



The Lionfish Invasion



Florida Fish and Wildlife Conservation Commission
Division of Marine Fisheries Management

Lionfish

(Pterois volitans & P. miles)

- Tropical predatory fish from Indo-Pacific region
- Introduced by an aquarium release in 1980's
- Established in western Atlantic Ocean, Caribbean Sea, and Gulf of Mexico
- High reproductive output
- Voracious appetite
- Lack a natural, consistent control mechanism in invaded range
- Unique coloration – native predators do not recognize as prey
- Density and biomass exceed that in their native range



Marine Invasions

- 41 nonnative marine fishes in Florida, *only 5 have become established*
 - USGS non-indigenous aquatic species database 2019



- **Lionfish have become successfully established in nonnative range and are classified as the worst marine invasion to date**





Habitat Use

- Found on a variety of natural and artificial habitat, including mangrove, seagrass beds, estuaries, oil rigs, shipwrecks, etc.
- Depths range from 1 – 1000+ feet
- Can tolerate temperature as low as 50°F
- Wide salinity tolerance: estuarine (<4 ppt) to seawater (35 ppt)
- Have a high site fidelity
- Demersal species; commonly found under ledges, overhangs, and in crevices



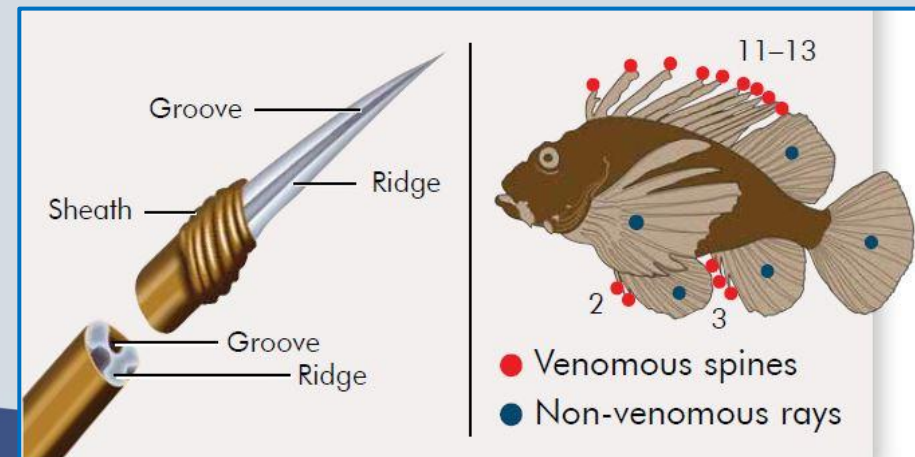
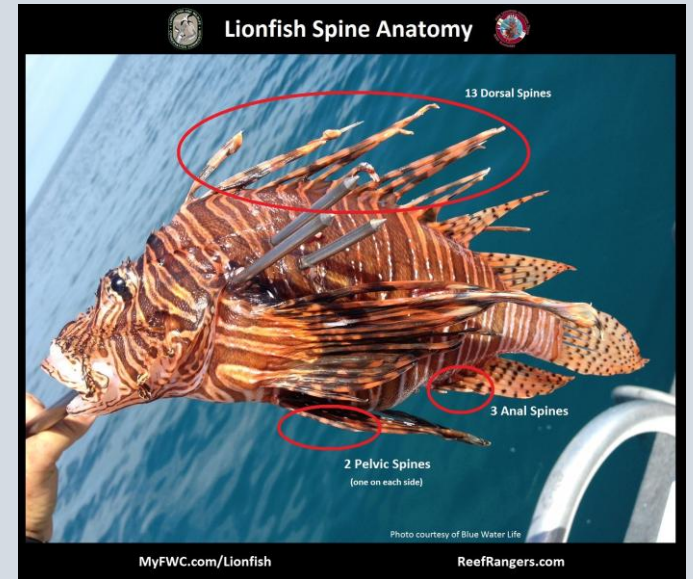
Lionfish Reproduction

- Reach sexual maturity within the first year
 - Compared to 5-8 years for many other reef fish
- Spawn average of 30,000 eggs
- Spawn frequently, every 2-4 days in warm months
- Eggs encased in a floating, gelatinous egg mass – travel great distances by wind/current



Venomous Spines

- 18 venomous spines
- Contains grooves (not hollow) that house venomous glandular tissue
- Neuromuscular toxin can cause pain, swelling, redness, tingling, numbness, dizziness, etc.
- Symptoms may vary depending on person and wound location
- No reported deaths
- Treatment: apply heat
 - Soak in hot water
 - Apply heat packs
 - Seek medical attention



Venomous vs. Poisonous

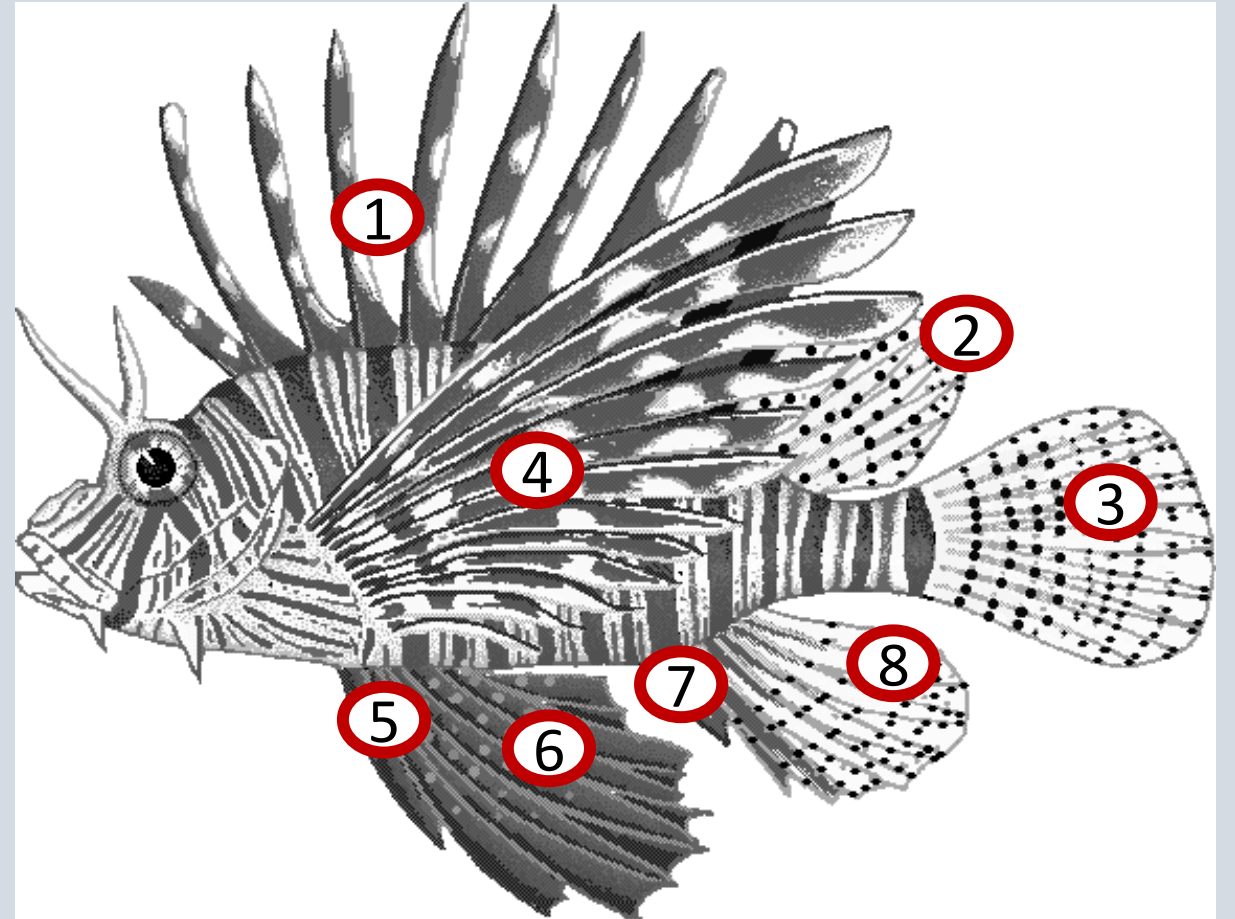
- Poisonous – a toxin ingested, inhaled, or absorbed through skin
- Venomous – a venom injected through a bite or sting
- Lionfish are venomous NOT poisonous



Anatomical Terms

Dorsal

1. Dorsal Spines
2. Dorsal Fin
3. Caudal Fin
4. Pectoral Fin
5. Pelvic Spines
6. Pelvic Fin
7. Anal Spines
8. Anal Fin

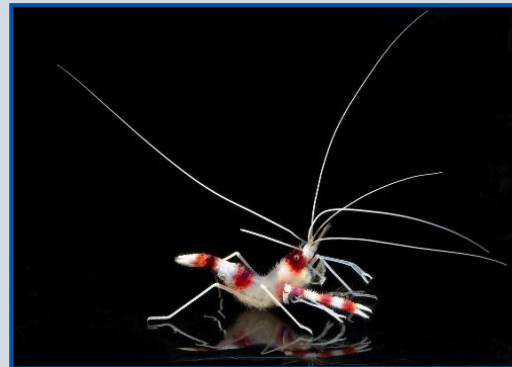


Ventral



Lionfish Diet

- Can consume prey $\frac{1}{2}$ their body size
- Fan out pectoral fins to corner their prey
- Economically important species:
 - Fish: Groupers, snappers, baitfish
 - Invertebrates: shrimp, crabs, lobster
- Ecologically important species:
 - Cleaners: maintain health of reef fish by removing parasites
 - Grazers: maintain health of coral reefs by consuming algae



Effects on Native Ecosystems



- Opportunistic generalists
 - Consume over 90 different species of native fish and invertebrate species
- Reduce recruitment and prey biomass
- Absence of natural control mechanism
- Non-consumptive effects:
 - Competition with larger predators for habitat and prey
 - Habitat degradation
- **Humans are only known predator**



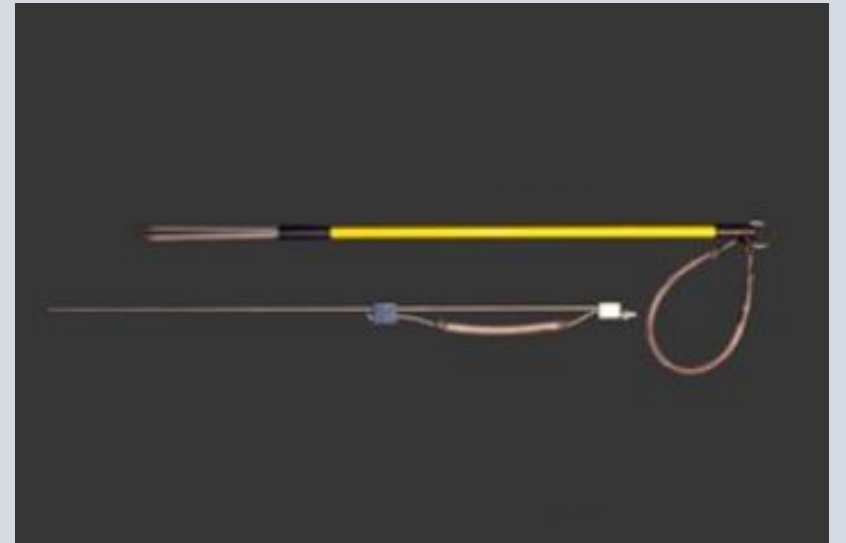
Harvesting Equipment

- Pole spears, Hawaiian slings, hand-held nets, and other lionfish-specific devices
- Puncture-proof container, ZooKeeper Lionfish Containment Unit, or dry bag to protect diver from spines
- Puncture-resistant gloves



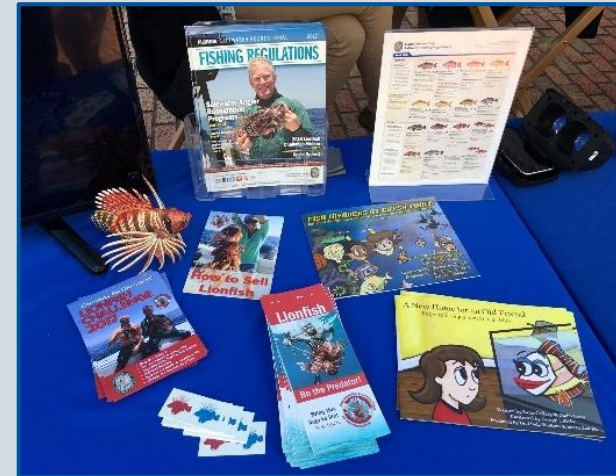
Regulatory Revisions

- Recreational fishing license is not required
- No size or bag limit
- Special permits offered for areas where spearfishing is prohibited
- Divers using rebreathers are permitted to spear and remove lionfish



Programs about Lionfish

- **Agency goals:** Minimize negative impacts to human health and safety, the environment, and the economy
 - Diver programs:
 - Rules that make it easy to harvest lionfish
 - Support lionfish tournaments
 - Encourage divers to harvest lionfish
 - Research new ways to catch lionfish
 - Education programs:
 - Workshops and school dissections
 - Traveling “Be the Predator” outreach booth
 - Lionfish Removal and Awareness Day
 - Promote consumption and commercial market



From 2014-2024 FWC has tracked the removal of over 1,000,000 lionfish from Florida waters!

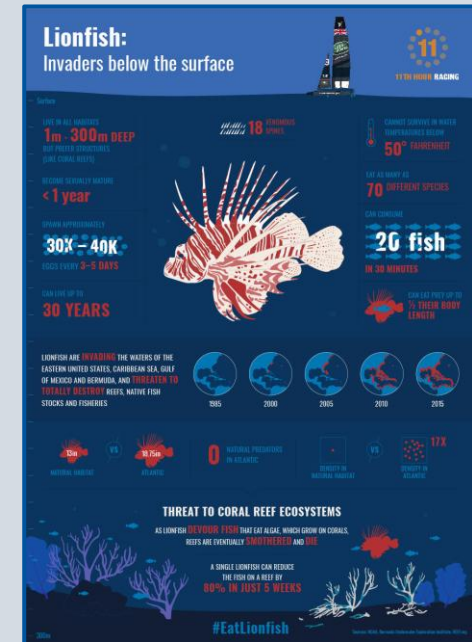
“Be the Predator” Outreach Booth

- Travel all over the state of Florida
- Visit schools, festivals, tournaments
- Provide lionfish information to the public
 - Brochures, books, pencils, etc.



Classroom Invasion

- Teacher workshops
- Dissections
- Educational resources
 - Modules
 - Materials
 - Activities



Activity Books & Coloring Pages

- [Kids Activity Book](#)
- [Currents Maze](#)
- [Diver Maze Activity](#)
- [Lionfish Activity Book](#)

Presentations & Lesson Plans

- [Lesson Plan and Overview](#)
- [Lionfish Presentation - VIDEO](#)
- [Lionfish Presentation - PDF](#)
- [Notes Page for Teachers](#)
- [Invasion! Activity Guide](#)
- [Lionfish Food Web Activity Guide](#)
- [Lionfish Presentation Worksheet](#)

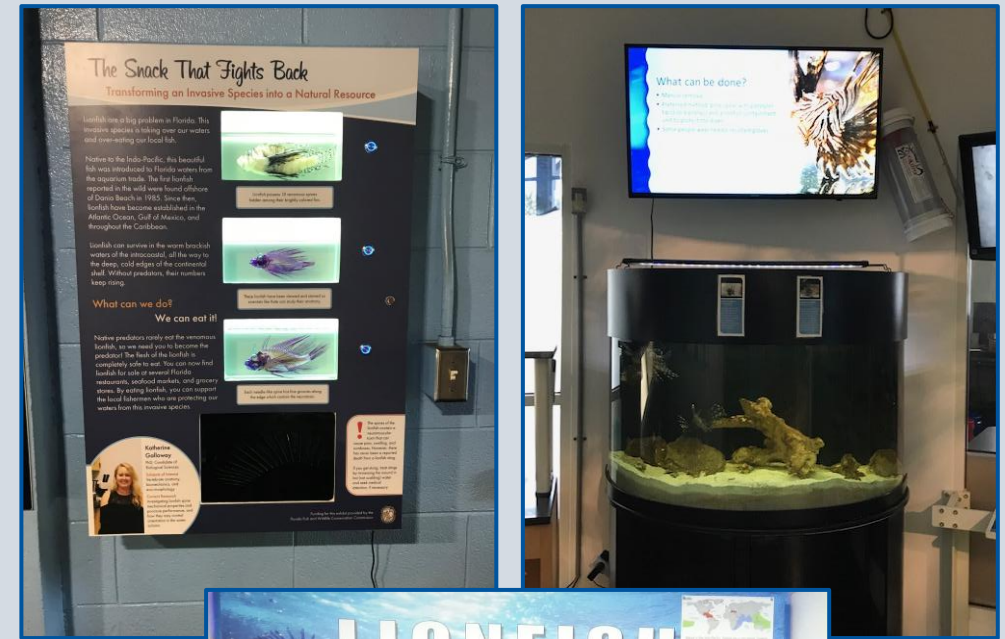
Videos

- [Guy Harvey Lionfish Video](#)
- [Lionfish Dissection Video](#)



Lionfish Education Exhibit Program

- Public educational lionfish display
- Aquariums and display exhibits
- Videos & presentations
- Funds provided by FWC
- Information supplied by FWC



Tournament Assistance Program

- Raises public awareness, increases local removals and increases tracking of harvest
- Increase participation in lionfish removals through outreach efforts and support of lionfish tournaments
- Tournaments with a lionfish category: \$500
- Lionfish specific-tournaments: \$1000 - \$2400



Lionfish Removal and Awareness Day

- May 17 – 18, 2025
- HarborWalk Village in Destin, FL
- Lionfish dishes
- Conservation & art booths
- Family activities
- Restaurant Week
- Emerald Coast Open Tournament
- May 16 – 18, 2021
- Categories
 - Most Lionfish
 - Smallest Lionfish
 - Largest Lionfish



2025 Lionfish Challenge

- May 24 – Sept. 14, 2025
- Incentive to encourage divers to harvest lionfish
- Recreational & Commercial categories
- Prize tiers
- Crowned Lionfish King/Queen or Commercial Champion
- 2024 removed over 31,500 lionfish



For Challenge information visit www.FWCReefRangers.com

Contact Information

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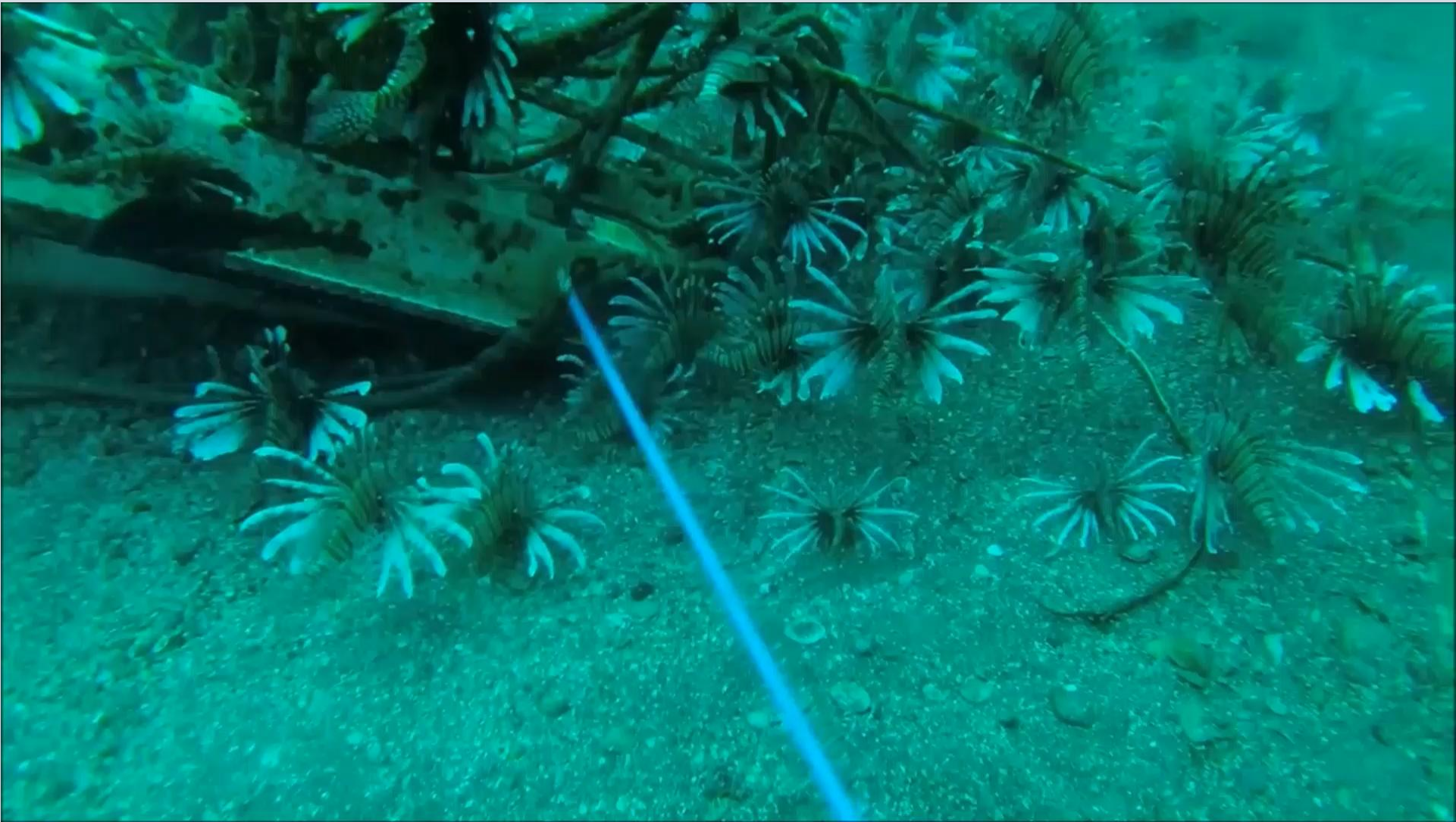
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www.FWCReefRangers.com

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Questions?

Video and Diver: Meaghan Faletti

