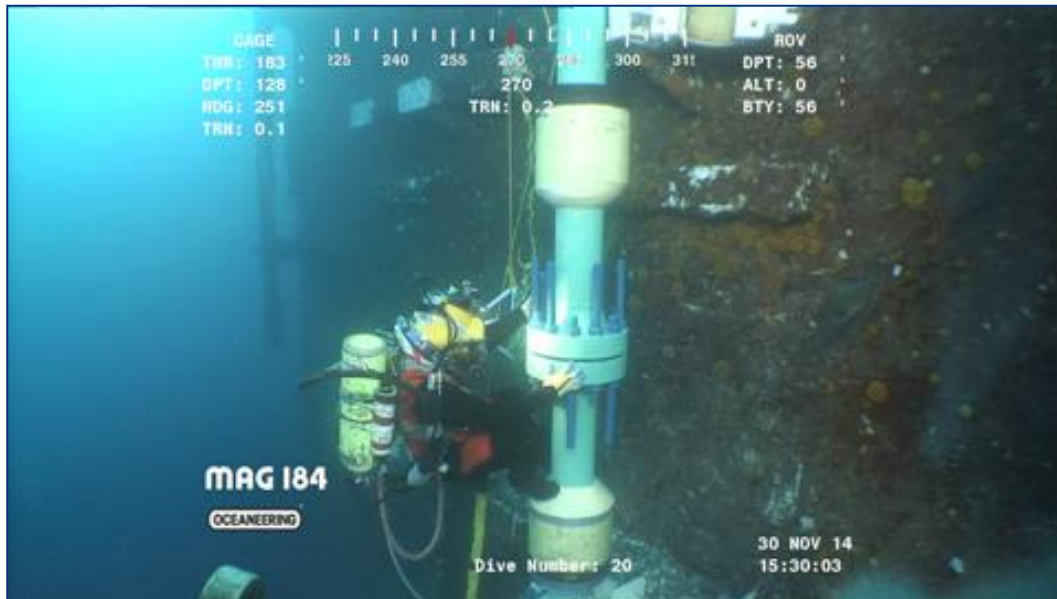
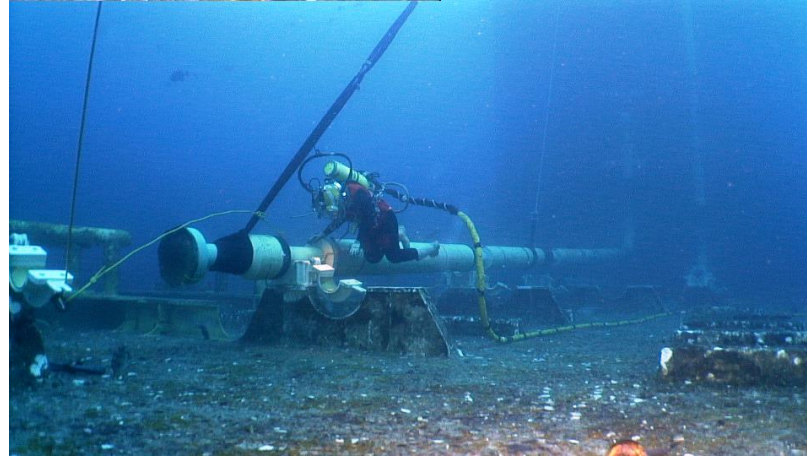


Figure 2 -40 ft Conductor Tray Framing

DEEP WATER INSTALLATIONS



***“Not uncommon to see lionfish at 330 feet and have been seen down to 1,000 feet”
(NOAA report)***

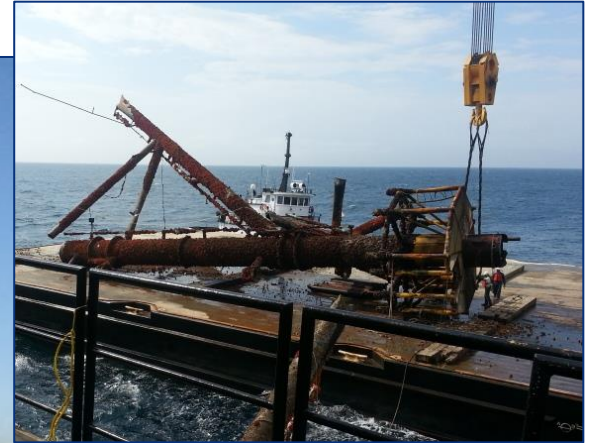
WELDING & BURNING

Lionfish are not aggressive but they appear to be territorial so will seldom move away more than a foot or two



INCIDENTS: Lionfish stings on the Liftboat 7/25 & 7/30 – 2014

Scrapping work



INCIDENT #1:

“Lionfish Sting” - Night 7.25.14



- Diver wearing 3mm wetsuit, denim jeans, and thick welder's shirt, stung during dive on 100-foot elevation
- Vis was 10'-15' but did not see what stung him
- Reported to topside at 2nd water stop: 80 fsw
- Pain was at a “7” in the water
- Treated in chamber with hot water and Benadryl; Pain at a “3” upon surfacing (23:34)
- Sunday: Increased swelling and pain; brought to beach 7.27.14 to see Doc Alleman
- Give prescription meds & “no dive” status
- RTW: **8.5.14**



INCIDENT #2: “Lion Fish Sting” - 7.30.14

Supervisor's Report:

“While on a gas dive the diver was scrapping after the platform had been removed.

Picking up a piece of debris he felt a puncture in his right palm. Two minutes later he reported throbbing in the hand.

Dive was aborted.

Dr. Serio called. Advised hot water and Benadryl when the diver reached surface

Doctor requested diver be brought to the beach

RTW: **8-14-14**



Email to all Diving Supervisors:

Recommendations to Prevent Reoccurrence Offshore



From Diving Operations: With two Lionfish stings within 5 days of each other, we need to be doing something different:

1. Stress the importance of being **doubly vigilant** underwater in Safety Meetings and Pre-dive Briefs
2. Do not reach under debris without first **visually checking or probing with rig axe**
3. Wearing the most **puncture resistant gloves** you have. We realize that there is no glove that is totally spine resistant, but consider using heavy welding gloves with gauntlets. Add layers of duct tape if that helps.

If you have other ideas, please share them with us. If there is anything you need from Diving Operations just ask. We are here to support you.

DIVING OPERATIONS SUPPORT



Hot Requisition:

- Additional Tillman Welding Gloves
- Additional Bib Coveralls
- Additional PVC gloves – 14”



Additional Requirements:

- Lionfish hazards to be addressed in Safety Meetings
- Lionfish hazards to be addressed in JSEAs
- Lionfish hazards to be addressed at OII Supervisor, Diver, and Tender monthly meetings

LIONFISH STING TREATMENT

- Hot water (110-114 F) and Benadryl (can use hot compresses in the chamber)
- In the several hundred cases the Oil hyperbaric physician, Dr. Joe Serio, has treated, **only three** had become infected
- **Lesson Learned:** In addition to hot water and Benadryl, we have advised our personnel to also clean and treat the puncture wound for **potential infection**, as per doctor recommendations
- Monitor for infection. (Recommended to have Doxycycline available)

Note: Diving companies and divers should consult with their own hyperbaric physicians for recommendations on treatment and medications



ROOT CAUSE ANALYSIS (1)

Causal Factor 1: Wearing standard Kevlar diving gloves

Root Causes 1: Human Performance Difficulty;
Management Systems; Standards, Policies, or
Admin Controls (SPAC) - Not strict enough

- Corrective Action 1: **Research, test, and implement use of lionfish spine resistant gloves**



Root Causes 2: Human Performance Difficulty;
Management Systems; Standards, Policies, or
Admin Controls (SPAC) – Confusing or Incomplete

- Corrective Action 2: **Implement new gloves into the Oil Glove Matrix** (“Hypodermic resistant”)



HYPODERMIC RESISTANT GLOVES



SharpsMaster II® 9014

- Highest needlestick resistance available provided by the layering of SuperFabric® brand material
- Tested using actual 25 gauge needles (modified ASTM 1342-05 test)
- Highest level of cut resistance on noted enhanced areas, exceeds ISEA/CE **level 5**
- Single-glove needle solution with incredible dexterity and comfort
- Wrinkle rubber palm coating with Actifresh™ anti-microbial treatment
- Sharpsmaster II® lionfish gloves were featured in the recent Lionfish Derby to protect researchers and fishermen against poisonous lionfish spines.



2015 GLOVE MATRIX W/ LIONFISH HYPODERMIC RESISTANT GLOVES



USE THE RIGHT GLOVES FOR THE JOB !

OCEANEERING

Grit Blasting Glove

Use for handling blasting sand and when grit blasting during cleaning operations. These gloves provide thick protection and are used when working in heavy marine growth or if additional protection is needed. May also be used for underwater burning applications.



Cowhide Leather Gloves (Leather Driving Gloves)

These are wrist length protective gloves used topside while rigging or for handling sharp materials, wire rope, steel, etc. DO NOT USE for topside burning and welding applications.



Maxiflex Gloves

To be used for general work on deck while working with wet equipment or onshore general purpose.



Leather Welding/ Gloves

These gloves have long cuffs to protect the wrists and lower forearms. Use these gloves for topside burning and welding applications or for subsea welding inside the habitats. These gloves are not designed for rigging



Hypodermic (Puncture) Resistant Diving Gloves

To be used for general diving operations, to prevent injuries due to Lionfish and other marine life stings, scrapes punctures and abrasions. These gloves may also be used over the yellow latex gloves.

Bluette Underwater Burning/Welding Gloves

These gloves are to be used over the yellow latex gloves in underwater burning and wet welding applications. DO NOT USE for grit blasting or subsea cleaning operations

Yellow Latex Gloves

Wear these gloves under the burning/welding gloves to protect from electrical shock. They should also be worn under the diving gloves in wet welding application.

Kevlar Diving Gloves

To be used for general diving operations where Lionfish and other invasive marine life are not present. Tenders should use these while tending a hose or working with wet equipment on deck.



ROOT CAUSE ANALYSIS (2)



Casual Factor 2: Used hot water and Benadryl as per protocol

Root Causes 2: Human Performance Difficulty; Management Systems; Standards, Policies, or Admin Controls (SPAC) – Confusing or Incomplete

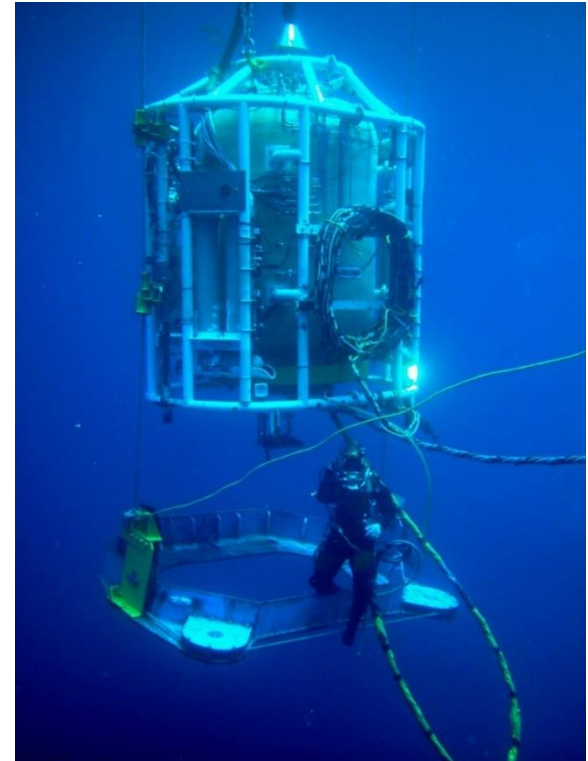
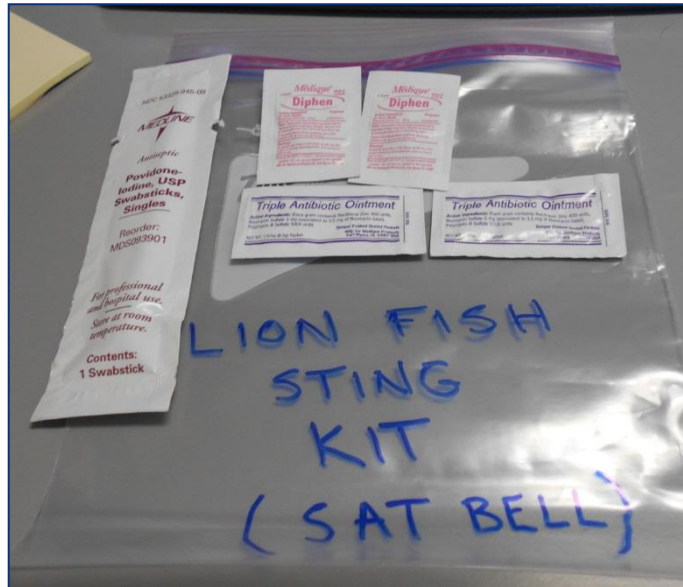
- Corrective Action: **Request an updated lionfish protocol, including wound care, from hyperbaric physician.**

Note: Diving companies and divers should consult with their own hyperbaric physicians for recommendations on treatment and medications



PUNCTURE WOUND TREATMENT FOR BELL/SAT

- Triple Antibiotic Ointment (small single use packets)
- Diphen (Benadryl)
- Providone Iodine Swabsticks (Betadine)
- Sterile dressing or Band-Aids to cover puncture wound



Note: Diving companies and divers should consult with their own hyperbaric physicians for recommendations on treatment and medications

CONCERNS EXPRESSED IN THE INDUSTRY

- In most cases the divers do not see the lionfish so they are difficult to avoid
- If we recommended spearing the fish then we create the added risk to the divers of spear injuries
- There is a concern about public image and outrage over killing “pretty fish”
- Need for a national governmental campaign addressing lionfish as an invasive species that should be eradicated where possible (*NOAA awareness and reef programs*)



Not on MY Reef!



RECOMMENDATIONS

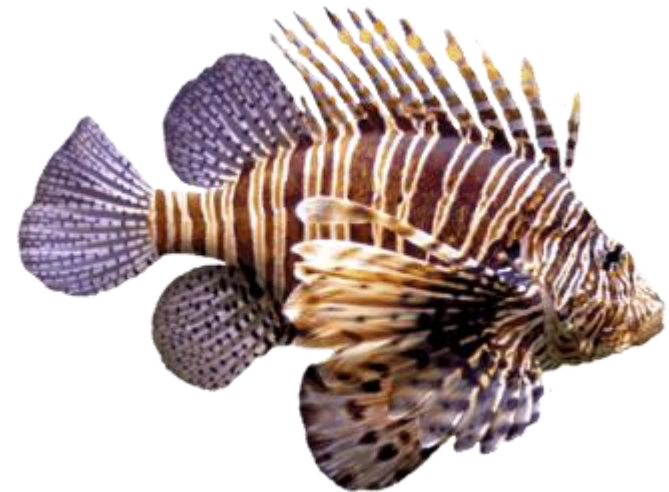
Add Lionfish and hazardous marine life to:

- Pre-job Risk Assessments
- HazID process
- Shift change Safety Meetings
- Diving JSAs / JSEAs
- Pre-dive Briefings & Toolbox Talks
- In-house training modules for tenders, divers, and supervisors
- Request sighting reports from your supervisors and divers



CONCLUSION

- Statistically, the probability of encounters with lionfish remains **high**, and will continue to grow; but the probability of infections and complications is **low**.
- **Lesson Learned:** Treat the puncture wounds for potential infection immediately



Note: Diving companies and divers should consult with their own hyperbaric physicians for recommendations on treatment and medications

END



QUESTIONS?



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