



## UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office

263 13th Avenue South

St. Petersburg, Florida 33701-5505

<http://sero.nmfs.noaa.gov>

JAN 18 2018

F/SER24:RM

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

006671JAN2018

Dear Mr. Gregory:

NOAA's National Marine Fisheries Service requests the Gulf of Mexico Fishery Management Council review the enclosed Exempted Fishing Permit (EFP) application at their January 2018 meeting. The EFP proposal was submitted by Kampachi Farms LLC (Kampachi). Kampachi is requesting to deploy a small-scale aquaculture demonstration net pen and rear two consecutive cohorts of almaco jack in federal waters of the Gulf of Mexico. The EFP would be for a two year period to evaluate the use of a PolarCirkel-style net pen in an offshore aquaculture operation, review environmental impacts, and analyze public perception of aquaculture in the Gulf of Mexico.

The project would collect important biological, social, and economic data on the feasibility of an off-shore aquaculture operation, and presents an opportunity to develop industry support around off-shore aquaculture as a viable source of fresh seafood in the Gulf of Mexico.

Sincerely,

A handwritten signature in black ink, appearing to read "Roy E. Crabtree".

For Roy E. Crabtree, Ph.D.  
Regional Administrator

Enclosure





January 12, 2017

Rich Malinowski  
Acting Southeast Regional Aquaculture Coordinator  
National Oceanic and Atmospheric Administration (NOAA) Fisheries  
Southeast Regional Office  
263 13th Avenue South  
St. Petersburg, Florida 33701  
(727) 551-5761  
[Rich.Malinowski@noaa.gov](mailto:Rich.Malinowski@noaa.gov)

**RE: Exempted Fishing Permit Application for the Velella Epsilon Project –  
Pioneering Offshore Aquaculture in the Southeastern Gulf of Mexico  
NOAA Sea Grant 2017 Aquaculture Initiative**

Mr. Malinowski,

Please find the enclosed Exempted Fishing Permit (EFP) Application for the subject Velella Epsilon (VE) Project. The VE Project Team submits this application in support of a fisheries-related research activity that focuses on seafood product development and market research. This application was completed in strict compliance with the Code of Federal Regulations (CFR) 50 CFR § 600.745(b), a Magnuson-Stevens Act (MSA) - General Provision for Domestic Fisheries, and in close coordination with NOAA Southeast Regional Fisheries Aquaculture staff.

If you have any questions or comments, please do not hesitate to contact me directly at 850-279-6088 (office), 850-240-3414 (cell), or [dpeters@gsrcorp.com](mailto:dpeters@gsrcorp.com).

Sincerely,

A handwritten signature in black ink that reads 'Dennis J. Peters'. The signature is written in a cursive, flowing style.

Dennis J. Peters  
Aquaculture Permitting Coordinator  
Eastern Regional Operations Manager

encl: EFP Application  
Screening for Finfish Aquaculture in the Eastern Gulf of Mexico Waters (South FL Site)

cc: Jess Beck  
Neil Sims  
Lisa Vollbrecht

## The Velella Epsilon Project – Exempted Fishing Permit Application

### 1.0 Application Submission Date and Research End Date:

#### 1.1 Application Submission Date:

January 12, 2017

#### 1.2 Research End Date:

September 30, 2020

### 2.0 Applicant Contact and Project Coordination Information:

#### 2.1 Applicant Contact Information:

Neil Anthony Sims  
Kampachi Farms, LLC  
PO Box 4239  
Kailua-Kona, HI 96740  
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#### 2.2 Project Coordination Information:

Dennis Jay Peters  
Gulf South Research Corporation (GSRC)  
815 Bayshore Drive  
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[dpeters@gsrcorp.com](mailto:dpeters@gsrcorp.com)

### 3.0 The Point of Contact Regarding Project Questions during Application Consideration:

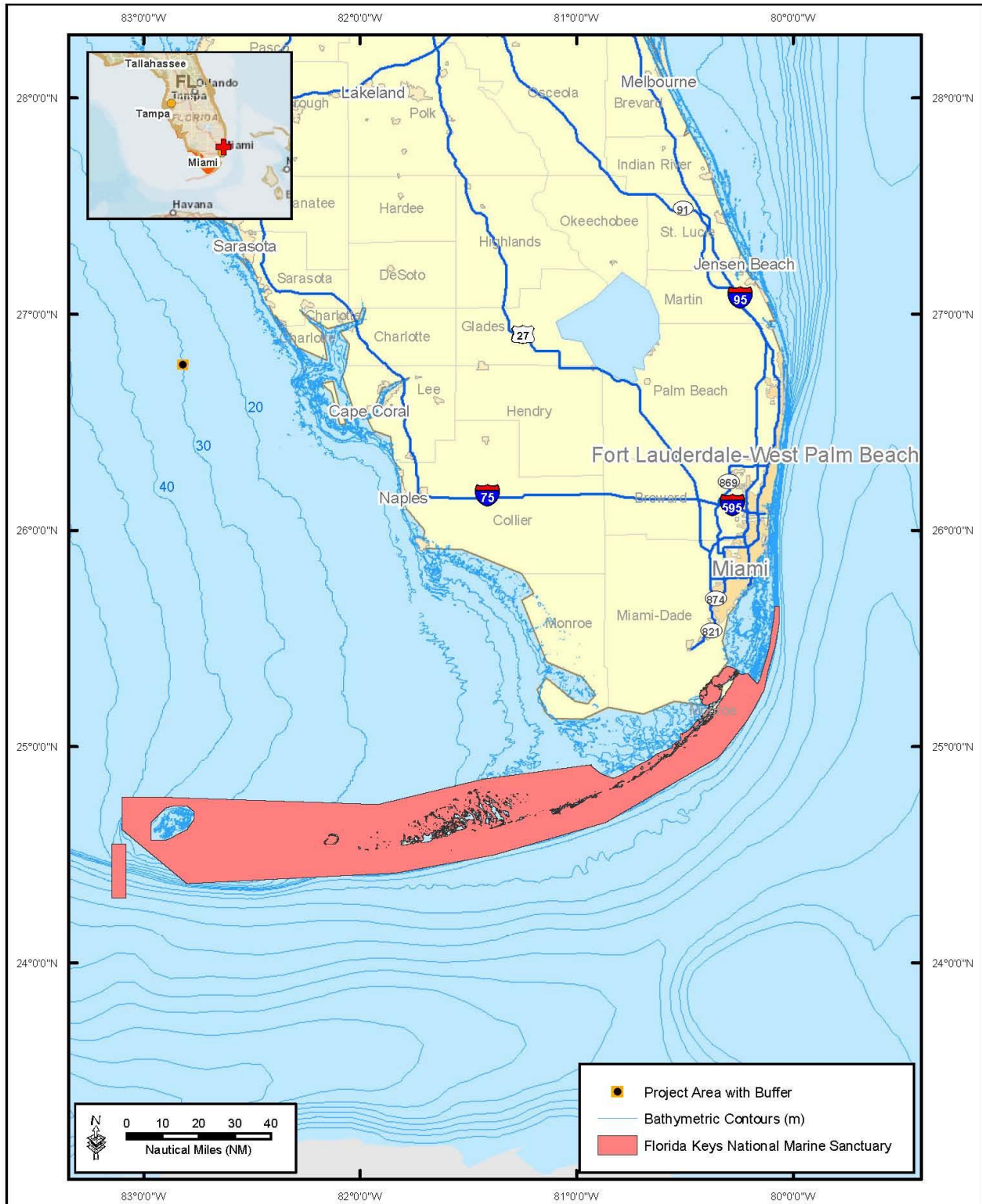
Dennis Jay Peters

### 4.0 Purposes and Goals of the Exempted Fishery Activity, and the Justification for the EFP Issuance:

Although permitting of aquaculture systems for rearing Federally managed species identified in the Gulf of Mexico Fisheries Management Plan (FMP), are typically performed through the Gulf Aquaculture Permit (GAP) application process, due to the relatively small scale and scope of the VE Project (temporary and trial basis [approximately one year growout], the VE Project Team is utilizing the EFP application process as the most appropriate permitting request and pathway for this particular project. The following paragraphs provide statements and continuing discussion of the multifaceted purposes and goals of the VE Project:

**4.1 Purpose #1:** The *first purpose* of this exempted fishery activity is to validate the feasibility of deploying a temporary, small-scale, demonstration net pen and rearing two consecutive cohorts of the Federally managed species, almaco jack (kampachi; *Seriola rivoliana*), in Gulf of Mexico (GOM) waters off southwest Florida, located due west of Boca Grande inlet, Port Charlotte, Florida (Figure 1; approximately located at 26°45'58.65" N and 82°49'12.57" W). Fingerlings will most likely be sourced from the Rosenstiel School of Marine and Atmospheric Science (RSMAS), University of Miami (U of M), hatchery. Dr. Benetti (RSMAS) is a world-renowned marine aquaculture expert, specializing in hatchery and open ocean aquaculture growout technologies of marine finfish species. Other marine hatcheries (e.g., Mote Marine Lab) may participate as well.

NOAA Sea Grant 2017 Aquaculture Initiative  
The Vellela Epsilon Project – Exempted Fishing Permit Application



**Figure 1. Single Point Mooring Site for the VE Project Demonstration Net pen Located at Approximately 26°45'58.65" N and 82°49'12.57" W**

The VE Project has partnered with Dr. Daniel Benetti as a Co-Project Leader, who has provided a commitment to supply fingerlings for stocking and growout for the VE Project. The VE Project plans to raise and harvest almaco jack during both the consecutive cohort trials.

The **goals of the first purpose** are to (a) validate the use of a submersible surface net pen on a single-point mooring (SPM) as an effective array design for the GOM to reduce operating costs and provide optimal fish health; and to use the demonstration as a platform to maximize access for public outreach benefits. The SPM net pen array will additionally minimize the environmental footprint of the limited water quality impacts and avoid hard bottom, corals, and/or other sensitive habitats. An additional goal of the first purpose is to (b) achieve a minimum survival rate to harvest of approximately 85% from each of the two cohorts grown in back-to-back cycles (5 to 6 months/cycle), yielding approximately 34,000 fish from an initial 40,000 fish stocked.

The SPM was first approved and successfully deployed in Hawaii (RIN 0648-XC791) during the Velella Delta project, which lasted 41 months in duration. This particular SPM consisted of a 3,658-meter (m) mooring line in approximately 1,830 m of water (i.e. 2:1 scope), utilizing a deadweight anchor. It is anticipated that the VE Project mooring will demonstrate the utility of a SPM in shallower water, approximately 30 m to 45 m deep with a longer scope (conceivably 5:1), for a mooring line length of 150 m to 230 m, and utilizing an embedment anchor. The SPMs have also been successfully utilized with the SubFlex system in Israel. Small-scale SPM single net pens are also used in some parts of Japan, such as Kagoshima. Kampachi Farms, LLC anticipates utilizing SPMs for future offshore macroalgae culture trials in Hawaii, as well.

The preliminary siting analysis for the Demonstration farm site and location of the SPM considered the following criteria:

- Convenient proximity to a commercial port (Charlotte Harbor)
- Short navigation time for stocking, harvesting, and public tourism activities
- Water depths that allow for net pen submersion, but maximize mooring scope
- Avoidance of corals, coral reefs, and hardbottom habitats
- Avoidance of artificial reefs and submerged cultural resources (ship wrecks)
- Sources of open sand bottoms (unconsolidated sediments) for positioning the SPM
- Avoidance of marine protected areas (MPAs), marine reserves, and Habitats of Particular Concern (HAPCs)
- Avoidance of navigational fairways, vessel traffic routes, anchoring areas, lightering zones, deepwater ports, platform safety zones, military (Air Force) zones, fisheries and tourism areas, dredging sites, mineral extraction areas, designated dredge material dumping sites, rights of way for energy transmission lines and communications cables, and scientific reference sites
- Avoidance of other offshore aquaculture facilities (none within 1.6 nautical miles)
- Avoidance of Ocean Dredged Material Disposal Sites (none within 1.0 nautical mile)
- Proximity to seafood outlets for product marketing and sales trials

The VE Project Team also participated (12/11/2017) on a live demonstration of the **Gulf AquaMapper** provided by Ken Riley, Lisa Wickliffe, and James Morris, in order to perform a preliminary siting analysis for the VE Project with their available datasets (and links to many of the below Federal website databases). Supplemental data (e.g., wave heights, currents, temperatures, multibeam side scan sonar, and bathymetry modeling) at the proposed site location were provided during a second follow-up call (01/10/2018) with James Morris' lab (including Ken Riley and Barry King). These data are provided as an attachment to this EFP application, in the preliminary **Screening for Finfish**

***Aquaculture in the Eastern Gulf of Mexico Waters (South FL Site)*** report, by Lisa C. Wickliffe, Ken Riley and James A. Morris, Jr., (NOAA, National Ocean Service National Centers for Coastal Ocean Science) as supplemental siting analysis information. Mr. Morris' lab has offered to provide ongoing modeling and data support during the permitting process. The preliminary siting analysis for the Demonstration farm site and location of the SPM additionally referenced data and information from the following Federal websites:

- Essential Fish Habitat Mapping Application for the Gulf of Mexico Fisheries:  
<http://portal.gulfcouncil.org/EFHMap.html>
- GIS Data for Gulf of Mexico EFH and HAPC  
[http://sero.nmfs.noaa.gov/maps\\_gis\\_data/habitat\\_conservation/efh\\_gom/index.html](http://sero.nmfs.noaa.gov/maps_gis_data/habitat_conservation/efh_gom/index.html)
- NOAA Gulf of Mexico Data Atlas  
<https://www.ncddc.noaa.gov/website/DataAtlas/atlas.htm?plate=Temperature%20-%20CMECS>
- NOAA Ocean Explorer  
<http://oceanexplorer.noaa.gov/explorations/02mexico/background/currents/currents.html>
- NOAA National Data Buoy Center - Eastern Gulf of Mexico Recent Marine Data  
<http://www.ndbc.noaa.gov/maps/Florida.shtml>
- NOAA National Data Buoy Center - HF Radar National Server  
<http://hfradar.ndbc.noaa.gov/index.php?s=42013>
- NOAA Office for Coastal Management - Digital Coast  
<https://coast.noaa.gov/digitalcoast/>

The VE Project Team plans to perform a thorough siting analysis via a future Baseline Environmental Survey (BES), that will at a minimum, comprise a comprehensive *Seafloor Survey* and *Hydrographic Measurements*; as defined in the ***Baseline Environmental Survey Guidance and Procedures for Marine Aquaculture Activities in U.S. Federal Waters of the Gulf of Mexico***, October 24th, 2016.

The VE Project is concurrently applying for a U.S. Army Corps of Engineers (USACE) Section 10 permit (12/28/2017, Department of Army Permit Number: SAJ-2017-03488-KRD; "Velella Epsilon Project/Aquaculture"), as well as a U.S. Environmental Protection Agency (USEPA) National Pollutant Discharge and Elimination System (NPDES) permit. A BES will be conducted, and the subsequent data analysis and report will be submitted in support of the USACE, Section 10 and the USEPA, NPDES permits (along with copies to NMFS representatives), in order to best select the exact site location for the SPM, and demonstrate confirmation of hardbottom and coral habitat, cultural resource, and other potential user group avoidance. NOAA navigational charts of the area do not indicate any conflict with major shipping channels or DoD Restricted Access areas.

An Interagency Coordination Meeting (potentially including, National Oceanic and Atmospheric Administration [NOAA] Fisheries, National Marine Fisheries Service [NMFS], U.S. Fish and Wildlife Service [USFWS], USEPA, USACE, and the Bureau of Ocean Energy Management [BOEM]) has been targeted for Thursday, February 15, 2018, in Tampa, Florida. One of the primary objectives for this meeting is to reevaluate the proposed site location, ensure that all potential user group activities and sensitive marine resources have been deconflicted, and achieve concurrence on the optimal site location for this effort. The VE Project Team feels that this multiagency coordination is



the best approach for final site selection prior to expending resources on potentially conducting a *Seafloor Survey* in support of the required BES, and in compliance with the *Siting Requirements and Conditions* of the for ***FMP for Regulating Offshore Aquaculture in the Gulf of Mexico***; January 13, 2016. The VE Project Team will continue to look for any previously conducted sea floor surveys for the proposed project site location. If none are identified, it is anticipated that a *Seafloor Survey* in support of the BES for the VE Project would be initiated soon after the Thursday, February 15, 2018, Interagency Coordination Meeting.

It is understood, however, that the issuance of these permits is contingent upon the successful completion and issuance of the EFP; completed consultation per Section 7 of the Endangered Species Act (ESA), the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson Stevens Act) for Essential Fish Habitat (EFH), and Section 106 of the National Historic Preservation Act (Section 106); as well as the accomplishment and signing of a Finding of No Significant Impacts (FONSI) and an Environmental Assessment (EA). It is also understood that a final permit authorization and issuance of the Department of the Army (DA) Section 10 permit will not be able to be made without a copy of the State of Florida's Section 404 Water Quality Certification (WQC) and Coastal Zone Management Act (CZMA) consistency determination and/or waivers.

**4.2 Purpose #2:** The **second purpose** of this exempted fishery activity is to conduct a thorough environmental monitoring program whose **goal** is to demonstrate that impacts on water quality around the net pen are likely to be immeasurable, due to the low stocking biomass, the careful monitoring of feeding, and the constant, dilutive movement of water through the net pen. These very conclusions have been the experience with larger aquaculture net pen operations in state waters.

Two scientific field technicians from Kampachi Farms, LLC, will be stationed on the tender vessel at all times for the duration of the project (staff will be rotated, so that each individual is at sea for four weeks, then off for two weeks) to feed the fish, collect mortalities, collect data on the growing fish, and monitor fishing and marine mammal interactions. Additional technicians from RSMAS will conduct environmental monitoring. Using a probe similar to a HYDROLAB® HL7 Multiparameter Water Quality Sonde, these technicians will measure a suite of physical, hydrographic parameters at depth; such as, temperature, salinity, pH, turbidity, dissolved oxygen (D.O.), D.O. saturation, and specific conductivity. Additionally, water samples will be taken from which measures of supplemental physical and nutrient parameters will be performed; such as dissolved nitrogen and phosphorus, total suspended solids, and lipids. These samples are anticipated to be taken at a number of sites up-current of the VE Project net pen, and at a range of distances down-current, at a range of depths (e.g., surface, 15 m, and 30 m). The VE Project Team will work directly with NMFS and USEPA to define a specific monitoring plan for the Demonstration farm activities.

It is understood that the VE Project will comply with the water quality monitoring, requirements, and conditions specified in the EFP permit, along with all applicable monitoring and reporting requirements specified in the other associated Federal permits (NPDES and Section 10). Additionally, a Nutrient Management Plan may be required (and will be developed) as a condition of the USEPA, NPDES permit. Authors (Price, C.S. and J.A. Morris, Jr) of the ***Marine Cage and The Environment: Twenty-first Century Science Informing a Sustainable Industry*** summarized that "...Usually there are no measurable effects 30 meters beyond the cages when farms are sited in well-flushed waters. Nutrient spikes and declines in dissolved oxygen sometimes are seen following feeding events, but there are few reports of long-term risk to water quality from marine aquaculture..." (NOAA Technical Memorandum NOS NCCOS 164).

**4.3 Purpose #3:** The *third purpose* of the exempted fishing activity is to directly address the public misperception of, and fishing industry resistance to, the expansion of open ocean aquaculture in the GOM. To initiate this effort, Mr. Peters (GSRC) will identify and select a sample of potential stakeholders at the beginning of the project and conduct an assessment of their attitudes towards aquaculture, specifically marine fish, net pen, ocean-based aquaculture in the GOM. This assessment work will include in-person, telephone, and email interviews with established stakeholder interests and provide the baseline data for later evaluation of the effectiveness of the project.

The *goals of the third purpose* are to (a) provide a platform for promotion of rational aquaculture policies and demystification of the industry, by providing a working net pen example to Federal regulators, politicians, constituents, journalists, and other influencers of policy or public perceptions, as well as the local community; (b) increase public awareness of, and receptivity towards, offshore aquaculture, and the need to culture more seafood in U.S. waters, by providing public tours of the offshore operation, (c) serve as a demonstration platform for data collection of water quality, potential benthic impacts, and marine mammal and fish stock interactions resulting from offshore aquaculture in the GOM; and (d) provide local recreational, charter, and commercial fishing communities with evidence of the benefits of aquaculture, through the fish attraction device (FAD) effects of the project, and by documentation of fish aggregation and fishing boat activity around the VE project. The VE Project will capture descriptions and outcomes from the engagement with stakeholders and other community interests, and will condense these findings into summary accounts from the relevant public meetings, meetings with regional relevant officials, and other information gathered during public outreach activities.

**4.5 Justification for Issuance of the EFP:** The justification for issuance of the EFP is to successfully establish and complete a Demonstration farm project for open ocean aquaculture of almaco jack in the GOM, with documented lessons-learned, public outreach experiences, and a detailed permitting pathway for others to follow. The EFP issuance is further justified as the most appropriate permitting pathway (vs. a GAP), due to the relatively small scale and scope of the VE Project (temporary and trial basis [approximately one year growout]). The VE Project will support, promote, and invigorate marine aquaculture in the GOM by directly addressing the constraints, barriers, or hurdles, and often misperceptions of, U.S. domestic aquaculture development that currently limit increased production. Issuance of this EFP will support project work that has been determined to have a relatively high likelihood of increasing U.S. aquaculture production, while advancing nascent aquaculture industries.

## 5.0 Specific Regulations Necessitating an EFP and Necessity for Project Success:

**5.1 Scientific research activity, exempted fishing, and exempted educational activity (50 CFR § 600.745[b]): Exempted Fishing – (1) General:** The VE Project qualifies for an EFP under this particular provision as it requires the VE Project's fisheries-related research activity that focuses on seafood product development and market research; in particular, the aquaculture and incidental harvest of species managed under the GOM FMP. EFPs are issued under the authority of the MSA for situations where research activities would normally be prohibited by Federal fishing regulations; the VE Project is an example of this situation.

**5.2 Fisheries of the Caribbean, Gulf, and South Atlantic; Aquaculture (50 CFR Parts 600 and 622) - Final Rule:** NMFS has the authority to permit aquaculture operations in Federal waters of the GOM pursuant to the Gulf of Mexico Fishery Management Council's (GMFMC) Fishery Management Plan (FMP) for Regulating Offshore Marine Aquaculture in the Gulf of Mexico and its implementing regulations. The proposed species for culture with the VE Project is the almaco jack (kampachi;



*Seriola rivoliana*). Almaco jack is identified as a Federally managed *Species Listed in the Fishery Management Plans of the Gulf of Mexico Fishery Management Council*; revised 01/11/2017.

For the purpose of this VE Project Demonstration, the University of Florida and Kampachi Farms, LLC (the VE Project), request that participating vessels be exempted from the following regulations, and for the subsequent rationales:

**50 C.F.R. § Subparts F—Offshore Marine Aquaculture in the Gulf of Mexico**

**622.101 Permits**

Rationale: The VE Project proposes to culture a Federally managed species (almaco jack) for a temporary and trial basis activity. The **GAP** application process is designed to support larger, long-term (and typically commercial) culture of Federally managed species identified in the Gulf of Mexico FMP. Additionally, a **Gulf Aquaculture Dealer Permit** is not required as the VE Project does not propose to receive fish cultured by another aquaculture facility.

**5.3 Necessity for Project Success:** One of the various constraints to and misperceptions of, U.S. domestic offshore aquaculture development is the limitation of species with closed life-cycle technology that are suitable for production offshore. The VE Project has specifically identified and proposes to culture a species with a proven culture record and with a documented closed life-cycle technology that is suitable for offshore production in the GOM: almaco jack. Ultimately, project success is inherently determined and controlled by strict schedule management and compliance. The following schedule summary provides the key milestone activities and goals of the VE Project, the approximate start date, finish date, and the duration of each activity:

<b>Milestone Activity</b>	<b>Start Date</b>	<b>Finish Date</b>	<b>Months</b>
<b>Deploy Demonstration Netpen/ Tender Vessel Array</b>			
Lease available harbor space	Aug-18	Aug-18	1
Obtain mooring and deployment equipment	Aug-18	Sep-18	2
Mobilize tender vessel to harbor	Sep-18	Oct-18	2
Mobilize staff to harbor	Sep-18	Oct-18	2
Cage delivery	Sep-18	Sep-18	1
Construct cage at port	Oct-18	Nov-18	2
Install mooring	Oct-18	Oct-18	1
Deploy research pen	Nov-18	Nov-18	
<b>Rear Two Consecutive Cohorts of Almico Jack</b>			
Consult on the availability of fingerlings	Aug-18	Jan-19	6
Larval run and nursery time for fingerlings	Sep-18	Apr-19	3
Ship fingerlings to port, onboard to vessel, stock in pen	Nov-18	May-19	
Feeding, cleaning, monitoring	Nov-18	Sep-19	7
Water Quality Monitoring	Nov-18	Oct-19	7
Benthic monitoring (before, during, after cohorts)	Nov-18	Sep-19	12
Environmental Data and vessel reports	Nov-18	Oct-19	12
Engagement in active public outreach	Nov-18	Sep-19	7
Source a buyer(s) for the fish	Feb-19	Aug-19	2
Harvest fish and delivery to port	Apr-19	Sep-19	
<b>Path to Commercial Offshore Netpen Viability</b>			
Determine if market price supports commercial model	Apr-19	May-19	1
Determination of business model viability	May-19	Jun-19	1

## 6.0 Catch (Culture) Information:

**6.1 Species expected to be Harvested and/or Discarded under the EFP:** The almaco jack is the selected species that will be cultured and ultimately harvested from within a closed Demonstration net pen system under the EFP. The original source of the fish to be stocked in the net pen will likely be from the RSMAS Hatchery in Miami, Florida.

The VE Project Team would transfer fingerlings from the RSMAS Hatchery land-based rearing tanks into oxygenated holding containers. Using a crane, they would then place the holding containers onto flatbed trucks and secure them. The trucks would follow the shortest distance RSMAS, Miami to the Port Charlotte Harbor, where the holding tanks would be transferred using a small crane to the deck of the tender vessel. NMFS, USCG, and other appropriate agencies would be notified of the anticipated transport activity. It is estimated that three trips to stock the net pen for each grow out cycle would be required. The transport vessel would proceed to the VE Project site location (at approximately 12 mph) where the fingerlings would be pumped via a hose directly into the net pen using a specially designed fish pump. As this is a well-rehearsed commercial activity, it is unlikely any fingerlings would escape during these operations.

Due to natural mortality that occurs with wild stock and with cultured finfishes, small numbers of this species are anticipated to result in mortality during the 5- to 6-month growout period, and ultimately be discarded after a thorough laboratory autopsy has been performed to determine the cause of death.

**6.2 Number or Weight by Species, of such Harvest and/or Discard under the EFP:**

The VE Project will harvest (market and sell) two cohorts of almaco jack, each comprising 17,000 fish, grown in back-to-back cycles (5 to 6 months/cycle) for a final total harvest of approximately 34,000 fish, or a total marketable yield of approximately 68,000 kilograms (kg). Due to natural mortality, it is estimated that 6,000 fish, of varying sizes over the course of 10 to 12 months, will be discarded (on shore) after a thorough laboratory autopsy has been performed to determine the cause of death. The total weight of the discarded fish is estimated to be less than 4,550 kg.

The VE Project Team would harvest fish from the net pen using a vacuum pump. Fish would be concentrated using a seine net and then harvested. Fish may also be harvested using dip nets and transferred to a support vessel and transported to shore for processing. NMFS, USCG, and other appropriate agencies would be notified of the anticipated transport activity.

**6.3 Expected Disposition of Species, of such Harvest under the EFP:** The VE Project will transport the harvested fish to a shore-based operation, where extensive marketing trials will be conducted and the fish will be ultimately sold to markets in South Florida. Due to natural mortality, small numbers of almaco jack will ultimately be discarded on shore after a thorough laboratory autopsy has been performed to determine the cause of death.

**6.4 Anticipated Impacts:**

**6.4.1 Fisheries** - The closed net pen culture and harvest of almaco jack would not result in any anticipated impacts on, nor jeopardize the sustainability of, any wild stocks of almaco jack, or of any other wild fish. The VE Project plans to use almaco broodstock that are native to the GOM (and are not genetically engineered) for the source of eggs during the hatchery production of fingerlings. The VE Project would therefore, utilize first generation offspring of wild-caught fish to stock the net pen. As such, the VE Project would use fingerling fish (first-generation offspring; F1 juveniles) for stocking the net pens from an existing

facility (e.g., RSMAS, U of M) that harvests fish to maintain adult broodstock. This is consistent with the ***Guidance and Procedures for Genetic Requirements for Gulf Aquaculture Permits***; February 12th, 2016. Additionally, the VE Project would not result in any substantial increase in harvest of wild almaco jack.

Cultured fish could possibly escape during net pen stocking and harvest activities; however, the VE Project would use methods designed to prevent accidental escapes including using closed containers to transport fingerlings to the net pen. Because stocking would be done using pumps while the net pen is at the surface and the surround net is deployed, few fingerlings if any would likely escape during stocking operations. Considering the equipment and operations that will be put in place to reduce the risk of escape, the potential for escapes during stocking and harvesting is thought to be minimal. Should any fingerlings escape, they would be expected to remain around the net pen (which would, even in this case, act as a fish aggregating device) rather than swimming off into pelagic waters. Large fish that are expected to have become attracted to the net pen such as tunas, billfish, and possibly sharks, would likely consume any escaped fingerlings that are not retrieved.

The fish that would be stocked and maintained in the net pen would be genetically indistinguishable from the local wild population because they are first-generation (F1) offspring from wild-caught fish from the GOM and are the result of mixed broodstock parental crosses. As such, an unforeseen release of small quantities of cultured fish into the wild would not substantially impact the genetic structure of wild fish stocks through genetic introgression and would not reduce the health or fitness of the wild stock.

As cited in the ***FMP for Regulating Offshore Aquaculture in the Gulf of Mexico*** (January 13, 2016), "...Scientific information available for species likely to be cultured in the Gulf EEZ (cobia, almaco jack, red drum, red snapper) indicates that red snapper and red drum should be collected within a 62 and 82 mile (100 and 132 kilometer [km]), respectively, radius of the location of the offshore aquaculture facility, while cobia and ***almaco jack may be collected from anywhere within the Gulf in order to maintain the genetic integrity of those populations...***"

Further, disease and parasite transmission from the VE Project are unlikely to have a substantial impact on wild stocks based on:

- (a) Fingerlings would be from the RSMAS certified disease-free hatchery facility. Before stocking the pen, the fish would be examined, and therefore, the net pens would not be stocked with fish showing signs of disease or parasites.
- (b) Technicians would routinely monitor the health of the fish in the net pen; dead or sick individual fish would be removed. Should a disease outbreak occur or heavy parasite loading be detected, then the net pen would be treated to the extent necessary, following the ***U.S. Fish and Wildlife's Approved Drugs for Use in Aquaculture*** handbook; April 2015.
- (c) Fish are proposed to be stocked at levels that are not expected to result in stress from overcrowding, which has the potential to result in a greater likelihood for diseases.

(d) Fish mortalities that occur during the VE Project would be removed during daily maintenance operations. Technicians would not dispose of any mortalities in the GOM.

As guided by any subsequent requirements issued in the EFP, the VE Project will develop an **Aquatic Animal Health Plan**, tailored to the specific needs of this Demonstration farm project, as required. Guidance will be additionally taken from the **National Aquatic Animal Health Plan for the United States**; prepared by the *National Aquatic Animal Health Task Force*; October 2008; as implemented by the U.S. Department of Agriculture's (USDA) *Aquaculture/Aquatic Animal Health Program*.

**6.4.2 Marine Mammals and Protected Species** - The VE Project's net pen culture and harvest operations of almaco jack would not result in any anticipated impacts on marine mammals, sea turtles, or other protected species of the GOM. There are 28 different species of marine mammals that may occur in the GOM. All 28 species are protected under the MMPA; six are additionally listed as endangered under the Endangered Species Act (ESA) (sperm [*Physeter microcephalus*], sei [*Balaenoptera borealis*], fin [*Balaenoptera physalus*], blue [*Balaenoptera musculus*], humpback [*Megaptera novaeangliae*] and North Atlantic right [*Eubalaena glacialis*] whales).

Other ESA-protected species occurring in the GOM include two threatened sea turtle species (loggerhead [*Caretta caretta*] and green [*Chelonia mydas*]); three endangered sea turtle species (Kemp's Ridley [*Lepidochelys kempii*], leatherback [*Dermochelys coriacea*], and hawksbill [*Eretmochelys imbricata*]); two endangered fish species (Gulf sturgeon [*Acipenser oxyrinchus desotoi*] and smalltooth sawfish [*Pristis pectinata*]); and one threatened fish species (Nassau grouper [*Epinephelus striatus*]).

Additionally, nine coral species (elkhorn [*Acropora palmata*], staghorn [*A. cervicornis*], Lamarck's sheet [*Agaricia lamarcki*], lobed star [*Orbicella annularis*] pillar coral [*Dendrogyra cylindrus*], elliptical star coral [*Dichocoenia stokesii*], mountainous star coral [*Orbicella faveolata*], boulder star coral [*Orbicella franksi*], rough cactus coral [*Mycetophyllia ferox*]) are ESA-protected as threatened.

The potential for attraction or interaction of marine mammals and sea turtles at the VE Project site is likely. Despite the potential risks; however, the potential for entanglements are unlikely if anchor lines are kept taut at all times. SPMs, as in the proposed array, are designed to remain taught. The cage (and any attached vessels) will track around in a 'watch circle' with the current, maintaining a taught mooring line. Additionally, the pen will use a rigid copper alloy mesh, which presents no marine mammal entanglement hazard. The VE Project activity is not anticipated to result in collisions between protected marine mammal, sea turtle, or fish species and the net pen or tender vessel. The vessel captain will operate at sea in a manner that would reduce the risk of collisions with marine mammals and sea turtles.

No impacts are anticipated on the Gulf sturgeon, as they are not anticipated to occur at the offshore distance of the VE Project site location (30 to 45 miles offshore). No impacts are anticipated on the Nassau grouper, as they are limited to locations including the Yucatan, Tortugas, and Key West.

Due to the relatively shallow water depths of the proposed VE Project site location (approximately 30 m to 45 m deep), the SPM (anchor) securing the tender vessel and supporting the floating net pen would be positioned via diver assistance and/or drop camera systems, as a habitat conservation measure for

avoidance and minimization of environmental impacts, thus ensuring that the placement is in an area of unconsolidated sediments (sand bottom) and avoiding hardbottom, coral, or other sensitive habitats.

The VE Project Team would implement a **Marine Protected Species Monitoring and Reporting Plan**. Marine protected species are marine mammals, sea turtles, and ESA-listed seabirds. The VE Project staff would monitor marine mammals and other protected species whenever staff are at the VE Project site. A designated representative of the EFP permit would report immediately to NMFS (a) any observed or reported direct physical contact by any marine mammal, sea turtle, or ESA-listed seabird with any part of the net pen array; or (b) any observed or reported injured or entangled marine mammal, sea turtle, or ESA-listed seabird within 100 m of any part the net pen array. The VE Project staff would cease all surface activities, including stocking, harvesting operations, and routine maintenance operations when an ESA-listed seabird comes within 100 m of the activity until the bird leaves the area.

**6.4.3 Essential Fish Habitat (EFH)** - The VE Project's net pen culture and harvest activities of almaco jack may adversely affect EFH, but would have only a minimal effect on EFH. The VE Project's activities are anticipated to have no effect on EFH Habitats of Particular Concern (HAPC), as none are located in the vicinity of the project area. The Reef and Banks Coral EFH HAPC are located in the northwestern portion of the GOM, off the Texas and Louisiana coasts; and the Pulley Ridge Coral EFH HAPC is located approximately 80 nautical miles southeast of the VE Project site.

The VE Project activities are anticipated to result in negligible, short-term impacts on EFH, including the *Shrimp, Red Drum, Reef Fish, Coastal Migratory Pelagics, Spiny Lobster, Coral and Coral Reefs Stone, and Stone Crab* Fishery Management Units (FMUs). The VE Project is not anticipated to result in substantial impacts on EFH waters (water quality) or substrate (hardbottom components) of the GOM or coastal habitats due to the stationary (SPM) site location and diver-assisted anchor placement of the VE Project; the limited size and duration of the project; operational features that would result in minimal impacts to water quality, and that prevent adverse impacts to shallow habitats. The VE Project has GPS-tracking features to help ensure that if gear becomes detached, a notification signal would be sent and the gear could be retrieved. There would be limited vessel activity associated with the project.

## 7.0 Anticipated Vessel Effort Information:

### 7.1 For Fixed Gear:

**7.1.1 Type and Size of Gear** – The VE Project will include an array consisting of an offshore-strength PolarCirkel-style net pen (up to 25 m diameter, with copper alloy mesh netting, up to 14 m deep) and tender vessel, which will both be moored by the tender vessel anchor for the duration of deployment.

**7.1.2 Amount of Gear** – A single (one), 25 m or less diameter offshore-strength PolarCirkel-style net pen will be deployed (no gear will be deployed to sample wild fish stock).

**7.1.3 Number of Gear Hauls** – Two (2) net pen deployments will be performed; in support of the two back-to-back cycles of fish cultures (no gear hauls of wild fish stock will be conducted).

**7.1.4 Average Soak Time** – Each net pen deployment and fish culture cycle will have an approximate 5- to 6-month duration; for a total 10- to 12-month project duration (no soak time of gear will be conducted to target wild fish stock).

**7.1.5 Sampling Months/Time of Year** – The net pen deployment for the first fish culture cycle will occur approximately from November 2018 through April, 2019; and the second cycle will occur approximately from April, 2019 through September, 2019 (no sampling of wild fish stock will be conducted).

**7.1.6 Sampling Locations and Depth** – Each of the two fish culture cycles will be located on a single point mooring (anchor) at approximately 26° 45' 58.65" N and 82° 49' 12.57" W, in approximately 30 m to 45 m water depth.

It is anticipated that the USACE, Section 10 permit will typically require the establishment of a 500 m buffer area (approximately 0.9625-square-mile area) around each side of the project area. As such, below are the approximate coordinates for the 0.9625-square-mile area; however, the VE Project Team is amenable to repositioning the proposed site and project footprint should the final siting analysis determine an alternate location that best avoids sensitive habitats, resources, or user groups:

<u>Location</u>	<u>Latitude</u>	<u>Longitude</u>
Top Left	26° 46.418' N	82° 49.669' W
Top Right	26° 46.390' N	82° 48.719' W
Bottom Right	26° 45.537' N	82° 48.750' W
Bottom Left	26° 45.565' N	82° 49.700' W

The VE Project net pen will have as a minimum, one properly functioning locating device (e.g., global positioning system [GPS] device) to assist in locating the system in the event it is damaged or lost. It is additionally understood that the USCG will likely require that the VE Project structures be marked with lights and signals to ensure compliance with private aids to navigation (33 CFR 66.01).

During nominal storm events such as storms less than a Category 1 level or other similar tropical storms, the tender vessel would remain on location and the offshore-strength PolarCirkel-style net pen would be submerged approximately 10 m below the surface until the storm (high wind and wave height) conditions diminish. During storm events greater than a Category 1 level, the net pen will be submerged, and the tender vessel will – at the Captain’s discretion - either stand off on its own anchor, or return to an identified safe harbor. Once the storm has passed, the tender vessel will return to the mooring position, re-connect with the mooring line, bring the net pen to the surface, and resume activities. It is anticipated that a contingency plan for emergency containment and retrieval of the net pen array resulting from severe weather conditions would be developed as requirements of the EFP and/or the Section 10 permits.

GPS transponders aboard the net pen array would provide regular automated reporting of the array’s position. This information would be available only to the VE Project Team members and not to other mariners. Video feeds from security and in-water cameras would be available for monitoring at the shore station 24 hours a day. Streaming video would also be available in the VE Project Team’s project manager’s office and accessible through the internet. VE Project staff would access the online command and control system at least twice a day to monitor the systems. If staff detect that the net pen is outside of the expected operating area, they would use GPS information to launch an emergency response in a timely manner.

At the conclusion of the Demonstration trials, the net pen array and all mooring equipment would be removed from the site and hauled to shore for proper cleaning and storage. The VE Project Team would comply with any requirements for a more detailed

**Closure Plan** that may be developed as requirements of the EFP and/or the Section 10 permits.

**7.2 For Mobile Gear:** No mobile gear will be deployed.

**8.0 Vessel Information:**

**8.1 Vessel Name:** Schooner Machias

**8.2 Vessel USCG Documentation Number, State License or Registration:**  
U.S. Coast Guard (USCG) Document No. 289053

**8.3 Vessel Home Port:** Honolulu, HI

**8.4 Vessel Owner Information:**

Ocean Charter Service, Inc.

1042 D. Ilima Drive,

Honolulu, HI 96817

(808) 595-0219

[CaptBillAustin@hawaii.rr.com](mailto:CaptBillAustin@hawaii.rr.com)

**8.5 Vessel Captain Information and Primary Project Participants Names:**

**8.5.1 Captain** - Bill Austin

**8.5.2 Crew** - U of M graduate students, first mate, and cook (names to be provided)

Depending on the availability of Machias at the time of deployment, an alternative tender vessel of similar capability may be arranged from Port Charlotte, Florida. The exact specifications of the vessel and captain information will be provided as soon as they are confirmed for the deployment.

**9.0 Principal Investigator (PI), Applicant (same as PI), and Project Coordinator's CV:**

(Attached)

**10.0 Signature of Applicant:**



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Neil Anthony Sims



**NEIL ANTHONY SIMS, M.Sc.**

**EDUCATION** : 1989 - 1990 : M.Sc. in Zoology University of New South Wales, Sydney.

1977-1980: B.Sc. Zoology/Marine Biology, James Cook University, North Queensland.

**PROFESSIONAL EXPERIENCE** : Full-time positions

**2011 - Present**: Co-Founder, President, Co-CEO of **Kampachi Farms, LLC.**, a private company pursuing marine fish hatchery and open ocean mariculture research and development, based in Kona, Hawaii, and La Paz, Mexico. 8 employees.

**2004 - Present** : Co-Founder, President of **Deep Blue Research, LLC.**, an open ocean mariculture research and development company.

**2004 - 2011** : Co-Founder, President, Co-CEO of **Kona Blue Water Farms, Inc.** Established a marine fish hatchery and open ocean fish farm in Kona, Hawaii producing over 1 million lbs of sashimi-grade Kona Kampachi®, worth over \$6 million annually, in an environmentally-sound manner, using sustainable diets. Up to 48 employees.

**1992 - 2004** : Vice-President / Research Director and founding partner of **Black Pearls, Inc.**, the first private company to develop South Sea pearl oyster hatchery culture techniques in the Pacific Islands. BPI applied these methods to expansion of pearl farming in Hawaii, South Pacific atolls, Australia and South East Asia. 12 full-time employees.

**2000 – 2004** : Chairman of the Board and founding partner of **Queensland South Sea Pearl Company, Pty, Ltd.**, based in Cairns. Pearl farm operations for silver-lip pearl oysters in Cape York Peninsula and Torres Strait areas of Australia. 15 employees.

**1995 - 2001**: Vice-President, Black Pearls of Micronesia, Inc., pearl farm in Marshall Islands. 40 employees.

**PROFESSIONAL EXPERIENCE** : Consulting and other positions

Vice-Chair of Aquaculture Stewardship Council's Technical Advisory Group (2015-present), and Member of TAG (2009-present).

Chair of Offshore Mariculture Session, Aquaculture America 2015. New Orleans, LA.

Co-Chair of Offshore Mariculture session, Aquaculture America 2014, Seattle, WA, USA.

Chair of 4<sup>th</sup> Offshore Mariculture Conference 2012, Izmir, Turkey

Testified to U.S. Congress House Sub-Committee on Insular Affairs, Oceans and Wildlife, Oversight Hearing on offshore aquaculture (September 9, 2009).

FAO Advisor for GESAMP (Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection: Working Group 36) on an Ecosystem-Based approach to Offshore Aquaculture (Crete, 2008; Orbotello, 2010).

President (2008-present), and Founding Boardmember (2007-present) for the **Ocean Stewards Institute**, the international open ocean mariculture trade association.

Co-Chair, Offshore Mariculture session, World Aquaculture Society Conf., Natal, Brazil, 2011.

Founding Member (2006–2007) for **Organic Seafood Committee**, National Fisheries Institute.

Co-ordinator, Pearl Oyster Res. Gp, South Pacific Commission, New Caledonia (1989 – 2005).

Chairman, Technical Sessions, for Pearls '94, the World's First International Pearl Conference.

Industry Advisory Committee Center for Tropical & Sub-Tropical Aquaculture (1999 – present)

Consultancies to : an aquaculture investment fund guiding Advisory Board establishment (2016); a public-private consortium of Chilean salmon industry partners and government agencies to recommend research strategies for offshore salmon farming (2016); Ras al Khaimah government on opportunities for open ocean mariculture in UAE waters (2015); Lockheed Martin (Oman/Saudi fish farm development, 2012); private pearl farms in Thailand (1997) and Philippines (1996 – 1999); Kuwait Institute for Scientific Research (1992); Australian International Development Assistance Bureau (1992); USAID (1991); South Pacific Commission, South Pacific Forum Secretariat (1991).

## **GRANTS AND AWARDS :**

Fish 2.0 Business Plan pitch competition, won Strongest Market Potential, Pre-revenue companies (2015). Since 1993, Mr Sims has been P.I. or Co-P.I. on more than 35 Federal or State research grants or contracts, worth over \$8 million, including :

Principal Investigator for a U.S. National Science Foundation - Small Business Innovative Research (SBIR) grant (Phases I and II) on "Launching Velella: Testing the Commercial Potential of Mobile Offshore Fish Farming in Ocean Gyres". 2009 - 2012.

Co-Principal Investigator for a Saltonstall-Kennedy Grant (NMFS/N.O.A.A.) grant for "Fishmeal Replacement Using the Byproducts from Microalgae Based Biofuel Production and Food Processing in the Diets of High Value Marine Finfish". 2010 - 2012.

Principal Investigator for a Saltonstall-Kennedy Grant (NMFS/N.O.A.A.) grant for "Operational and economic efficiencies of surface cage technologies: The key to profitability in America's open ocean fish farming industry." 2009 – 2011.

Co-Principal Investigator for a U.S. National Science Foundation - SBIR grant (Phases I and II) on "Innovative control of ectoparasites: key to the expansion of open ocean fish". 2007 - 2010.

Co-Principal Investigator for a National Oceanographic and Atmospheric Administration SBIR Grant (Phases I and II) for "Improved Giant Grouper hatchery methods open opportunities for open ocean aquaculture and fishery enhancement". 2007 – 2011.

**SELECTED PUBLICATIONS AND PAPERS :** Mr Sims writes a regular column on offshore aquaculture for Aquaculture Magazine. He was previously Editor of Pearl Oyster Information Bulletin (1989–2005), and regularly contributed articles to Pearl World, The International Pearling Journal. Has authored or co-authored over 20 published papers and reports, including:

Park, H.; ... **Sims, N.**; ... Clemente, T.. (in press). Towards the development of a sustainable soybean-based feedstock for aquaculture. Plant Biotech. Journal: PBI-00215-2016.R1

**Sims, N.A.** 2013. "Kona Blue Water Farms case study: permitting, operations, marketing, environmental impacts, and impediments to expansion of global open ocean mariculture". In A. Lovatelli, J. Aguilar-Manjarrez & D. Soto, eds. Expanding mariculture farther offshore: Technical, environmental, spatial and governance challenges. **FAO Fisheries and Aquaculture Proc. No. 24**. Rome, FAO. pp. 263–296.

**Sims, N.A.** 2013. Open ocean aquaculture can fill the void. Marine Ecosystems and Management. **Vol. 7**, No. 2. October - November 2013. p. 3.

**Sims, N.A.** 2012. "Environmental Impacts of an Open Ocean Mariculture Operation in Kona, Hawaii". Encyclopedia of Sustainability. **Vol. 5: 3555-3582**. Springer Science+Business Media, LLC, New York. ISBN: 978-0-387-89469-0.

Key, G. & **N. A. Sims**. 2012. Velella Project Pioneers Open Ocean Cage-Farming Technology. Global Aquaculture Advocate, **September/October 2012**: pp 84 – 88.

**Sims, N. A.**, & Key, G. 2011. Fish without footprints, pp. 1-6 in **OCEANS 2011**. IEEE.

**Sims, N.A.** (2010). "Fishing farming Supports Ecological Efficiency". Global Aquaculture Advocate. **May/June, 2010**: pp 54-55. (<http://pdf.gaalliance.org/pdf/gaa-sims-may10.pdf>)

**Sims, N.A.** (2008). "Net Impacts -- Net Pens Deliver More Fish With Smaller Carbon Footprint than Tank Culture". Global Aquaculture Advocate. **March/April, 2008**: pp 41-3.

Welch, A., Hoenig, R., Stieglitz, J., Benetti, D., Tacon, A., **Sims, N.**, and O'Hanlon, B. 2010. From fishing to the sustainable farming of carnivorous marine finfish. Reviews in Fisheries Science **18**(3): 235-247.

**Sims, N. A.** 1994. Growth of wild and cultured black-lip pearl oysters, *Pinctada margaritifera* (L.) (Pteriidae: Bivalvia), in the Cook Islands. Aquaculture **122**: 181 – 191.

**Sims, N. A.** 1993. Size, age and growth of the black-lip pearl oyster, *Pinctada margaritifera* (L.). J. Shellfish Res., **12** (2): 223-8.

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# DENNIS JAY PETERS

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Miramar Beach, Florida 32550

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[petersd1@cox.net](mailto:petersd1@cox.net)

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## Marine Sciences Operations Management

Mr. Peters' professional experience include over 34 years of aquatic research and monitoring, fisheries/aquaculture development, and diving experience, which has focused on the protection and enhancement of marine and estuarine ecosystems of Florida, Hawaii, Belize, and the Caribbean. Dennis has worked closely with environmental issues in concert with the sensitive policy and political concerns of the local, state, and Federal stakeholders most responsible for ecosystem management and protection. This long-term working relationship with the stewards of Florida's sensitive habitats and species, particularly the Gulf of Mexico marine environment, has also afforded Mr. Peters an appreciation and knowledge of public concerns and issues.

Mr. Peters has provided direct consultation and representation support on behalf of his clients to USFWS, NMFS, and FDEP. Dennis has been responsible for preparing and securing Take Permits (Take Statements, IHA, and LOA) for the protection of T&E marine mammal and sea turtle species, as provided by the ESA and MMPA. Other areas of expertise includes marine aquaculture, environmental program management, protected species surveys, mitigation and best management plans development, permit application development, and water quality investigations and analyses.

## PROFESSIONAL EXPERIENCE

### **GULF SOUTH RESEARCH CORPPORATION (GSRC) – Niceville, Florida**

#### **Eastern Regional Operations Manager – Southeastern United States**

**August, 2009 - Present**

Operations and business development for GSRC's Niceville, Florida location, directing and marketing environmental services to Federal and state agencies, as well as program and project management across multiple DOD customers; with focus on Navy, Air Force, and Army Corps of Engineers. Program manager for Naval Facilities Engineering Command (NAVFAC) Southeast, U.S. Army Corps of Engineers (USACE) Mobile District, and Air Force Civil Engineering Center (AFCEC).

### **SCIENCE APPLICATIONS INTERNATIONAL CORPORATION (SAIC [LEIDOS]) – Shalimar, Florida**

#### **Business Development, Division Manager, and Vice President – Shalimar, Florida**

**December 1995 – June 2009**

Managed and operated the DOD Integrated Planning Division's (IPD) business (~\$18M), financial performance, and staff of ~124 personnel. The IPD organization was comprised of a multi-disciplinary staff with expertise and capabilities supporting four Key Business Areas; Environmental Compliance, Range Management and Sustainment, Environmental Planning (NEPA, Natural and Cultural Resources), and Integrated Spatial Solutions.

### **FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP), DIVISION OF MARINE RESOURCES, FLORIDA MARINE RESEARCH INSTITUTE (FMRI) –**

#### **Ft. Walton Beach, Florida**

#### **Research Administrator I - Ft. Walton Beach Field Lab, Florida**

**January 1992 – December 1995**

Responsible for the establishment and direction of a fisheries field lab designed to conduct continuing stock assessments and estuarine monitoring for "Florida's Marine Fisheries-Independent Monitoring Program". The program utilized stratified-random and fixed monthly sampling of estuarine fishes and selected invertebrate species. Data provided trends in fishery populations and water quality so as to assess the impact of management regulations as well as fishery practices.

### **GULFSTREAM AQUACULTURE – Destin, Florida**

#### **Owner/Consultant – Destin, Florida**

**July 1991 – January 1996**

Owned and operated a private aquaculture consultancy business for marine finfish research and development operations. Performed biological assessments of the technology and feasibility required for commercial culture of new and traditional finfishes for the aquaculture industry. Developed production schedules, economic analyses, and infrastructure investigations encompassing issues of broodstock husbandry and spawning, mass larval rearing of hatchery operations, and growout maturation.

### **HAWAII SEAFOOD GROWERS, INC. – Kailua-Kona, Hawaii**

#### **Operations Manager | Broodstock Manager**

**March 1990 – July 1991**

Responsible for the construction, operation, and management of a Mahimahi (dolphin fish, *Coryphaena hippurus*) fish farm on the Big Island of Hawaii. Additionally responsible for commercial scale development, broodstock spawning, hatchery production, high density growout, cold water harvesting, and product sales and marketing. Responsible for expenditures, professional correspondences and representations, and employee supervision.

**NORAQUA INC. – Vero Beach, Florida**  
**Broodstock Manager | Hatchery Manager**

**May 1987 – March 1990**

Assisted with the development and construction of the first commercial aquaculture facility for Mahimahi (dolphin fish) on Grand Bahamas, Bahamas. Performed site evaluations and selections based on underwater assessments of sediments, water current, and quality parameters. Responsible for broodstock procurement (*Coryphaena hippurus* and *C. equisetis*), transport, conditioning, and spawning. Initiated genetic selection programs using third generation (F3) stock and refined live feed enrichment processes and mass larval rearing techniques for marine finfish culture.

**HARBOR BRANCH OCEANOGRAPHIC INSTITUTE – Ft. Pierce, Florida**  
**Research Assistant I – Ft. Pierce, Florida**

**May 1984 – May 1987**

Worked with the Marine Fisheries Population Assessment program and was responsible for the sampling design and coordination of collections of complete life stages of commercially significant marine finfishes including tarpon, snook, drum, ladyfish, and mullet. Collated and analyzed fisheries and water quality data for quarterly reports and publications, while participating in discussions concerning project design and scope with various funding agencies, mosquito control districts, and state fishery laboratories.

**EDUCATION**

**Master of Science (M.S.);** Bio-Environmental Oceanography, Florida Institute of Technology; 1984

**Bachelors of Science (B.S.);** Biology, Lebanon Valley College; 1980

**Graduate Courses;** Marine Ichthyology and Marine Ecology, Marine Science Consortium; 1977 & 1978

**PROFESSIONAL / COMMUNITY AFFILIATIONS**

**FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION (FWC) - FLORIDA MARINE FISHERIES ENHANCEMENT INITIATIVE (FMFEI); aka Marine Stock Enhancement Advisory Board [MSEAB])**

**Board of Directors**

**May 2008 - Present**

An FWC Hatchery Network Initiative promoting a network of marine fisheries/hatchery enhancement centers across the State of Florida for the enhancement and sustainability of recreational and commercial fisheries.

**CHOCTAWHATCHEE BASIN ALLIANCE (CBA)**

**Board of Directors**

**January 1996 - Present**

A local nonprofit, grassroots environmental organization of community volunteers, agency representatives, and local leaders. CBA focuses on water quality monitoring, habitat restoration, education, and research initiatives of the Choctawhatchee Bay watershed; Served as Chair, Vice Chair, and Treasurer.

**CHILDREN'S VOLUNTEER HEALTH NETWORK, INC. (CVHN)**

**Board of Directors and Board of Trustees**

**April 2009 - Present**

A faith-based 501(c) 3 organization providing direct medical, dental, and mental health services to schoolchildren whose family income falls below certain measures throughout Walton and Okaloosa Counties and surrounding communities; served as Vice Chair and Treasurer.

**NORTHWEST FLORIDA STATE COLLEGE FOUNDATION (NWFSCF)**

**Board of Directors and Board of Trustees**

**January 2012 - Present**

A premier college foundation supporting Northwest Florida State College in improving the educational opportunities of students and enhancing the quality of life in the region through positive, value-added community and industry relationships.

**PUBLICATIONS**

**Florida Scientist**, "Seasonality, Residency, and Spatial Distribution of Juvenile Surf Zone Fishes of the Florida East Coast. March, 1987.

**Gulfstream Aquaculture**, "Japanese Flounder Aquaculture: Analysis of Feasibility & Profitability". August, 1991.

**Gulfstream Aquaculture**, "Mahimahi Aquaculture: Production & Economic Analysis Comparison at a Pre-Designed 600-Ton Japanese Flounder Facility". October, 1991.

**Norsk Fiskeoppdrett**, "Mahimahi-opp varmere farvann". March, 1991.