



# LIONFISH INTERNATIONAL, LLC

06c

1709 SE 26<sup>th</sup> Terrace, Cape Coral, FL 33904

(850) 630-9801

August 30, 2017

006644 AUG 20.17

Mr. Doug Gregory, Executive Director  
Gulf of Mexico Fishery Management Council  
2203 North Lois Avenue, Suite 1100  
Tampa, Florida 33607

**Reference:** This letter serves as notification of an intent to use a new gear type in the Gulf of Mexico to collect lionfish.

Dear Mr. Gregory,

As CEO of Lionfish International LLC (LFI), I am submitting this notice with a request for a signed return receipt which is date stamped to serve as adequate evidence of the date that the notification was received by the Gulf of Mexico Fishery Management Council to establish the beginning of the 90-day notification period.

This notice is based on my understanding of the following requirements:

## **Guidelines and procedures for determining new fisheries and gear.**

(a) *General.* Section 305(a) of the Magnuson-Stevens Act requires the Secretary to prepare a list of all fisheries under the authority of each Council, or the Director in the case of Atlantic highly migratory species, and all gear used in such fisheries. This section contains guidelines in paragraph (b) for determining when fishing gear or a fishery is sufficiently different from those listed in §600.725(v) as to require notification of a Council or the Director to use the gear or participate in the unlisted fishery. This section also contains procedures in paragraph (c) for notification of a Council or the Director of potentially new fisheries or gear, and for amending the list of fisheries and gear.

(b) *Guidelines.* The following guidance establishes the basis for determining when fishing gear or a fishery is sufficiently different from those listed to require notification of the LF Council or the Director.

LFI submits this notification with the following **Proprietary Notice:**

***This data shall not be disclosed outside the Government and shall not be duplicated, used, or disclosed in whole or in part for any purpose other than evaluation of this proposal.***



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## **A. Name, address, and telephone number of the person submitting the notification.**

Name: Bruce McCormack, CEO, Lionfish International, LLC (LFI)

Address: 1709 SE 26th Terrace, Cape Coral, Florida 33904

Phone: (850) 630- 9801

E-mail: bmccormack@guscenter.com

## **B. Description of the gear.**

LFI's harvesting technique consists of the following system:

(A) Harvesting vessel – 40 ft. specially designed Stamas fishing vessel.

(B) ROV – modified Deep Ocean Engineering T-5. Including:

- i. Umbilical
- ii. Control station
- iii. Cameras and acoustics
- iv. Slurper
- v. Corral

(C) Launch and recovery system

## **C. The fishery or fisheries in which the gear will be used.**

There is no directed lionfish fishery in the United States. Landings come from bycatch in the commercial spiny lobster trap fishery, minimal commercial spearing and small spearfishing derbies held around Florida to help control the species.

LFI intends to harvest lionfish throughout the Gulf of Mexico for commercial sale. Information obtained will provide different data points including: local densities of lionfish, currents, temperature, depth, GPS and Doppler navigation. Additional biomass will be identified in video. This information will be available to support stock assessments of important reef fish species, as well as provide geographic information system (GIS) and benthic-habitat information over the entire harvesting area.

## **D. A diagram and/or photograph of the gear, as well as any specifications and dimensions necessary to define the gear.**

(A) Harvesting vessel – 40 ft. specially designed Stamas Fishing Vessel

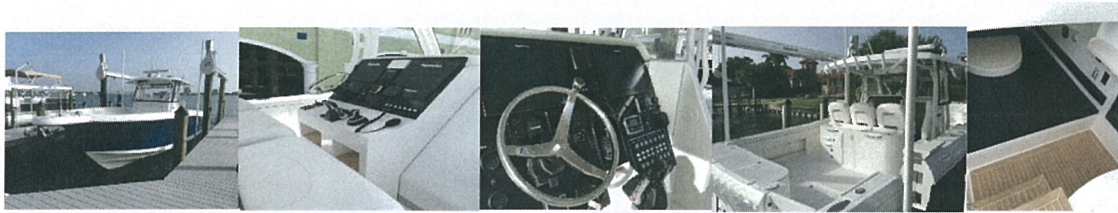




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- New construction 40 ft. Harvest vessel.
- Power, Twin Suzuki 350 A, 6.5 Kv Generator.
- Raymarine Gs Glass Bridge Radar, Chart Plotter, GPS, EPIRB, Sat Phone, AIS
- Dynamic Positioning Systems for precise navigation location when harvesting, using Teleflex joy stick control and bow thruster.
- Special handling gear, 1200 lb. boom for launch and recovery, 36 in Open Transom for launch and recovery of the ROV.
- 2000 lb. chilling box for catch.
- Special Lights and day shapes for fishing.

(B) ROV – modified Deep Ocean Engineering T-5. Including:



## ROV Lionfish Harvester –

designed and built for harvesting, monitoring and providing research of lionfish.

Weight in Air: 39.5 kg (87 lbs.)

Length: 889 mm (35 in)

Width: 559 mm (22 in)

Height: 406 mm (16 in)

Forward Thrust: 63.0kgf (139 lb.)

Depth rating of 300 meters (1000 ft.) 500 meters optional

Lateral Thrust: 14.0kgf (30 lb.)

Vertical Thrust: 17.0kgf (37 lb.)

Magnetically-coupled brushless thrusters

Speed at Surface: 4.0 knots

Configuration: 4 vectored horizontal, 1 vertical

### i. Umbilical

Copper 300m standard length - neutral in freshwater and slightly buoyant in saltwater



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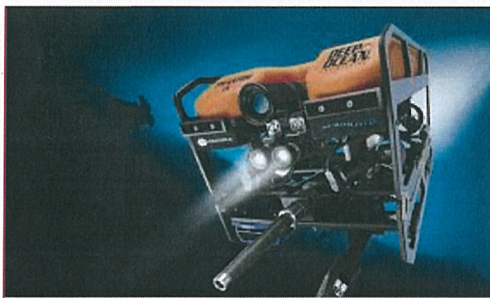
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## ii. Control station



Open Architecture NMEA 2000 is a marine communications standard used for connecting marine sensors and display units. It allows integration of a wide variety of sensors, electronic compass for heading accuracy, depth sensor, current sensor, temperature sensor, precise navigation using Doppler, inertial and GPS for navigation and mapping, ahead looking cameras, sonars, and sensors for precise identification of the lionfish for harvesting.

## iii. Cameras and Acoustics



Camera Tilt Lighting Sony HD camera standard (1920x1080)

Rear/auxiliary camera 30 x optical zooms 12 x digital zoom with image stabilization and horizontal field of view: 65° Lux: 1.4 capable of white balance and advanced image adjustments front mounted on mechanical tilt unit (+/-90°)

Front facing LED lights (6000 / 18,000 lumens standard)

Standard Flotation Frame Auto Functions - Accuracy neutrally buoyant in water - configurable flotation and ballast weights open frame design to easily add auxiliary sensors Heading, depth, trim (speed) +/-0.05° +/-0.25% FSS power universal input 90-250 VAC.





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## **Rendering of the lionfish Slurper with attached Corral**

The device is mounted beneath the ROV, with the cage extending off the back of the vehicle. It is designed to allow small reef fish, if caught, to escape through the 1.5-inch mesh.

### **iv. Slurper**

The capture device ("slurper") is constructed of readily available 6-inch PVC pipe and a 45-degree "wye" fitting. An ROV thruster provides high-speed waterflow in the direction of capture. The speed at which the water is moving invokes the Venturi effect to create a vacuum at the intake side of the slurper. The lionfish is then propelled through the tube and into the cage attached to the ROV.

### **v. Corral**

When the corral is full approximately 400 lbs. of lionfish the ROV brings the corral to the surface and ROV and Corral are brought onboard the harvesting vessel by the launch and recovery system where the corral hatch is opened and the lionfish emptied into the fish holds. After offloading the catch the ROV and corral are re-deployed to continue harvesting operations. This event happens every time the corral is full.

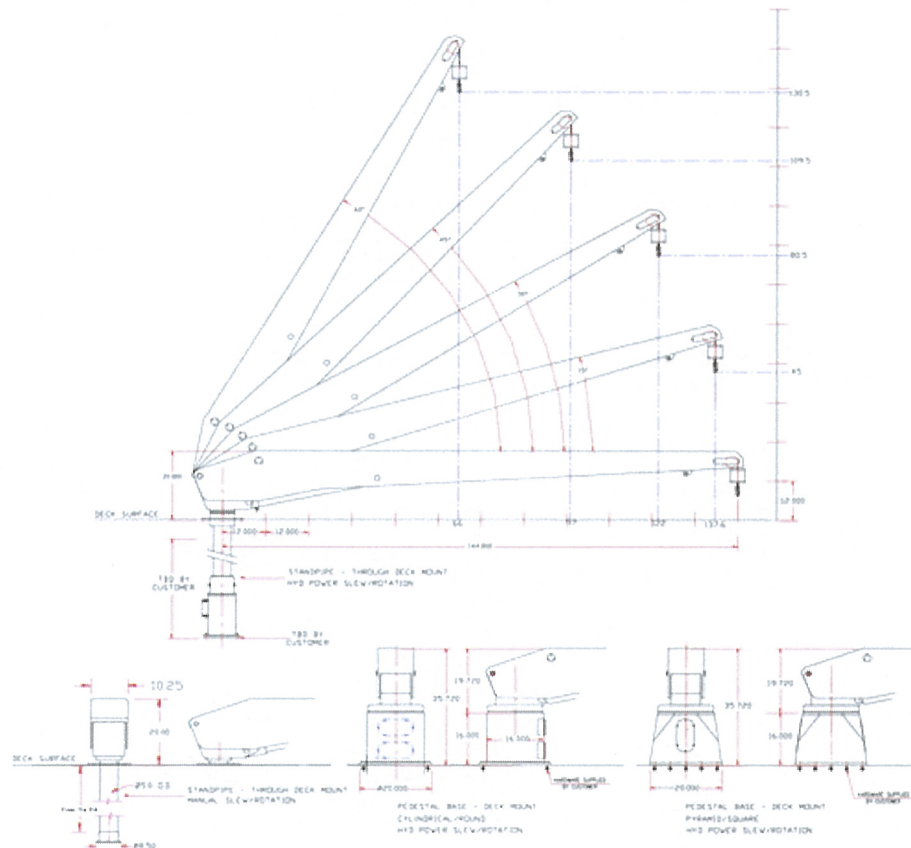


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## (C) Launch and recovery system



Mini Crane Electric Davit 800lb (362kg)

### E. The season(s) in which the gear will be fished.

We intend to harvest lionfish twelve months a year, projecting 200 days a year per boat, allowing for weather and other conditions beyond our control. LFI will begin operations with one vessel and projections to increase the number of vessels to ten within five years.

### F. The area(s) in which the gear will be fished.

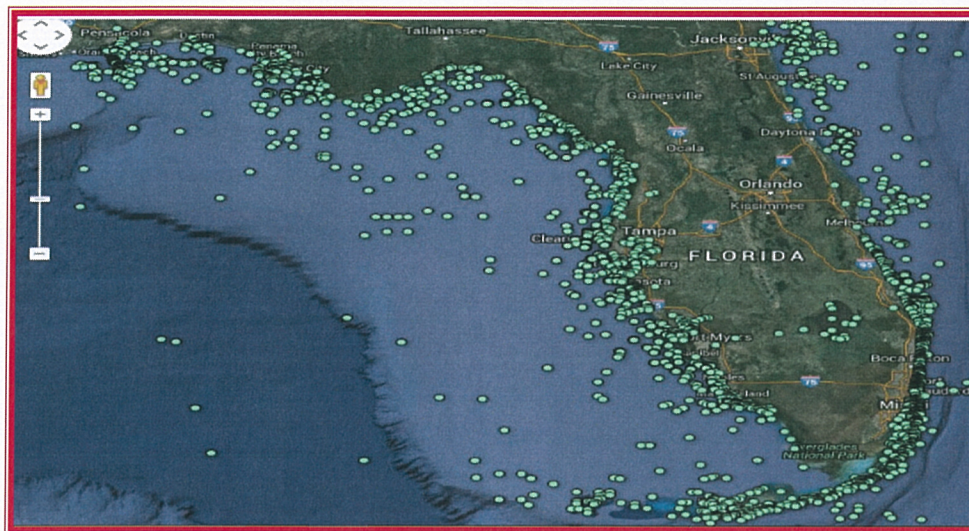




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FWC chart of Artificial Reef Locations, natural bottom, and plotted wrecks.

The LFI harvesting plan will include off shore Florida Straits to Dry Tortugas and the entire Gulf of Mexico. The initial harvesting operations will begin on the west coast of Florida, either the Panhandle of Florida, Mid Gulf Area (Tarpon Springs to St Petersburg Beach), or Southwest Florida (Ft. Meyers area). We are determining which areas to harvest based on many considerations such as time of year, weather conditions, the number of natural bottom, artificial reefs and bottom structures that hold lionfish. This will provide better information on when and where lionfish are harvested and monitored to help make better informed management decisions. We will develop a standard way to quantify populations across the entire Gulf of Mexico, including artificial reefs and other structures. LFI will develop a harvesting operations management model to merge the research efforts and derive a population estimate of lionfish.

All LFI vessels will be equipped with the same electronic systems for harvesting and data collection. The crew will be trained on using LFI standard operational procedures in accordance with our quality assurance systems in operating the vessel, harvesting, monitoring, and emergency procedures. On each vessel, the information received and distributed will be quantified for abundance of lionfish populations, and bottom types along vessel tracks. By integrating electronic monitoring with other data collection methods, we will increase cost-effectiveness, an important consideration for long-term 3-D monitoring and assessment.





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**G. The anticipated bycatch species associated with the gear, including protected species, such as marine mammals, sea turtles, sea birds, or species listed as endangered or threatened under the ESA.**

The harvesting gear is designed, and engineered to catch only lionfish. The operator identifies the lionfish by camera and activates a foot pedal to engage the slurping device that captures the identified lionfish and not harvest any other species or catch any species listed under ESA. The gear will release any small bycatch through 1.5-inch mesh as an excluder device in the design of the corral.

We do not anticipate any bycatch species associated with the gear, LFI Standard Operational Procedures call for keeping a vigilant eye out for protected species, moving the ROV away or recovering the vehicle until the area is clear from marine mammals, sea turtles, sea birds, or species listed as endangered or threatened under the ESA. We only anchor in extreme condition to protect the natural environments on the bottom.

**H. How the gear will be deployed and fished, including the portions of the marine environment where the gear will be deployed (surface, midwater, and near bottom).**

The harvesting vessel and ROV are designed to work together using advanced electronics and dynamic positioning systems for precise navigation when harvesting. The captain oversees the operations and is in control of the vessel at the Port helm station. The captain maintains visual control of the vessel and will take total control when necessary. The ROV operator is located on starboard side of the vessel in the pilot house beside the helm station. The ROV operator controls the ROV and vessel by joy stick, monitoring laptops, and flat screen displays to visually harvest the lionfish. The third operator is keeping a watchful eye on the umbilical, boat traffic, marine mammals, sea turtles, sea birds or any other obstruction that could endanger the operation and is a third set of eyes and ears for the captain and ROV operator.

The ROV is designed and engineered to be highly maneuverable. Five thrusters allow the operator to move in the water column horizontally and vertically. This maneuverability prevents the vehicle from resting on the seabed bottom which prevents any disturbance to reefs, structures, or grass beds. The ROV is connected to the harvesting vessel by an umbilical. The ROV operator uses lap top computers and a control box with joy sticks to maneuver the ROV which is equipped with sensors for depth control, height over bottom, current direction, speed and water temperature. HD cameras are positioned to allow the operator to make positive identification of the lionfish. The operator engages a foot pedal to actuate the venturi slurping device to suck the lionfish into the corral.





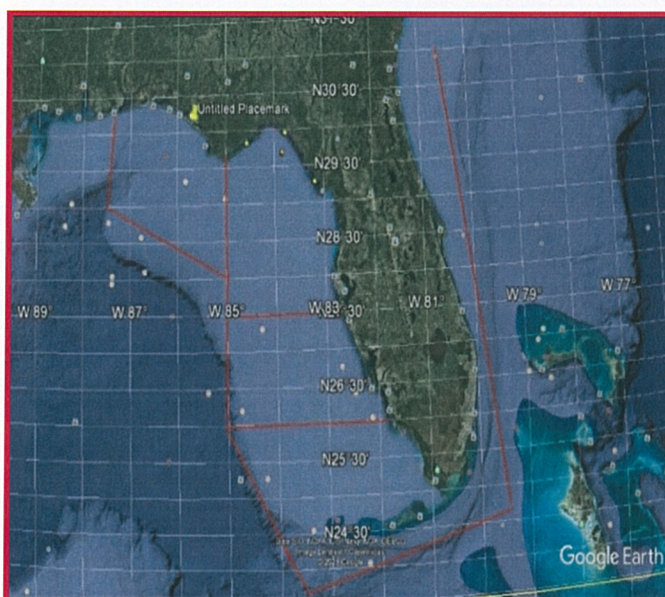
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When the corral is full of lionfish, the ROV brings the corral to the surface. The ROV and corral are brought onboard the harvesting vessel by the launch and recovery system where the corral will be opened and the lionfish put into the fish holds. After offloading the catch the ROV and corral are re-deployed to continue harvesting operations. This event happens every time the corral is full.

When the harvesting vessel reaches full capacity, the catch is delivered to an assigned dock where the distributor takes possession of the catch. The harvesting vessel is refueled as needed, the crew rests or is replaced, and operations are resumed in the harvesting area.



### Four designated harvest areas:

1. NW Florida Panama City
2. Central Gulf Coast St Pete, Clearwater
3. SW Florida Cape Coral / Ft Meyers
4. Florida Keys Marathon



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To offer a better understanding for this request, I submit the following introduction:

## History

The parent company of Lionfish International, LLC, (LFI) is Gulf Unmanned Systems Center, LLC (GUSC). GUSC was formed in 2012 to support testing, training, and manufacturing of unmanned systems from aerial to sub-sea to support Department of Defense (DOD), state agencies and academia. The mission of GUSC is to support research, development, testing and evaluation, in-service support of: mine warfare systems, mines, naval special warfare systems, diving and life support systems, other missions that occur primarily in coastal (littoral) regions. GUSC is engaged in the development of existing unmanned surface vehicles (USVs), unmanned underwater vehicles (UUVs), and unmanned aerial vehicles (UAVs) in support of missions in the littoral and riverine environments. GUSC headquarters is in Carrabelle, Florida.

In October 2015, GUSC personnel were invited to attend meetings in Tallahassee, Florida to be informed about the emerging problem of lionfish and offer recommendations on how to combat the issue. After several meetings, we surmised that agencies other than the Florida Fish and Wildlife Conservation Commission (FWC) who sponsor spearfish rodeos for lionfish are very concerned but do not have a unified strategy or budget for quantifying, analyzing, or minimizing the environmental and economic impact of the lionfish invasion. In January 2016, GUSC management made the decision to use the new technology of unmanned systems and sensors to help combat the growing lionfish problem and to start a separate company (LFI) to manage and develop the business.

LFI headquarters are in Cape Coral, Florida. This location gives us easy boat transit proximity to the Florida Keys, East Coast, and Gulf Coast of Florida. The location provides ground transportation distributions and shipping to major metropolitan areas tied together by interstates, major state highways and airports to provide distribution points nationally and internationally.

LFI will provide management, fiscal responsibility, program coordination, technological development, and industry training to support the development of a lionfish fishery through commercial scale harvesting using remotely operated vehicles (ROV) unmanned technologies. Coupled with a shift in the seafood paradigm, this gear use will:

- help quantify the fishery stock
- create new manufacturing jobs in boat building, assembly of specialized vehicles and sensors.





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LFI will promote commercial fisherman training and fleet operations.

We are also aware that combatting the problem in Florida is only a start; all affected areas must have harvesting programs to combat the problem.

## **Problem Statement**

Lionfish have wreaked havoc on the U.S. southeastern coast. Coastal communities along the Atlantic and Gulf of Mexico face a growing ecological and economic threat from lionfish.

Lionfish are an invasive species that have a negative impact on our commercial and tourism fishing industry. Lionfish are a major risk to marine life because they have no natural predators. A single female lionfish can spawn up to 2 million eggs per year. Lionfish can feast on 40 sportfish per day, devastating the commercial and recreational fishing industry in Florida and damaging coral reefs because they consume herbivores that clean algae from the reefs. Lionfish are out-breeding our native species of snapper, groupers, wrasses, shrimp, spiny lobster and reef cleaners plus everything else they can consume, causing damage to our coral reefs. Lionfish do not readily bite baited hooks and are difficult to trawl or net because of their habitat. Trapping has its own problems, such as traps resting on hard bottom or reefs, bycatch, and nuisance of lost traps. If left unchecked, lionfish will ultimately cause the destruction of native fish stocks, reefs, and the livelihoods of people that depend upon them.

The lionfish rapid expansion threatens the very resources and values that federal and state agencies were established to protect. They diminish the quality of visitor experience for anglers, divers, snorkelers and other visitors; not to mention devastate the already taxed commercial fishing industry. The lionfish invasion is emblematic of the complex challenge of managing invasive species that originate from outside federal and state boundaries. State agencies encourage divers, anglers, and commercial harvesters to remove lionfish from their state waters to limit destruction and negative impacts to our native marine life and ecosystems. LFI will harvest lionfish from shallow waters to 1000 ft.

LFI is spurring innovation and the development of technologies to help eradicate this invasive species to protect both the ecosystems and economic livelihoods of the communities affected.

## **Socio Economic Benefit**

LFI has the facilities and infrastructure to support this new fishing industry in helping preserve the fishing culture of our state. LFI will create new jobs along the Florida Gulf and Atlantic coasts, revitalizing the sea food industry. LFI will create a new fishing industry that will employ directly one hundred fifty personnel and indirectly hundreds of new jobs from fish house cleaning and packaging, truck drivers for distribution, and waiters and waitresses throughout



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the affected areas. LFI's unique harvesting method will create new jobs to build high tech, purpose-designed, purpose-built fishing vessels that employ special harvesting equipment. These vessels will be equipped with multiple special sensors, including navigation, autonomous and remotely operated systems. This also should include saving countless jobs that are involved in the seafood industry that could be lost due to the lionfish invasion. Through LFI and this harvest method, consumers will receive a confirmable US wild caught fish.

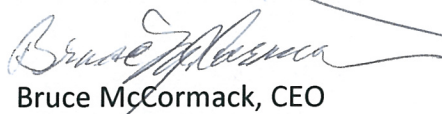
### CONCLUSION:

*LFI is dedicated to harvesting lionfish, an invasive species that is not recognized as a fishery. LFI has dedicated private investment dollars for the design and engineering of a system of systems approach to the harvest and monitoring of the lionfish to help insure keeping our natural populations of fish, shrimp, spiny lobster and underwater habitat that lionfish prey on safe. In addition, we will help rid our waters and put these invasive fish in restaurants, grocery stores and dining room tables.*

NOAA National Marine Fisheries Service and state agencies dedicated to the stewardship of the nation's living marine resources and their habitat are limited in what they can accomplish, usually because of fiscal restraints. LFI, acting as a responsible harvester of lionfish, will aid in protecting the natural resources of certain *fisheries*, protected species, and habitat conservation. LFI will also be helping NOAA and the dedicated state agencies address their needs in a wide range of scientific research and monitoring of lionfish and the general biomass that is captured by our monitoring.

LFI receives the first ROV harvester the first week of September 2017. We intend to start proof of concept testing and training 12 September 2017. We have a testing scheduled for thirty days in the Johns Pass / Clearwater state waters area. We invite you to witness our operations. I will keep you informed of the progress so you or your staff can witness our harvesting progress.

Thank You,



Bruce McCormack, CEO

Lionfish International, LLC