



Atlantic Lionshare Ltd

March 5th 2019

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Dr. Carrie Simmons, Executive Director
Gulf of Mexico Fishery Management Council
4107 W. Spruce St. Suite 200
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 Dr. Simmons,

As project coordinator of Atlantic Lionshare Ltd, 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.

It is Atlantic Lionshare's intention to relocate their Bermuda operations to Florida in May/June 2019 in order to continue harvesting lionfish in the most densely populated areas.

We would like to commence harvesting/fishing in June 2019. Given the constantly increasing lionfish populations together with hitherto limited containment, Atlantic Lionshare expect these activities to continue for many years to come. As such, Atlantic Lionshare requests to use a new gear type, remotely operated vehicle (ROV), in federal waters of the Gulf of Mexico so that their mission to protect the marine environment from lionfish can continue seamlessly.

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

The project coordinator is Elizabeth Martin.
Telephone: +1 441 734 2710
Email: emartin@asb.bm
Address: 120 Somerset Rd
Somerset, MA06
Bermuda

Liz will coordinate Atlantic Lionshare's activities and is able to respond to any questions that may arise concerning this application.

B. Description of the gear.



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ReefSweeper

The ReefSweeper is a Remotely Operated Vehicle (ROV) designed for the specific purpose of harvesting lionfish.

During testing, the ReefSweeper has caught over 2 lionfish per minute, which comfortably supports our projections of harvesting up to 800 lionfish per day.

The ReefSweeper utilizes a blend of technology between a mechanical spear and suction to cull lionfish. The lionfish are speared, the spear retracts which brings the lionfish into the vehicle, which are subsequently pulled off the spear and sucked into the collection chamber. The collection chamber can hold around 150 fish per load. Once the load is full, the ReefSweeper is brought back aboard, the crew open both sides of the chamber and remove the fish. The ReefSweeper receives a quick maintenance check and is redeployed. This process usually takes about fifteen minutes from start to finish. The lionfish are immediately iced and prepped for commercial sale or consumption.

In order to specifically target lionfish the ReefSweeper pilot has a set of monitor screens providing both long and short range views of the surroundings. This allows the pilot to maneuver the ReefSweeper to and around its target. The process is then taken to a far greater level of specificity through the use of laser beams (one red and one green) which, once aligned on the target lionfish allow the pilot to activate the spear with a high level of accuracy. In all of the testing that has been conducted so far there has been absolutely no by-catch of any other species and Atlantic Lionshare are confident that this is the most trustworthy method for protecting other species and the reefs during harvesting activities.



Vessel Information



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The Atlantic Lionshare host vessel is a 45ft 2003 Central Marine Commercial Fishing Vessel named Atlantic Security with the following key specifications.

Twin 430hp Cummings Motors

36kw three phase Cummings Generator

Winch and Davit

Auto pilot, GPS, Depth Sounder, Radar, Two VHF Radios

All safety equipment including EPIRB and Sat phone.





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

Non-federally managed lionfish fishery. It is Atlantic Lionshare's intention to sell all lionfish commercially and currently has a verbal agreement with a major food store to purchase these lionfish. As awareness builds as to the viability of Lionfish as a healthy food source we anticipate demand will continue.

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

The dimensions of the ReefSweeper are as follows:

Width 37in
Length 60in
Height 49in





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(See Section B for additional photos)

The Reef Sweeper is tethered to the vessel with 650ft of bright yellow, kevlar based umbilical. The umbilical not under load easily floats on the surface. We only deploy the umbilical as needed to operate in the depth required. Unnecessary umbilical is immediately pulled back onto the vessel. The Reef Sweeper has four cameras. One HD camera is positioned to the left/center and another HD camera is positioned to the right/center. There is one SD camera for targeting and lining up the lionfish shot. There are two more SD cameras that show the lionfish coming into the collection tube entrance and the lionfish going into the collection chamber. The control station has a monitor for each HD camera, one for the targeting camera, one for the collection cameras, one for monitoring the operating systems of the vehicle, and one spare. The Reef Sweeper's power unit ("blue box") is located next to the pilot along with the keyboard and mouse. The pilot flies the Reef Sweeper via a hand held control that it is connected via cable directly to the power unit. The hand held control has one stick for forward/backward movement, one stick for up/down plus side to side, buttons to switch from one flight mode to another, button for firing the spear, button for turning the lights on/off/ and another button to disable the spear altogether (used during deployment and retrieval). Our current pilot has been flying for a few years and has been with us full time since September 2018. The best training is "time on the sticks"!



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

It is anticipated that ReefSweepers will operate for 12 months of each year, subject to weather conditions, in order to make a meaningful impact on the lionfish populations. Atlantic Lionshare will commission as many ReefSweepers as required to fulfil this core objective.

Realistically each ReefSweeper will be active for approximately 200 days a year with the potential of harvesting 150,000 fish per annum.

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

Atlantic Lionshare intends to harvest lionfish throughout Florida (and neighboring State coastlines) in the Gulf of Mexico and will most likely commence operations in the general vicinity of Pensacola, FL.

The ReefSweeper is tested to depths of 1,000 feet and can operate from depths of 10 to 1,000 feet. It will be deployed wherever the highest lionfish populations are found which are most likely in depths below 150 feet.



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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.

Atlantic Lionshare's ReefSweeper is specifically designed for harvesting lionfish and to-date has never caught or injured any other marine species. This is largely due to the laser beams utilized by the ReefSweeper to provide pinpoint accuracy for the spear release as well as the training provided to all ROV pilots.

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 ReefSweeper is deployed and retrieved from the ocean surface. This gives the pilot full control of the vehicle at all times. A davit and winch are used to assist in deployment and retrieval. A spare winch plus a block and tackle are on board the vessel if needed. The ReefSweeper has eight navigation thrusters which provide steady, even control when flying. Software on the ReefSweeper assists in keeping the vehicle from getting too close to the reefs and the corals.

We use two lasers, one green and one red, to help the pilot judge the appropriate distance to fire the spear. Once the two lasers align, the pilot knows the spear can be fired to catch the lionfish without actually hitting the reef itself. If the lasers are not aligned or if they cross over each other, the pilot knows the vehicle is either too far away or simply too close to fire the spear. Testing the lasers is part of the maintenance check completed before each deployment. Note that the umbilical is buoyant which prevents any of it from dragging on the bottom at any time. The umbilical is attached to the ReefSweeper from the middle of the vehicle and again from the top. This is mainly to stop any tangles but does add extra protection to keep the umbilical away from the reef or structure. Although we prefer not to leave any lionfish behind, we will not take any shots if we could possibly injure something else. For example, we were lining up a shot on a lionfish and it swam into a hole in rocks extremely close to a lobster. The lobster started swiping at the lionfish (nice to see it protecting its' territory) which blocked our ability to shoot the lionfish without accidentally injuring the lobster. If it is not safe, we will not fire the spear. Note that we carefully monitor marine activity such as whales around the vessel. We will not deploy or continue to harvest in areas where there is any potential for marine life to be disturbed.

Purpose



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Atlantic Lionshare was founded in response to a massive change in the balance of both reef health and fish populations brought about by the overwhelming invasion of the lionfish within the Atlantic Ocean.

This small and seemingly innocuous fish has already destroyed many reefs by devouring other species of fish and crustacean that serve to keep the health of reefs ecologically balanced. This obviously effects our environment but on a commercial level will also significantly impact tourism in areas where exploring reef life is popular. For example, about 10% of the Caribbean population is employed by the tourist industry, which clearly presents a significant threat to these economies.

Similarly, on another massive financial basis this same fish is devouring the young of many commercial foods, such as grouper, snapper and lobster, which in turn is beginning to significantly lessen the availability of these food fish in many Atlantic regions.

The National Conservancy Organization cites that reefs drive about \$30 billion in global tourism revenues, and provide a first line of defense for 63 million people. Also, one square kilometer of healthy reef will generate between 5 and 10 tons of fish per annum. As such, the decimation of the reefs alone will bring about massive ecological and financial problems, let alone the ecological damage to many species of fish through the voracious and somewhat indiscriminate appetite of the lionfish.

This problem has only manifested itself over the past 20 years with the release of these formerly Pacific based fish into the Atlantic where they have no natural predators. However, with the current population explosion of lionfish in the Atlantic this issue is becoming exponentially worse by the day. Some governments are encouraging spear fishing competitions to cull lionfish but with a single female lionfish producing between 1 million and 2 million eggs a year these efforts are somewhat futile. A few governments are also offering bounties for lionfish but again, the numbers achievable and the risk to divers at the same time makes this nothing more than a token gesture.

The populations of lionfish are somewhat unpredictable as they exist in many depths and are difficult to predict in terms of their optimal habitats.

In areas, such as Florida and the Bahamas, these populations are already known to be significant with no signs of anything other than devastating expansion. In June 2016 it was reported that lionfish have now been found in the Mediterranean (Turkey and Cyprus) so the overall scenario simply gets worse and worse.

The following illustration is the latest assessment of lionfish populations.



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Therefore, Atlantic Lionshare has developed a commercially viable model to cull lionfish on a larger and ecologically significant scale, utilizing a patented (pending) technology called the Reef Sweeper. The Reef Sweeper is a remotely operated underwater vehicle that is equipped to extract lionfish from their habitat, quickly and effectively, without causing any further damage to other species or the surrounding environment. It is anticipated that a Reef Sweeper can harvest between 500 and 800 lionfish a day.

Lionfish can grow to a size of approximately 18 inches. Given the damage that the lionfish inflicts on the marine environment, from decimating other species through to endangering reefs, there can be nothing other than a positive impact on marine habitats and fisheries through harvest of this species. Reefs provide protection and spawning grounds for many species and by containing the lionfish populations, Atlantic Lionshare will assist in allowing the reefs to rebound and many species to thrive again.