Lionfish International brief to Gulf Management Council Key West

Harvesting Lionfish with NOAA and Gulf Management approved Gear in the Gulf of Mexico

Presented by:

Lionfish International, LLC

Quick history 20 months

Nov 16- Jan 17 commence Study of Lionfish Problem

- January 17 Formed Lionfish team
- February started design and engineering of U/W Equip
- March 17 started compliance with Magnuson Steffens ACT
- April 17 Formed Lionfish International Florida LLC
- June 17 Ordered ROV
- August 25, 17 Received ROV

Testing begins

- Sept 25, 17 Pool and Dock testing began
- 2 Oct Briefed Gulf Management Council Biloxi
- Received permission to start testing in open waters.

Proof of Concept Testing

- December 2, 17, Open water Testing
- 21 January 18, Proof of concept Testing all systems
- Proof of concept Testing continues.
- Improving equipment.

Tested Surface Vessels

- Custom Courtney Ross
- 54 feet overall length, 15 foot beam
- Fiberglass construction
- 740 hp Detroit Diesel engine.
- Chart plotters
- Vessel Monitoring System
- Autopilot
- Dual ship-to-shore radios (VHF and single-side band)
- Dual GPS receivers
- Weather Radar
- EPIRB radio beacon
- SAT Phone
- Davit

- Stamas 40 ft. vessel
- Power, twin Suzuki 350 A.
- 6.5 Kv generator
- Electronics: Radar, chart plotter, GPS, EPIRB, Sat phone, AIS, Sat Phone
- Dynamic Positioning Systems using joy stick control and bow thruster
- 1200 lb. boom for launch & recovery
- 2000 lb. chilling box for catch
- Davit

ROV Lionfish Harvester - components

Umbilical

Copper 300 m standard length

Neutral in freshwater

Slightly buoyant in saltwater

Control station

Open architecture NMEA 2000 allows integration of sensors

Electronic compass, Doppler and GPS to navigate and map

Precise identification and location of lionfish

Cameras & acoustics

Camera tilt lighting Sony HD camera (1920 x 1080)

Rear auxiliary camera

Front facing LED lights

Flotation frame auto functions

Accomplishments to Date

- **Hardware designed and in proof of concept testing by LFI team. Have repaired all mechanical discrepancies.**
- **Software designed and being tested. Six months of testing and repairs.**
- **Gear Approved by NOAA SE Fisheries, Gulf Management Council.**
- **Have conducted 35 days and nights at sea testing 40 ft boat and 54 ft boat with all gear.**
- **Seven personnel or two complete trained crews on systems and Standard Operational Procedures.**

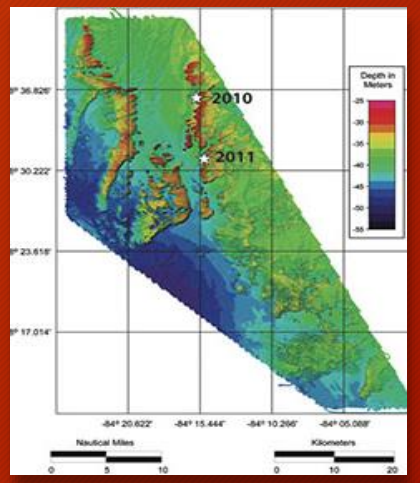
Areas in which the gear will be harvested

- LFI will conduct harvesting operations in the entire Gulf of Mexico. Starting in the Florida Middle Grounds.

- LFI intends to harvest lionfish 12 months a year, projecting 200 days per year per vessel.

- LFI began operations with 1 vessel, with projections to increase to 10 vessels within 3 years.

- Using multiple testing areas in the GOM. Florida Middle Grounds, Elbow, Pipeline, Panhandle to mention a few



Problems Encountered

We have not captured a single Lionfish since the beginning of our proof of concept started testing January 18 . We have overcome a great many obstacles, design deficiencies, software deficiencies and unusual bad weather the West Coast of Florida has been suffering .

We have tested all equipment and made many improvements in house with improved designs. We have had extensive training on the equipment in all conditions. Have trained seven personal on the use of the ROV, Pre-dive Post dive procedures , underwater operations of the ROV, tending the ROV during operations, launching and recovering of the ROV , maintenance and repair. Started logistics and maintenance

Multiple problems with software costing multiple operational days. Thirty eight up dated repairs to soft ware Redesigning of operations the Slurper was not adequately designed and tested to capture the lionfish.

Modifications

The team is making changes to the harvesting system in order to hold the ROV and maintain position and attitude while applying suction, and, at the same time, hold the targeted fish from swimming away. We are addressing the spatial stability of the ROV while activating the slurper device, either actively or passively, by the suction of the slurper."

Our Engineers are also redesigning the slurper for a more robust venturi effect and hydrodynamic efficiency within the slurper pipe. This may mean using a larger thruster for more power and a slight modification to the existing slurper. We will have the results within two weeks. We have six new slurper muzzles to adapt to different bottom types protecting the natural bottom.

The team is also designing a fast-acting piston to create suction to engulf the fish very similar to a slurp Gun . Using this method to create suction will create a very fast response time and not create the thrust we are seeing moving the vehicle forward.

Accomplishments

Tested all surface vessels

Tested all subsurface equipment

Tested all electronics

Tested equipment in different depths, underwater currents, water clarity and sea conditions, weather conditions

Tested personnel in use of this special equipment

Making modifications to equipment

Questions?

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