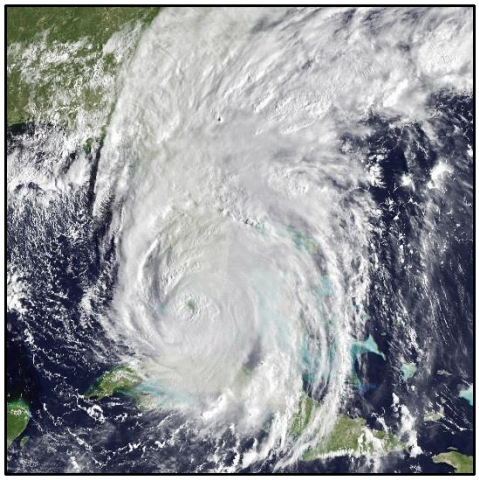
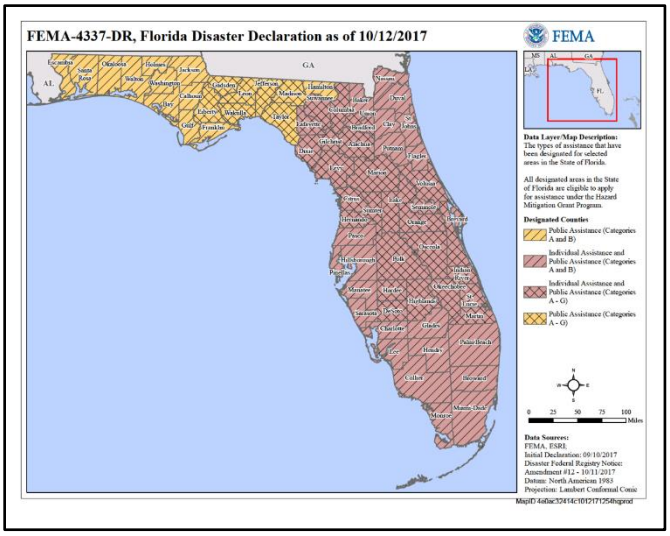
Hurricane Irma Fishery Disaster Funding Proposal

Project Narrative

INTRODUCTION



Hurricane Irma made landfall at Cudjoe Key, Florida as a Category 4 hurricane on September 10, 2017 with sustained winds of 130 mph. After it passed the Florida Keys, it made a second landfall at Marco Island as a Category 3 hurricane. High winds and a storm surge of over 5 feet cut off the Keys from the mainland for days. The storm then moved throughout Florida, exiting the state into Georgia as a tropical storm on September 11. Hurricane Irma is estimated to be the costliest storm in Florida's history. By October 2017 Governor Scott had requested and received federal assistance for individuals and households in 46 counties, including coastal counties from west coast counties from Dixie County to Monroe County and from Nassau County to Miami-Dade County on the east coast.



A rapid economic damage assessment of the impacts to fishing related businesses was conducted by FWC and NOAA after the storm. Damage estimates from the storm on these businesses indicated that damages to vessels and businesses exceeded $93 million and revenue losses were reportedly nearly $130 million.

Although damage to fisheries occurred in many places in Florida, the middle and lower Florida Keys was particularly hard hit. More than 90% of the spiny lobster landed in Florida are landed in the Florida Keys. The spiny lobster fishery, one of the most valuable fisheries in Florida had opened just one month prior to the storm. The magnitude and timing of the storm was devastating to the commercial lobster fishery. Traps were lost or destroyed; saltwater wholesale dealers suffered infrastructure damage and were unable to accept product because of a lack of power for some time; and crews of fishermen were displaced.

The commercial lobster fishery in the Keys was not the only fishery affected. Other commercial fisheries up and down both coasts were also impacted in similar ways. Recreational charter businesses in the Keys and along both coasts were affected from storm related impacts, such as damaged vessels; loss of time on the water due to personal losses; an inability to communicate with customers; lost dock space;

poor fishing conditions because of water quality impacts; and a lack of customer bookings after the storm.

In October 2017 Governor Scott requested that the US Department of Commerce Secretary Wilbur Ross declare a fishery disaster in Florida. Secretary Ross declared a fishery disaster on February 8, 2018. Congress appropriated $200 million under the Bipartisan Budget Act of 2018 for twelve fishery disasters that occurred between 2014 and 2017. Based on this appropriation, NOAA Fisheries allocated $44,608,039 to the State of Florida to respond to the 2017 Hurricane Irma disaster. This proposal is submitted for the funding available to the State of Florida for the 2017 Hurricane Irma disaster.

FWC developed the following plan in consultation with fishing industry organizations and individuals. The list of organizations consulted included the Florida Keys Commercial Fishing Organization, Organized Fishermen of Florida, Southeastern Fisheries Organization, Florida Marine Life Association, American Sportfishing Association, Key West Charter Boat Association, Islamorada Charter Boat Association, Lower Keys Guides Association, Florida Guides Association, Coastal Conservation Association Florida, Nature Conservancy, Reef Environmental Education Foundation, Snook and Gamefish Foundation, Bonefish Tarpon Trust, and the West Palm Beach Fishing Club.

The following is a list of categories of projects that will strengthen the long-term economic and environmental sustainability of Florida fisheries. These projects were developed in partnership with leaders of the commercial fishing, wholesale dealer and charter fishing communities. Methodologies for accountability for payments made to commercial fishers, seafood wholesale dealers, and charter captains will be further developed with consultation and approval of the NOAA Fisheries Southeast Regional Office prior to any payments being made.

Commercial Fishers

Four projects are proposed to help commercial fishers continue to be important economic engines of the community and essential components of the fishing industry, while minimizing any impacts that they might have on the ecosystem. The projects include lobster certificate buy backs to increase fishery efficiency, while minimizing impacts to the environment; a lineless trap research and development project to minimize impacts from lobster traps on the environment; lobster trap replacements for traps lost or destroyed in the storm; and direct payouts to fishermen impacted by revenue loss to help the sustainability of this crucial component of the fishery.

Wholesale Dealers

Three projects are proposed to ensure sustainability and resiliency of wholesale dealers. Commercial fishers holding a saltwater products license can only sell their product to a licensed wholesale dealer. Anyone wishing to sell a saltwater product to the public must possess a retail dealer's license. Therefore, commercial fishers, wholesale dealers, and retail dealers are dependent upon each other to provide the public with wholesome, healthy Florida seafood for the table. The proposed projects include the addition of redundant power supplies so that impacts from future storms are minimized from power outages; payments for seafood wholesale facility improvements and uninsured repairs from Hurricane Irma facility damages; and direct payouts to wholesale to ensure the public's continued access to Florida seafood.

Licensed Charter Businesses

A direct payout program is proposed for charter captains to ensure continued viability of this industry. The charter fishing industry is an important economic component of many communities, providing access to fishing opportunities for tourists and residents. A good number of these businesses were disrupted because of the storm, and direct payouts to these captains will help ensure their continued service to recreational fishers. The fishing access infrastructure project described below will also help the charter fishing industry.

Habitat Restoration

Healthy habitats are essential to our fish stocks. While many of our habitats have evolved to be resilient to the effects of storms, Hurricane Irma damaged many habitats that are in need of restoration so that they can be more resilient to future storms. Three projects are proposed to help provide resiliency of important seagrass, mangroves, and corals as well as restoration of sponges, which act as important ecosystem filters and habitats. A coastal habitat restoration project is proposed to restore mangrove and seagrass habitats in areas where these habitats have been impacted, including those footprints damaged by derelict vessels. The rescue and banking of coral tissue from the Florida reef tract is important for future restoration efforts that will be needed because of damages from Hurricane Irma and a highly lethal coral disease, Scleractinian Tissue Loss Disease (STLD), which has been steadily moving southwestward into the Florida Keys. Stock enhancement of sponges in Florida Bay is proposed to replace some of the sponges that were lost from the storm to ensure that this resource continues to provide important ecosystem services.

Marine Debris

Because of the winds and tidal surge from Hurricane Irma, a lot of man-made debris was scattered across the marine environment. Some of this debris threatens important habitats and protected species. Tourism is an important component of Florida's economy and fishing is important to tourism. Aesthetics is important to tourism in general and can be important when deciding where to go fishing. Therefore, cleanup of marine debris is important to both tourism and fishing. One project is proposed to remove debris, especially trap debris on and in the water and stranded on shorelines. The focus of this project will be in the Florida Keys. A portion of this project is to remove fishing gear, especially rope that has been entangled on sensitive corals.

Derelict Vessel Accountability

Fishing and boating vessels are ripped from their mooring with each large storm that passes through Florida. The Florida Fish and Wildlife Conservation Commission (FWC) maintains a database of derelict vessels so that removal of these vessels can be coordinated with local, state and federal agencies. Improvements to this database are proposed to speed up the recovery of vessels that become derelict in future storms.

Fishing Access Infrastructure

Access to fishing from fishing piers, boat ramps, and marinas is important to Florida's fishing economy. As Hurricane Irma made its way through Florida, public fishing access infrastructure was damaged. This infrastructure includes fishing piers, boat ramps, and marinas. One project is proposed for repair of public fishing access shoreside infrastructure to help sustain fishing in Florida as well as to provide resiliency to future storms by hardening some of the infrastructure that was damaged. Repairs of some

of these structures, such as fishing piers will allow for continued access by subsistence fishers, who lost that access after the storm.

PROJECTS

The following projects include direct payouts commercial fishers, wholesale dealers, and charter captains to help them recoup lost revenue. The projects also include assistance to the commercial industry for uninsured infrastructure damages and lost gear. These projects are proposed to provide some assurance that they can continue to contribute to Florida's valuable fishing industry. A project coordinator will be hired to assist in coordination of the projects below and coordinating the marine debris project with local government and non-governmental organizations that are also conducting marine debris removal in the Florida Keys and Florida Bay. An Operations Management Consultant II will be hired to assist in the administrative management of several of the grant programs described below. Project specific personnel are specified by specific project.

Lobster Trap Certificate Buy Back-$2,519,111

Fishers are required to have a saltwater products license with restricted species and crawfish endorsements to commercially harvest spiny lobsters with traps in Florida. Additionally, they are required to have a trap certificate for each trap that is fished. There are currently 467,806 trap certificates available to be used in the fishery. An analysis conducted by FWC indicates that the spiny lobster trap fishery is not being fished efficiently. In other words, fewer traps could be used to catch the same number of spiny lobsters. In addition, lobster traps can incur damage to habitats when moved around by storms, and the ropes associated with traps can entangle other animals and impact corals. In order to improve efficiency of the fishery and to reduce impacts from traps, the spiny lobster fishery has operated under a passive reduction program since 2004 with the goal of reducing the number of spiny lobster traps to be fished to 400,000. Under passive reduction, 10% of the certificates sold and transferred between fishermen must be transferred to the state and retired. It is estimated that it will take more than twenty years to meet the trap reduction goal of 400,000 active certificates through the passive reduction program. The funding for this proposed project will be used to purchase and retire up to 10,000 spiny lobster trap certificates to speed up reduction of spiny lobster traps being used. Utilizing a grant program, FWC will offer to purchase trap certificates on a first come first served basis (until proposed funds are exhausted) at $250/certificate. These certificates will be retired. The current value of these certificates on the free market ranges from $175 to $225. Offering to purchase trap certificates at above market value will provide some assurance that a larger number of certificates that are sold are retired.

Lobster Trap Replacement-$3,778,111

As Hurricane Irma approached landfall at Cudjoe Key with 130 mph sustained winds on September 10, 2017, lobster trap gear was destroyed and dispersed throughout the Florida Keys and beyond. While some of this gear was later located and retrieved, the lobster industry estimates that 94,000 spiny lobster traps have been lost. This proposed project is aimed at reimbursing fishermen for lost traps. Because it is impossible to quantify losses to individual fishers, a grant program is proposed to provide funding to lobster fishers based on the estimate of the total number of lost traps, estimated

replacement costs of the traps, and pro-rated by the number of active certificates held by individual fishers.

Direct Payouts to Commercial Fishers-$3,904,347

Direct payouts are proposed to be made to commercial fishers to minimize the impact that Hurricane Irma may have had on their revenues to help ensure that they can continue to provide Florida seafood to the public into the future. A grant program is proposed to pay commercial fishers who had reported landings value at least $1,000 less in 2017 than they averaged for the previous four years. The landings value must have been reported in FWC's trip ticket system by May of 2018, and they had to have landings that were reported each year from 2013 to 2018. Successful applicants would only be those residing in coastal counties from Dixie County to Monroe County on Florida's west coast and from Nassau County to Miami-Dade County on the east coast. Residence status would be based on addresses provided on Saltwater Products Licenses as of September 2017. A cap on payouts would be set at $20,000 per individual. A team of FWC employees would be utilized to evaluate grantee eligibility. Utilizing the grant program, FWC will advertise to applicants to apply online only during a one-month period and will pro-rate payments based on budget for this project and total losses identified from successful applicants.

Redundant Power Supplies for Wholesale Facilities-$2,292,131

One of the problems faced by saltwater wholesale dealers was the loss of power in the aftermath of Hurricane Irma, resulting in spoiled product and/or an inability to accept new product. The inability to accept new product also impacted commercial fishers. This proposed project aims at improving the resiliency of this industry for future storm events. A grant program is proposed that aims to encourage licensed saltwater wholesale dealers to invest in alternate power supplies. The grant program would provide up to a 50% cost match (up to $20,000) for these alternate power supplies for those licensed saltwater wholesale dealers who can provide invoices and copies of permits (except for portable generators not connected to a facility's electrical supply) for generators and any installation costs purchased from September 1, 2017 through September 1, 2019 and who agree to allow storage for competitors' product during future storms if the grantee has storage space available. This grant would only reimburse business owners for one generator per facility. Reimbursement would be given to grantees on a first come, first served basis until the budget is exhausted. The grantee would stipulate that no other government funds, except tax breaks, local government rebates, or other incentives had been used to purchase power supply hardware. The grantee would also have to stipulate that their losses had been uninsured. A team of FWC employees would be utilized to evaluate grantee eligibility.

Improvement or Uninsured Repair to Wholesale Facilities-$2,018,111

A rapid assessment of damage to saltwater wholesale and retail facilities conducted by NOAA Fisheries and FWC indicated that the saltwater wholesale and retail industry suffered a $8 million loss in damage to facilities and equipment. A grant program is proposed to reimburse licensed saltwater wholesale dealers for a 50% match (up to $30,000) for uninsured repair and improvements made to facilities from September 10, 2017 through September 1, 2019. Successful grant applicants will be those with physical addresses from the coastal counties of Dixie County to Monroe County on Florida's west coast and from Nassau County to Miami-Dade County on the east coast. Residence status would be based on addresses provided on Wholesale Dealer licenses as of September 2017. Grant applicants would need to certify that reimbursements would be made on uninsured damages or improvements to the facility or

equipment; and would need to supply proof of costs of repairs or improvements conducted by a licensed contractor. Grantee would also have to certify that they have received no other governmental financial assistance, except government loans for the repair or improvement to their facility. These grants would be available on a first come, first served basis until the budget for this program is exhausted. A team of FWC employees would be utilized to evaluate grantee eligibility.

Direct Payouts to Seafood Wholesale Dealers-$3,099,289

Direct payouts are proposed to be made to seafood wholesale dealers to minimize the impact that Hurricane Irma may have had on their revenues to help ensure that they can continue to provide Florida seafood to the public in the future. A grant program is proposed to pay seafood wholesale dealers who had reported landings value at least $10,000 less in 2017 than they averaged for the previous four years. The landings value must have been reported in FWC's trip ticket system by May of 2018, and they had to have landings that were reported each year from 2013 to 2018. Successful applicants would only be those residing in coastal counties from Dixie County to Monroe County on Florida's west coast and from Nassau County to Miami-Dade County on the east coast. Residence status would be based on addresses provided on Saltwater Wholesale Dealer Licenses as of September 2017. A cap on payouts would be set at $20,000 per individual. Utilizing a grant program, FWC will advertise to applicants to apply online only during a one-month period and will pro-rate payments based on budget for this project and total losses identified from successful applicants. A team of FWC employees would be utilized to evaluate grantee eligibility.

Direct Payouts to Licensed Charter Businesses-$1,335,479

Direct payouts are proposed to be made to minimize the impact that Hurricane Irma may have had on licensed charter captains' revenues to help ensure that they can continue to provide their services to recreational fishers in Florida in the future. A grant program is proposed to reimburse licensed captains who can demonstrate at least a $10,000 decrease in revenues in 2017, compared to the previous four years. The grant program will be advertised for a one-month period and payments will be pro-rated on the demonstrated losses and the budget for this project. Successful applicants would only be those residing in coastal counties from Dixie County to Monroe County on Florida's west coast and from Nassau County to Monroe County on the east coast. Residence status would be based on addresses provided on charter licenses as of September 2017. The basis for the demonstration in the loss in revenues is still to be worked out and will be done in consultation and approval from the NOAA Fisheries Southeast Regional Office.

Coral Rescue and Tissue Caching-$1,990,479

Coral reefs are well known as critically important habitat for many fish and invertebrate species. These reefs serve in a myriad of ways from supporting settlement and recruitment to providing shelter for the full range of life history stages of important commercial and recreational species. In Florida, coral reefs provide essential ecological functionality for many of Florida's most highly sought-after fishery species, including spiny lobster, many snapper and grouper species, hogfish, and barracuda. Many of these species and fish associated with shallow flats-fishing (e.g. bonefish and permit) have established spawning aggregations at many coral reef locations.

In September 2017, Hurricane Irma made landfall in the lower Florida Keys, causing substantial damage to the coral reef ecosystem in areas closest to the eye of the storm. Wave action toppled corals along

many miles of the reef tract, especially in the middle and lower Florida Keys. Waves combined with storm driven currents caused thousands of spiny lobster traps to move great distances. Many of these traps have ended up on the reefs. Concurrently, a highly lethal coral disease, Scleractinian Tissue Loss Disease (STLD), has been steadily moving southwestward from the Florida mainland into the Florida Keys. The invasion front is currently located south of the lower Florida Keys. This disease affects more than 20 reef-building coral species and has been persistent in Florida for three years. Once a coral colony is affected, the typical outcome is complete colony mortality. Complete colony mortality is a radical departure from previously known disease events which have resolved on their own and typically cause only partial mortality. The combined effects of Hurricane Irma and STLD has created a suite of circumstances requiring intensive and immediate action to ensure coral reef resiliency for the future.

A multi-agency / multi-stakeholder workshop (Coral Disease Intervention Action Plan Workshop, July 11-13, 2018, Key Largo, FL) was recently convened to explore the suite of priority actions required to address the short- and long-term impacts of the disease and hurricane perturbations on Florida's reefs. One of the top priorities arising from this workshop is to begin a coral rescue and tissue caching effort as soon as possible. The coral rescue effort combines an immediate short-term strategy whose goal is to ensure that there is sufficient genotypic diversity of these highly affected coral species rescued and stored at safe, disease-free land-based sites with a longer-term strategy to ensure there is sufficient tissue from these species available to begin restoring these species back into their natural habitats. The concept is simply to collect as many coral colonies (or partial colonies) of all the at-risk species from as many diverse locations as possible. The next step is to transport these corals to land-based aquaria that can first quarantine them to ensure they are disease free and then store them for future use in restoration. Two biologists will be hired to collect and transport the corals. Determination of the genotypes of the collected corals ensures there is sufficient genetic diversity present for each species so that restoration actions using these corals will have a higher probability of success.

A multi-agency coral rescue team formed out of the workshop is developing estimates of storage needs, contacting the American Zoological Society member aquaria for input, and designing a collection plan. This project will provide the support to carry out this plan. Quarantine facilities at aquaria has already been identified as a critical need. Consequently, the bulk of the funds requested here will support expansion of coral quarantine and storage facilities at the aquaria. This portion will likely be run through a grants / contracting program that will support the infrastructure development and initial operations at these institutions. Additional contracting will support the development of in-water coral storage when the on-land effort is complete and support the necessary genetic analysis of the corals. FWC staff will collect and transport corals to the partner institutions. Support is included for this part of the mission to rescue corals to preserve genotypic diversity and provide coral tissue for future coral reef restoration.

Sponge Restoration-$384,469

In September 2017 Hurricane Irma made landfall in the Florida Keys, causing substantial damage to the coral reef ecosystem in areas closest to the eye of the storm. Along the near-shore habitats of the middle Keys, the effects of storm surge forced water away from these shallow areas, subjecting the biotic community there to a prolonged exposure to air. Particularly affected was the shallow-water sponge community. This community is vital to the health of the coral reef ecosystem and the state's fisheries. Large sponges create structural complexity that serve as nursery habitat for an array of exploited finfish and invertebrates such as snappers, spiny lobster, and stone crab. Before Hurricane Irma, the sponge communities of the Keys had already been degraded by several stressors, the most

important of which have been the periodic blooms of planktonic blue-green algae. In recent decades these blooms have caused widespread mortality of the community and with it the loss of nursery habitat for important fisheries species throughout Florida Bay. Until the passage of Irma, the near-shore areas in the middle Florida Keys had been largely unaffected by these blooms and had remained a largely healthy nursery habitat. However, those areas are now severely degraded as well. A post-Irma assessment of one near-shore location in the middle Keys revealed that > 95% of the biomass associated with the large sponge species that function as nursery habitat had been lost.

In response to the degradation of Florida Bay's sponge community, the FWC has been refining methods to support large-scale sponge restoration efforts in Florida Bay, and has propagated thousands of sponges that are presently maintained in nurseries located along the periphery of Florida Bay. Although sponge restoration efforts had envisioned focusing on the most intensely earmarked for bloom-affected areas of Florida Bay, restoring the sponge communities affected by Hurricane Irma is now paramount. Efforts to refine the sponge restoration efforts allows the option to mount a large-scale restoration effort in the affected near-shore areas of the middle Florida Keys with the goal of re-establishing ecosystem function and fisheries nursery habitat.

The proposed project will be conducted by the Fish and Wildlife Research Institute (FWRI) and is a two-year large-scale sponge restoration effort in the near-shore environs of the middle Florida Keys with the goal of restoring ecosystem function and habitat for important fisheries species such as spiny lobster. Two biologists will be hired to augment existing FWRI staff to conduct the restoration project. During the first year, the focus of the efforts will be on propagating, growing, and maintaining a minimum of six species of sponges within *in situ* nurseries located along the periphery of Florida Bay. This effort will continue through the first part of the second year, at which time sponges will be transported to the middle Florida Keys and, approximating the original sponge community composition to the extent possible, outplant them on a minimum of three near-shore hard-bottom sites each measuring 1-2 hectares where the sponge community has been severely degraded.

Coastal Habitat Restoration-$8,738,034

Hurricane Irma made landfall in the Florida Keys as a category 4 storm with winds of 130 mph and a storm surge over five feet imparting tremendous energy into nearshore estuarine habitats. As it traversed north along Florida's gulf coast communities over the next 72 hours, the effects of this massive storm devastated estuaries fringing the entire Florida peninsula. Flooding, storm surge, and wind adversely affected mangrove and seagrass communities on both the Atlantic and Gulf coasts including the Florida Keys and Florida Bay. Direct destruction of seagrass meadows and mangrove forests systems were especially profound in the Florida Keys and Southwest Florida. Some seagrass meadows were buried by sediments transported by wind and wave energy and in other locations, sediment transport resulted in the formation of subtidal berms, which can result in isolated seagrass beds reducing the intrinsic health of these communities. In the Everglades, Florida Bay and 10,000 Islands, post Irma surveys conducted by NASA found that up to 40% of the mangroves were damaged. These impacts caused a loss of nursery and structural habitat, available food resources, and poor water and hydro-soil quality in adjacent estuaries and open marine systems (Figures 1 and 2). Collectively, this resulted in a loss of estuarine and marine fisheries production.

Figure 1: Rookery Bay isolated mangrove die-off.

To offset these impacts, NOAA grant funding will be utilized to identify, design and implement mangrove and seagrass habitat restoration and enhancement projects throughout the affected area. Priority will be given to those projects in areas with the greatest documented impacts. This will be accomplished using FWC's existing network of biologists to work with regional estuarine and marine habitat restoration partners throughout the affected area to identify and evaluate shovel ready restoration projects on public lands.

Project selection will be conducted by the FWC Marine and Estuarine Subsection (MESS) team and based off an existing and well-established review process currently being utilized for state funding allocations. This process is based on several factors, including but not limited to habitat type, regional priority location, feasibility, expected benefits to listed species, coastal resilience, longevity of project benefits, permit status, cost per acre, etc.

Utilizing existing FWC staff resources and hiring additional support staff will provide the necessary services to design, engineer, and permit those projects selected by the MESS team. When the appropriate agreements are in place, grants dollars will then be used to either competitively procure restoration services or enter into cooperative agreements with FWC partners to carry out restoration projects.

Figure 2: Fruit Farm Creek, 200-acre isolated mangrove project site in Collier County. The hydrologically isolated white area denotes a once healthy mangrove forest that suffered what is commonly referred to as a "mangrove heart attack", which leads to mass death of mangrove trees.

<u>Derelict Vessel Database Improvements-$500,000</u>

The FWC Division of Law Enforcement has developed and maintains a statewide derelict vessel database used to track derelict vessels within the state. This database is utilized by both FWC law enforcement officers and 59 other county and municipal law enforcement agencies within the state. This database is an online interactive tracking application that is essential to the inventory of Abandoned and Derelict Vessels (ADV's) (Marine Debris) that are navigation hazards and/or environmental threats to the public waters of the state. By utilizing this database, all parties needing the contained information can work together to remove and dispose of the vessels of concern.

During Hurricane Irma, there was a need for the Federal Emergency Management Agency (FEMA) and others to view those vessels that were caused by the hurricanes separately from those vessels occurring

prior to or after the storms. This comparison provides eligibility for vessel removal projects to receive federal funding for removal under FEMA. The existing database does not have this layering functionality. A separate database utilizing SharePoint and Survey Monkey's WuFoo platform proved insufficient to store the thousands of images effectively, as well as all the data and imagery needed for the job. This type of project requires extensive storage capability for images and data on thousands of target vessels.

During Hurricane Irma and its recovery period, these additional databases became problematic in their ability to keep up with the necessary workload placed upon them. This resulted in loss of information and redundant work by members of the response teams to duplicate efforts to complete required informational input.

The requested database project's purpose is to make a stable platform that contains both the existing database format with an additional layer dedicated to hurricane input and response management. This additional hurricane input will allow officers and response team members to use the existing system to add hurricane vessels into the database, creating a layer of storm related vessels. It will also improve the functionality of the existing database by utilizing the most up-to-date platform for the entire system. This hurricane input layer will provide a database for hurricane inventories, as well as a layer in a mapping feature that can be transposed over the existing derelict vessel map. This will assist FEMA and response team members with a picture of those vessels that were in place prior to and after the hurricane, as well as those that were caused by the hurricane.

The updating of our existing database platform combined with this new hurricane derelict vessel entry layer will speed up the recovery effort for all involved and make this statewide information readily available to the law enforcement and environmental response communities.

Florida Fish and Wildlife's Division of Law Enforcement is constantly striving to increase its ability to respond to and assist in the hurricane and natural disaster mitigation efforts. This improvement in technical abilities has been determined to be a large factor for improving our success in the interest of the public and our environmental protection effort. Management of this project will be conducted by FWC's Boating and Waterways Section under the existing Derelict Vessel Program in cooperation with FWC's Information Technology Division. No additional personnel will be needed for this database upgrade project.

Marine Debris-$3,169,817

An estimated 150,000 lobster traps were lost, damaged or destroyed in the Florida Keys by Hurricane Irma. Many of these were in the Florida Keys National Marine Sanctuary (FKNMS) (Figure 3). This figure was created by the University of Florida in the aftermath of Hurricane Irma to identify traps and clusters of traps that could be retrieved by fishermen. Although an estimated 56,000 traps were picked up by fishermen, an estimated 94,000 traps remain. A portion of this project will aim to augment FWC's annual derelict trap removal program in areas prioritized by the FKNMS, and not addressed by other grant programs. During the closed and at times during the open fishing season for spiny lobster, stone crab and blue crab, FWC contracts with fishermen to retrieve lost or abandoned traps for disposal. The trap debris removed with this program is usually easily identified from observations made above the water. Hurricane Irma also created considerable underwater marine debris in the FKNMS not always visible from the surface. Much of that debris is fishing gear, especially submerged traps and trap rope, but land-based debris was also deposited over much of the seafloor.

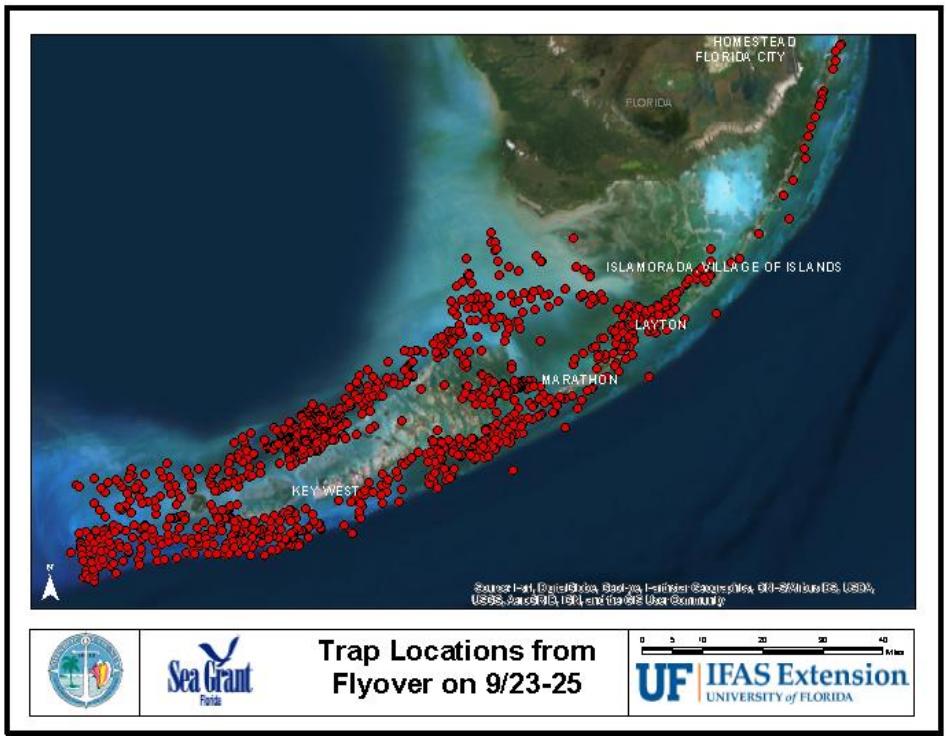


Figure 3. Locations of lobster traps and trap clusters identified by the University of Florida 9/23-9/25 2017.

Three sub-projects are delineated in this section to address both identifiable from the surface (trap retrieval), underwater debris in the FKNMS, and debris deposited on shorelines. The geographical focus of this project will be the Florida Keys and Florida Bay. Prior to beginning these projects, the FWC will coordinate and meet with FKNMS and Everglades National Park (ENP) staff to prioritize the locations and focus the mission of these debris removal efforts. Three observers will be hired to ensure accountability of debris removed.

Traditional Trap Retrieval-The FWC, in coordination with priorities of the FKNMS, will manage and contract trap retrieval during the trap fishery closed seasons and at locations where appropriate during

the open seasons. For example, the FWC recently completed a trap debris clean-up in the Duck Key area of the Florida Keys during the open season of some of the trap fisheries. Trap retrieval efforts will focus in waters on zones depicted on Figure 4. There have been high numbers of trap clusters noted for some of these areas (Figure 5).

Fishery participant organizations and/or others will be contracted to implement this program and are selected through a competitive solicitation process. The Contractor will be responsible for recruitment, selection and financial compensation of the project participants and for all work performed in this project. Each project participant will provide a properly licensed and commercially registered vessel meeting United States Coast Guard vessel safety requirements and capable of operating safely in the region, and that vessel will be manned by an experienced and qualified captain. Each vessel will be equipped with a functional electric or hydraulic trap puller, or crew that will effectively hand pull and retrieve traps. The Contractor will provide all labor and materials necessary to retrieve traps, including properly trained and certified commercial divers where necessary. The Contractor will be required to provide an adequate method for transporting all traps, trap debris, line, and buoys to an authorized waste management or recycling facility for disposal. The Contractor will be responsible for all costs and expenses, including disposal fees, resulting from the trap retrieval process and shall not hold FWC responsible for any damage(s) that may occur to any vessel or equipment during the trap retrieval or disposal process. If possible, traps and trap debris will be returned to trap owners or recycled through the Fishing For Energy program. Best Management Practices for Removal of Debris from Wetlands and Other Intertidal Areas (Research Planning, Inc. 2014) and the Florida Keys National Marine Sanctuary's Protocols for Underwater Marine Debris Removals within Florida Keys National Marine Sanctuary (2018) will guide removal efforts. The number of traps will be determined and recorded by an observer for each trip. The weight of the debris taken to the landfill will also be recorded.

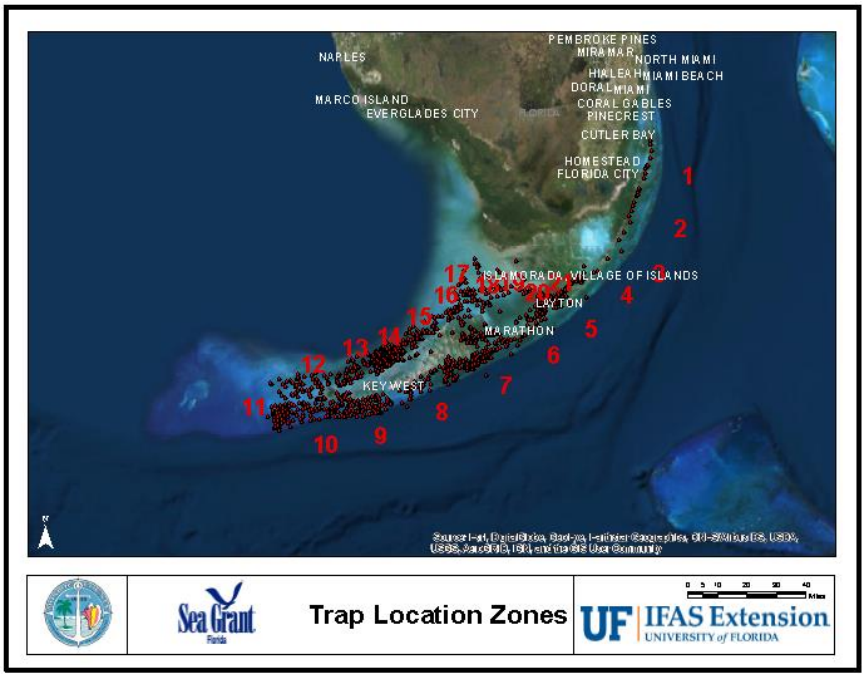


Figure 4. Zones of lobster traps and trap clusters identified by the University of Florida 9/23-9/25 2017.

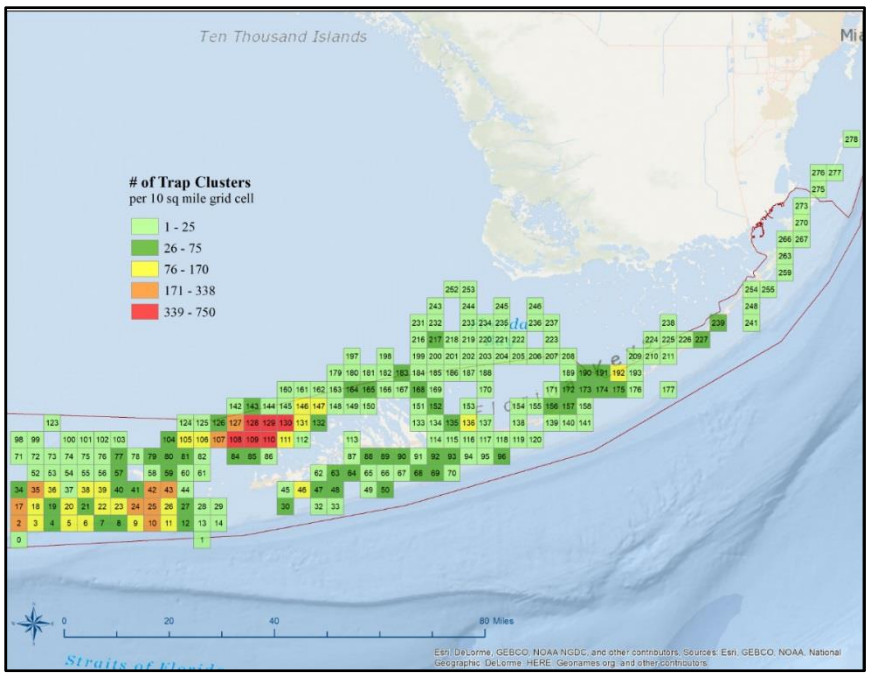


Figure 5. Density map of trap clusters provided by FKNMS.

Underwater Debris-FWC will work with the FKNMS to prioritize locations and the focus of underwater debris removal, focusing on trap debris for areas that are not addressed with other grants. Once the initial efforts to prioritize are completed, the FWC will contract the management, operation, and tracking of underwater debris removal. This contract could be to other local, state, or federal agencies, or non-profit organizations. The contractor will be responsible for acquiring any necessary permits, training, disposing of, and tracking debris removal. Nevertheless, the FWC will remain involved in this effort to ensure the sub-contractor is effectively managing this operation.

Underwater debris removal in a coral reef environment is complex and challenging. The amount of debris Hurricane Irma has created is enormous. At this time, it is very difficult to determine the actual cost-structure of this effort. That cost-structure will be influenced by the nature of the debris removed, the location of that debris and the modes of operation to remove that debris. The details of this effort are presently unknown and will be developed once the prioritization is developed in partnership with the FKNMS. Consequently, at this time, this proposal can only assign a total dollar amount for this project.

Shoreline Debris-FWC will work with the FKNMS and ENP to prioritize areas to remove debris, focusing on fishing gear related debris for removal along shorelines. After areas are prioritized, FWC will contract the management, operation, and tracking of shoreline debris removal. This contract could be to other local, state, or federal agencies, or non-profit organizations. The contractor will be responsible for acquiring any necessary permits, training, disposing of, and tracking debris removal. FWC will remain involved in this effort to ensure the sub-contractor is effectively managing this operation.

Lineless Trap Gear-$250,000

The amount of trap line used in the spiny lobster trap fishery and the loss rate of that line have raised concerns about the risk of entanglement of protected species, particularly dolphin, sea turtles, whales, and manatees. The entanglement of trap line on coral reefs, particularly protected branching corals species, has increased concerns for reef health particularly after the catastrophic loss of traps during Hurricane Irma. There is increased interest to reduce the risk of trap line entanglement of protected species and damage to coral habitat.

The lobster trap fishery currently has 467,806 traps available for use. Fishing industry estimates suggest 90 feet of line are used per trap for a total of 6,641 miles of line used each year in the fishery (Adams 2012). Trap line is predominantly 5/16 or 11/32 inch black polypropylene rope. Trap lines are predominantly used to attach one buoy to one trap, typically referred to as a "single". These single traps are the typical method for fishing lobster traps. Groups of traps connected by a submerged line and connected to buoys on only on each end of the group of traps are referred to as trawls or strings of traps (Adams 2012). Strings of traps have been used for many years for traps fished in water deeper than 25 m and near Miami presumably to reduce buoy cut-offs and trap robbing. The use of strings of traps appears to have increased in nearshore shallow water of the Keys. There are no surveys recording the number of traps fished in strings, but likely remains near 10% of all traps.

Trap line poses a risk for entanglement for many species including protected dolphin, sea turtles, and manatees (for review Adimey et al 2014). Ropes also entangle on the seafloor and cause damage to corals, sponges, and sea fans. The relationship between the amount of trap line and the number of entanglements is likely, but has not been documented. The location of traps and entanglement hotspots for protected species has been documented (Adimey et al 2014). Lost ropes and traps are the dominant type of submerged marine debris and are a persistent risk to coral habitats (Uhrin et al 2014). Buoy cut-off by motorboats and tropical cyclones appear to be the primary cause of lost traps and rope in the Florida Keys.

The current most effective method to limit the risk of entanglement by trap lines is to reduce the amount of trap line in the environment. This includes limiting the amount of time trap lines are deployed – that is with the trap line stretched between a buoy at the surface and a trap on the bottom as opposed to the trap line and buoy secured underwater with the trap until it is time to recover the trap. Additional technologies or modifications to fishing methods are sought to resolve the environmental impact of trap line. Technologies are needed for reducing the impacts from trap line are needed. Technology to allow the timed release of marker buoys has existed for decades (for a description Waugh and Waugh 1977). More recent research in other States and international trap fisheries has focused on activated pop-up buoys and electronic locator devices (He and Suuronen 2018, Baumgartner et al 2018).

The program goal is to reduce the risk of trap line affecting animals and the environment including protected species. Similar programs in other national and international trap fisheries have tested remote control devices that release marker buoys on demand or at a set time. Projects exploring this technology are encouraged. Selected projects will support FWC's mission to protect endangered species including corals. FWC intends to provide financial support to one or multiple applied research projects that are designed to develop and test technologies that have the potential to:

1) reduce the amount of trap line in the water or

2) reduce the amount of time trap line is in the open water posing a risk for entanglement, or
3) reduce the risk of trap line loss
4) reduce the risk of entanglement of animals in trap line
5) reduce the risk of entanglement of animals in lost trap line
6) develop pop-up buoys and fishing methods that reduce the amount of time ropes are extended from the ocean floor to marker buoys.

Florida Marine Fisheries Infrastructure Recovery Grant Program (FMFIRGP)-$10,628,661

Access to fishing from fishing piers, boat ramps, and marinas is important to Florida's fishing economy. Boat ramps and marinas are important for both recreational and commercial fishers. Fishing piers are important for subsistence fishers as well as others who do not own boats. As Hurricane Irma made its way through Florida, public fishing access infrastructure was damaged. This infrastructure includes fishing piers, boat ramps, and marinas. Management of this infrastructure by both local governmental and private entities, have requested assistance in repairing or rebuilding crucial infrastructure, allowing for normal operations to continue. In many cases, other means of recovery have been denied or have failed, causing these operations to be totally or partially inactive for the purposes intended. Some of these projects requested include public fishing piers and docks, public access ramps and supporting structures for vessels, inshore and offshore reef and shoreline restoration. Estimated damage to the infrastructure outlined may be more than one hundred million dollars.

The Florida Fish and Wildlife Conservation Commission (FWC) proposes the Florida Marine Fisheries Infrastructure Recovery Grant Program (FMFIRGP) to be the method to disperse funds for repair of access infrastructure. This grant will assist counties, cities, and commercial businesses with a non-match competitive grant opportunity, to repair or rebuild infrastructure directly related to the use of, access to, or protection of Florida marine fishery opportunities.

The program will take applications for projects needed and score them through a competitive process. Those projects rating the highest will be awarded funding to repair or rebuild their infrastructure needs. The awards will continue until the funding is depleted. After the awards are issued, FWC's Boating and Waterways Section will issue and execute grant agreements to those projects selected. FWC will monitor the projects for competitive bids, timely construction, compliance with all state and federal laws and project completion as defined within the grantees agreement contracts. Management of this program will require a full-time position assigned to the Boating and Waterways section as a state OPS Grant Specialist III, funded from the administrative cost attached to this grant. A full end of project report will be created outlining all completed projects and outcomes of this recovery program.

Project Schedule

	2019											
Project/Month	**Jan**	**Feb**	**March**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
Lobster Trap Certificate Buy Back					X	X	X	X				
Lobster Trap Replacement					X	X	X	X				
Direct Payouts to Commercial Fishers					X	X	X	X	X			
Redundant Power Supplies for Wholesale Dealers						X	X	X	X	X	X	X
Improvement or Unisured Repair to Wholesale Facilities							X	X	X	X	X	X
Direct Payouts to Wholesale Dealers							X	X	X	X	X	X
Direct Payouts to Charter Businesses										X	X	X
Coral Rescue					X	X	X	X	X	X	X	X
Sponge Restoration					X	X	X	X	X	X	X	X
Coastal Habitat Restoration					X	X	X	X	X	X	X	X
Derelict Vessel Database Improvements					X	X	X	X	X	X	X	X
Marine Debris					X	X	X	X	X	X	X	X
Lineless Trap Gear					X	X	X	X	X	X	X	X
Florida Marine Fisheries Infrastructure Recovery Grant Program					X	X	X	X	X	X	X	X

	2020											
Project/Month	**Jan**	**Feb**	**March**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
Lobster Trap Certificate Buy Back												
Lobster Trap Replacement												
Direct Payouts to Commercial Fishers												
Redundant Power Supplies for Wholesale Dealers	X	X	X	X	X	X	X					
Improvement or Unisured Repair to Wholesale Facilities	X	X	X	X	X	X						
Direct Payouts to Wholesale Dealers												
Direct Payouts to Charter Businesses	X	X	X									
Coral Rescue												
Sponge Restoration	X	X	X	X	X							
Coastal Habitat Restoration	X	X	X	X	X	X	X	X	X	X	X	
Derelict Vessel Database Improvements	X	X	X	X								
Marine Debris	X	X	X	X	X	X						
Lineless Trap Gear	X	X	X	X	X							
Florida Marine Fisheries Infrastructure Recovery Grant Program	X	X	X	X	X	X	X	X	X	X	X	

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