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
https://www.fisheries.noaa.gov/region/southeast

08/26/2022

F/SER31: JJS, LEF, JLL
SERO-2019-02205; SERO-2021-02842

Christopher B. Thomas
Chief, Permitting and Grants Branch
U.S. Environmental Protection Agency
Region 4
Atlanta Federal Center
61 Forsyth Street
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John Fellows
Acting Chief, Tampa Permits Section
Jacksonville District Corps of Engineers (USACE)
Department of the Army
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Jonathan Pennock, Ph.D.
Director
NOAA National Sea Grant College Program
1315 East West Highway
Silver Springs, MD 20910

Dear Mr. Thomas, Mr. Fellows, and Mr. Pennock:

We, the National Marine Fisheries Service (NMFS), are amending our letter of concurrence (LOC) that we provided to you pursuant to Section 7 of the Endangered Species Act (ESA) for the following action, in order to address information we considered, but did not document in the original LOC. In reviewing the existing consultation when considering the late-arriving action agency, NOAA National Sea Grant College Program, we noted that we did not fully document all of our considerations and supporting rationale for our LOC. In order to address information we considered, but did not include documentation on in the original LOC, we are now amending the consultation to include relevant additional information related to the project's potential impacts. This amended LOC does not change our determination that the Velella Epsilon project is not likely to adversely affect any listed or proposed species or designated or proposed critical habitat.

Permit Numbers	Applicant	SERO Numbers	Project Types
NPDES FL0A0000I, SAJ-20 17-03488	Kampachi Farms, LLC (now Ocean Era, Inc.	SERO-2019-02205, SERO-2021-02842	Offshore Cage Aquaculture, NPDES permit, Section 10 permit, Project Funding

Consultation History

On August 13, 2019, the EPA requested informal consultation on EPA's proposed issuance of a National Pollutant Discharge Elimination System (NPDES) permit to Kampachi Farms, LLC (now, Ocean Era, Inc.) for the point-source discharge of pollutants from their proposed Velella Epsilon marine aquaculture facility. In the same request, the USACE requested informal consultation on the proposed issuance of a Department of Army permit pursuant to Section 10 of the Rivers and Harbors Act for structures and work affecting navigable federal waters from the same aquaculture facility. The EPA included a biological evaluation with their request. On September 30, 2019, we concurred with the EPA and USACE determinations that the Velella Epsilon project is not likely to adversely affect any listed or proposed species or designated or proposed critical habitat in an LOC (SERO-2019-02205-see Appendix 1).

On October 21, 2021, NOAA's Sea Grant Program requested ESA Section 7 consultation on their proposed funding for the Velella Epsilon marine aquaculture project (Velella Epsilon) in partnership with Neil Sims of Ocean Era, Inc., University of Florida, and Dr. Daniel Benetti and the University of Miami. On July 14, 2022, we determined that NOAA Sea Grant's proposed funding was within the scope of the original action and that a separate consultation was not warranted. Instead, we issued a letter to NOAA Sea Grant as a late arriving action agency noting that their consultation obligation for funding of the Velella Epsilon project was fulfilled by the previous consultation.

Project Location

Address	Location Option	Latitude/Longitude (North American Datum 1983)	Water body
Approximately 45 mi off Sarasota, Florida	1	27.125787ºN, 83.197565ºW	Gulf of Mexico
	2	27.119580ºN, 83.197096ºW	
	3	27.115655ºN, 83.19913ºW	
	4	27.108763ºN, 83.201529ºW	

Pursuant to 50 C.F.R. § 402.02, the term action area is defined as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action". In the original LOC, we defined the proposed action area as a 1,000 m radius measured

from the center of the MAS, based on the result of the water quality analysis. We inadvertently omitted from our proposed action area definition the route that project vessels will take between the marina and the farm location. Therefore, we are redefining the action area in this amendment to the original LOC to include any vessel route in addition to the radius around the project location. As explained below, the expansion of the action area does not alter our determination in the original LOC issued to the EPA and USACE, that the proposed aquaculture facility is not likely to adversely affect listed species.

Existing Site Conditions
The project siting process and the site conditions can be found in the original consultation, SERO-2019-02205 (Appendix 1) which we incorporated by reference.

Project Description
The project applicant, Ocean Era, Inc. (formerly, Kampachi Farms, LLC), is proposing to operate a pilot-scale marine aquaculture facility, rearing up to 20,000 almaco jack (*Seriola rivoliana*) for approximately 12 months (with total deployment of the cage system - 18 months) in federal waters of the Gulf of Mexico, in 130 ft of water.

Specific construction and operation details of the project can be found in the original LOC, SERO-2019-02205 (Appendix 1) incorporated by reference.

Construction Conditions
Ocean Era, Inc. agreed to follow a protected species monitoring plan (PSMP), which they developed with assistance from my staff. The purpose of the PSMP is to provide monitoring procedures and data collection efforts for species protected under the MMPA or ESA that may be encountered at the proposed project. The PSMP also contains precautionary measures including suspending vessel transit and all surface activities (including stocking fish, harvesting operations, and routine maintenance operations) when a protected species comes within 100 m of the activity, until the animal(s) leave the area. Ocean Era, Inc. also committed to following vessel strike avoidance guidelines developed by the NMFS. (i.e., NMFS Southeast Region Vessel Strike Avoidance Measures; revised February 2021; https://media.fisheries.noaa.gov/2021-06/Vessel_Strike_Avoidance_Measures.pdf?null).
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Effects Determination(s) for Species the Action Agency or NMFS Believes May Be Affected by the Proposed Action. Please note abbreviations used in the table below: E = endangered; T = threatened; NLAA = may affect, not likely to adversely affect; NE = no effect.

Species	ESA Listing Status	Action Agency Effect Determination	NMFS Effect Determination
Sea Turtles			
Green (North Atlantic [NA] distinct population segment [DPS])	T	NLAA	NLAA
Green (South Atlantic [SA] DPS)	T	NLAA	NLAA
Kemp's ridley	E	NLAA	NLAA
Leatherback	E	NLAA	NLAA
Loggerhead (Northwest Atlantic [NWA] DPS)	T	NLAA	NLAA
Hawksbill	E	NE	NE
Fish			
Smalltooth sawfish (U.S. DPS)	E	NLAA	NLAA
Nassau grouper	T	NE	NE
Giant manta ray	T	NLAA	NLAA
Oceanic whitetip shark	T	NLAA	NLAA
Invertebrates and Marine Plants			
Elkhorn coral (*Acropora palmata*)	T	NLAA	NE
Staghorn coral (*Acropora cervicornis*)	T	NLAA	NE
Boulder star coral (*Orbicella franksi*)	T	NLAA	NE
Mountainous star coral (*Orbicella faveolata*)	T	NLAA	NE
Lobed star coral (*Orbicella annularis*)	T	NLAA	NE
Rough cactus coral (*Mycetophyllia ferox*)	T	NLAA	NE
Pillar coral (*Dendrogyra cylindrus*)	T	NLAA	NE
Marine Mammals			
Rice's whale	E	NLAA	NE
Blue whale	E	NLAA	NE
Fin whale	E	NLAA	NE
Sei whale	E	NLAA	NE
Sperm whale	E	NLAA	NE

Our species determinations, including our rationale for listed species for which you made NLAA determinations for the proposed project but for which we believe there are no effects, remain unchanged from the original LOC, even after considering our revised definition of the action area, and are incorporated by reference (Appendix 1).

Critical Habitat

The project is not located in designated critical habitat, and there are no potential routes of effect to any designated critical habitat.

Analysis of Potential Routes of Effects to Species
Potential routes of effects to the listed species that may occur in the action area (see table above) and that were documented in our original LOC include: disturbance, vessel strike, entanglement, and water quality changes. Analysis of those potential routes of effects are referenced in the original LOC, SERO-2019-02205 (Appendix 1), and are incorporated herein by reference.

Due to our expanded definition of the action area, this amended consultation adds additional analysis of the potential route of effects to species from vessel strikes that may occur during the transit of project vessels between where they are docked and the project area. In addition, this amended LOC addresses the potential risk of vessel strike effects from other non-project vessels due to a potential increase in recreational and commercial fishing traffic near the facility, the potential effects of the aquaculture facility acting as a fish aggregating device (FAD) leading to feeding or behavioral changes, increased predation, and increased bycatch; and the potential risk of harmful algal blooms from the project on listed species. This additional analysis does not change our finding that the project is not likely to adversely affect any listed species. Instead we document additional support for our finding.

Vessel strike risks:
As noted in the original LOC, vessel strikes between a marine animal and a vessel can kill or injure the animal, including air-breathing whales and sea turtles as well as any other marine species, when feeding, basking or swimming close to the surface (e.g., giant manta rays and oceanic whitetip sharks). Smalltooth sawfish are primarily demersal and rarely would be at risk from moving vessels. Therefore, we expect any vessel traffic effects on smalltooth sawfish to be discountable. The oceanic whitetip is a pelagic species, and may be more vulnerable to vessel strike than demersal species. While there is anecdotal information indicating vessel strikes on pelagic shark species do occur (e.g., Barnette, pers. obs.), such as when sharks are basking or cruising near the surface, strikes on this particular shark species are anticipated to be highly unlikely due to their preference for offshore pelagic waters where vessel traffic is more diffuse.

The proposed project involves only two vessels - a support vessel and a harvest vessel. The support vessel will be present at the facility throughout the life of the project except during certain storm events or times when resupplying is necessary. The harvest vessel (expected to be a vessel already engaged in offshore fishing in the Gulf) will be used to transport the fish, once grown, to land and as such, will only be present on-site when harvesting occurs. As stated in the original LOC, we do not believe any of the listed whale species that may be present in the Gulf of Mexico will be close enough to the facility location of this project for there to be any potential routes of effects to these species. For the same reasons explained in the original LOC, we also conclude that these whales will not occur close enough to the expanded action area, which includes the route from shore to the farm location, of this project for there to be any potential routes of effects. For non-demersal ESA-listed fish and sea turtles that may occur in the expanded action area and may be affected, any adverse effects from project vessels are still extremely unlikely to occur, due to the small number of vessels associated with farm activities and the low number of trips that will take place between shore and the farm.

The original LOC omitted discussing the risk of vessel strikes due to a potential increase in recreational and commercial fishing traffic to the area due to the project acting as a fish aggregation device (FAD). The addition of one aquaculture net pen may introduce new fishing

vessels to the area around the farm but those fishing vessels would likely be the result of a shift in current fishing vessel distribution from areas where vessels may currently aggregate. While it is difficult to estimate the increase in fishing vessels near the farm, the number of vessels that will be drawn to the farm is limited due to the distance the proposed project will be from shore (45 miles). The threat that fishing vessels present to ESA-listed fish and manta rays is not constant. It is influenced by vessel type, vessel speed, and environmental conditions such as sea state and visibility. A collision between any specific vessel and marine animal is extremely unlikely to occur (Barnette 2018). For example, when using the conservative mean estimate of a sea turtle strike every 193 years (range of 135-250 years) per vessel, it would require a moderately-sized marina project (*e.g.*, ~200 new vessels introduced to an area) to potentially result in one sea turtle take in any single year (Barnette 2018). While there may be some shift in fishing effort to the farm location and an increase in fishing vessels near the farm, the effect of vessel strikes on listed species is still extremely unlikely to occur.

Other Potential Risks from the Farm Acting as a FAD:
There are several other potential risks to listed species from the farm, potentially acting as a FAD. These include changes in trophic ecosystem effects leading to feeding/behavioral changes, potential increased predation on ESA-listed species, and potential aggregation of fishing effort around the farm leading to a potential increase in bycatch of ESA-listed species.

As pointed out in Callier et al (2018), an aquaculture facility has the potential to act as a FAD and attract fish to the area to feed on the excess fish food or feces that will be discharged from the fish cage. A finfish cage acts as a fish aggregating device (FAD) by providing structure in the pelagic environment but has increased food availability compared to traditional FAD's (e.g. artificial reefs), (Dempster et al. 2002). These structures provide shade, which create shadow areas where zooplankton become more visible to feeding fish; substrate for egg laying; act as a schooling companion, providing spatial reference for fish; shelter for small fish from predators; substrate for plant and animal growth; and as potential cleaning stations for pelagic fish (Beveridge, 1984).

What species may be attracted to offshore aquaculture is dependent on the farm location and varies by season. As there are no other fish cages in the Gulf of Mexico, the only other comparable structures offshore are oil platforms. Oil platforms are known to attract clupedis, engraulids, synodontids, bennids, and pomacentrids, which is expected, as those are common species around hard bottom habitat in the Gulf of Mexico (Lindquist et al. 2005). Those species are aggregating at the oil platform to either use the structure as a habitat, refuge, or feed on organisms that settle and grow on the structure itself. The assemblage of species that will be attracted to the Velella facility may be different, as fish will be attracted to not only the structure, but to the discharge from the net pen. Oil platforms are more likely to attract herbivorous fish and benthic carnivores, while this project is more likely to also attract particulate matter feeders such as rays and pagellus fishes (Tuya et al. 2006).

The impact of the attraction of fish to the farm facility is difficult to assess, as the attraction of particulate matter feeders may lessen the amount of discharge by reducing the amount of organic material that is released into the environment (Uglem et al. 2008). Sea turtles, in particular, are not known to feed on fish or particulate matter, such as what will be discharged from the farm location, nor do they feed on any of the fishes that will be attracted to the farm. Giant manta rays

and oceanic whitetip sharks may be attracted to the farm location to feed on fish or farm discharge. Regardless, based on this proposed one-cage project, the changes in the trophic ecosystem around the farm are likely to be minimal; that is, we expect any feeding or behavioral effects to ESA-listed species that may be attracted to the area to be too small to be meaningfully measured or detected, and effects insignificant. Since this project is limited to one fish cage, there is no evidence that the cage acting as a FAD will have any significant effect on any of the listed species in the table above.

Due to the increase in fish around the fish cage, there is a possibility that the farm will attract predators such as sharks or killer whales, which could prey on listed sea turtles or manta rays. However, the Gulf of Mexico killer whale population is very small (a 2009 survey estimated the population at 28 individuals), and they are primarily found in a mean depth of 1,900m (Maze-Foley and Mullin 2006). Oil platforms in the Gulf of Mexico are known to attract tiger sharks due to them acting as artificial reefs and attracting high densities of fish (Ajemiam et al. 2020). However, there is some limited evidence that tiger sharks attracted to fish farms are transient and are not found to be permanently aggregating around open ocean aquaculture farm locations (Papastamatiou et al. 2011). As oceanic whitetip sharks are highly mobile and opportunistic predators, they may be attracted to the farm location, but there is little evidence that the addition of one fish cage will adversely impact their foraging behavior.

The attraction of sharks to the farm location may have some impact on listed sea turtles and giant manta rays. Giant manta rays and sea turtles both have been observed with shark bites. A recent study on the east coast of Florida found that only 6.8% of identifiable manta rays had shark bites and hypothesized that mantas may be exhibiting some preference for areas with low levels of predators (Pate and Marshall 2020). Generally, giant manta mortality due to shark attacks is thought to be relatively low (Bucair et al. 2021). The hard sea turtle carapace makes large sea turtles more resilient to shark predation, and Stacy et al. (2021) found that the majority (80%) of sea turtle stranding's with shark-related injuries were due to sharks preying on already deceased sea turtles. While there is a risk of sea turtle and manta ray predation by sharks attracted to the project location, due to the small size of the farm and the transient nature of sharks, we believe this is extremely unlikely to occur.

Recreational and commercial fishermen may fish near the cage facility, as they do near other structures (e.g., natural and artificial reefs) while fishing for species managed under federal fisheries management plans (FMPs) (e.g., Gulf of Mexico Reef Fish FMP, coastal migratory pelagic resources FMP). Although the facility may aggregate some fish and fishing activity, we do not expect there to be a measurable increased risk of ESA-listed species bycatch attributed to the proposed aquaculture farm relative to that considered in our biological opinions on federal fisheries. As with vessel traffic, we believe that the proposed farm would only potentially shift current fishing vessel distribution from areas where vessels may currently aggregate.

Risks from Potential Harmful Algal Blooms:
Listed species may be adversely affected indirectly if the proposed facility leads to an increase in harmful algal blooms or red tide events due to the toxic nature of red tide to marine organisms. However, the best available information on the potential effects of the proposed facility do not indicate such will occur from this offshore small one cage project. Phytoplankton blooms are primarily natural events and an important part of the annual cycle of phytoplankton growth, but

some blooms are associated with 'harmful events', ranging from ecosystem disturbance to serious threats to human health. Phytoplankton blooms can vary seasonally and are predominantly due to local environmental conditions on land. Nutrient input from land into a marine system occurs via runoff; flooding of a major river basin which re-suspends nutrients; and local wind and rainfall, which set up oceanographic conditions, such as water-column stability, that may promote or exacerbate algal growth. Although nutrient enrichment from finfish farm waste has been associated with increased phytoplankton growth and the occurrence of algal blooms, these concerns are mainly for farms located in shallow, poorly flushed sites that are sensitive to nutrient additions.

The Velella Epsilon project has stringent monitoring requirements for discharge required by the EPA to protect water quality. The overall pollutant loading of the project is expected to be minimal given the small production levels from one cage. Additionally, it is not expected that aquaculture-related pollutants will be measurable in the water within 5-10 meters from the project (US EPA 2020). There is very little evidence of aquaculture farms directly being attributable to HABs. Water quality and phytoplankton monitoring of finfish farm sites in Ireland and Chile found no evidence that salmon aquaculture caused phytoplankton blooms (Hensey, 1992; Bushmann *et al.*, 1996). A study in British Columbia demonstrated that salmon farms did not increase the food for mussels grown adjacent to the farms. Additionally, there was no evidence of direct contribution of nutrients in the form of fish feed or feces and no indirect contribution of phytoplankton from nitrogen enrichment (Taylor *et al.*, 1992). Similarly, in the Bay of Fundy, Martin *et al*. (1999) could find no connection between fish farming and the occurrence of HABs. Finally, Price et al. 2015, found that modern operating conditions have minimized impacts of individual fish farms on marine water quality and the effects on dissolved oxygen and turbidity were minimized through better management. Based on the modeling done by the EPA for this project, we believe one cage will not produce enough discharge in a concentrated area to lead to a harmful algal bloom, or exacerbate existing blooms that have been occurring along the Florida coastline. Therefore, we find the effects of potential HABs or red tide events as a result of this project on listed species to be discountable.

Conclusion

Although the action area was expanded and additional analysis on the effects to listed species was conducted, this did not change the determination of the original LOC (SERO-2019-02205–Appendix 1)**.** Because all potential project effects to listed species were found to be discountable, insignificant, or beneficial, we concur with your assessment that the proposed action is also not likely to adversely affect any listed species or designated critical habitat.

This concludes your consultation responsibilities under the ESA for species under NMFS's purview. Consultation must be reinitiated if a take occurs or new information reveals effects of the action not previously considered, or if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action. NMFS's findings on the project's potential effects are based on the project description in this response. Any changes to the proposed action may negate the findings of this consultation and may require reinitiation of consultation with NMFS.

We look forward to further cooperation with you on other projects to ensure the conservation of our threatened and endangered marine species and designated critical habitat. If you have any questions on this consultation, please contact Joe Shields, Marine Habitat Specialist, at joseph.shields@noaa.gov or Lindsey Feldman, Marine Habitat Specialist, at lindsey.feldman@noaa.gov.

Sincerely,

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David Bernhart
Assistant Regional Administrator
for Protected Resources

Files: 1514-22.k, 1514-22.e, 1514-22.f.4
Appendix

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APPENDIX 1: 09/30/2019 Letter of Concurrence

UNITED STATES DEPARTMENT OF COMMERCE
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09/30/2019

F/SER31:JLL
SER-2019-02205

Christopher B. Thomas
Chief, Permitting and Grants Branch
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Dear Mr. Thomas:

This letter responds to your request for consultation with us, the National Marine Fisheries Service (NMFS), pursuant to Section 7 of the Endangered Species Act (ESA) and the Fish and Wildlife Coordination Act (FWCA) for the following action.

Project Name	**Applicant(s)**	**SER Number**	**Project Type**
Velella Epsilon Marine Aquaculture Facility	Kampachi Farms, LLC	SER0-2019-02205	Offshore Cage Aquaculture, NPDES permit, Section 10 permits

Your request is on behalf of the U.S. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers Jacksonville District (USACE), the two federal agencies responsible for permitting aquaculture operations in federal waters of the Gulf of Mexico. The EPA is proposing to issue a National Pollutant Discharge Elimination System (NPDES) permit to Kampachi Farms, LLC for the point-source discharge of pollutants from their proposed Velella Epsilon marine aquaculture facility. The USACE is proposing to issue a Department of Army permit pursuant to Section 10 of the Rivers and Harbors Act for structures and work affecting navigable federal waters from the same aquaculture facility. The EPA has elected to act as the lead action agency and the USACE is a cooperating and co-federal agency. The EPA and USACE have determined that their proposed actions are not likely to adversely affect any listed or proposed species or designated or proposed critical habitat.

Consultation History
We received your letter requesting consultation and Biological Evaluation on August 13, 2019 and initiated consultation that day.

Project Location
The proposed aquaculture facility will be located in the Gulf of Mexico in an approximate water depth of 130 feet (ft) (40 meters [m]), 45 miles (mi) southwest of Sarasota, Florida. The applicant has submitted four potential locations to place the cage and multi-anchor swivel

(MAS) mooring system. The applicant will select one of these four potential locations based on diver-assisted assessments of the sea floor when the cage and the MAS are deployed.

Proposed Potential Project Locations

Address	Location Option	Latitude/Longitude (North American Datum 1983)	Water body
Approximately 45 mi off Sarasota, Florida	1	27.125787ºN, 83.197565ºW	Gulf of Mexico
	2	27.119580ºN, 83.197096ºW	
	3	27.115655ºN, 83.19913ºW	
	4	27.108763ºN, 83.201529ºW	

Pursuant to 50 C.F.R. § 402.02, the term action area is defined as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action. The EPA defined the proposed action area as a 1,000 m radius measured from the center of the MAS, based on the result of their water quality analysis.

Existing Site Conditions

The proposed facility will be placed within an area that contains unconsolidated sediments that are 3-10 ft deep. The facility's potential locations were selected with assistance from NOAA's National Ocean Service National Centers for Coastal Ocean Science (NCCOS). The applicant and the NCCOS conducted a site screening process over several months to identify an appropriate project site. Some of the criteria considered during the site screening process included avoidance of corals, coral reefs, submerged aquatic vegetation, hard bottom habitats, marine protected areas, marine reserves, and habitats of particular concern. This siting assessment was conducted using the Gulf AquaMapper tool developed by NCCOS.[1]

Upon completion of the site screening process with the NCCOS, the applicant conducted a Baseline Environmental Survey (BES) in August 2018 based on guidance developed by the NMFS and EPA.[2] The BES report noted that were no physical, biological, or archaeological features that would preclude the siting of the proposed aquaculture facility at one of the four potential locations

Project Description

The project applicant, Kampachi Farms, LLC, is proposing to operate a pilot-scale marine aquaculture facility, rearing up to 20,000 almaco jack (*Seriola rivoliana*) for approximately 12 months (with total deployment of the cage system 18 months) in federal waters of the Gulf of Mexico in 130 ft of water.

A single CopperNet offshore strength (PolarCirkel-style) fully-closed submersible fish pen will be deployed on an MAS mooring system. The engineered MAS will have up to three anchors (concrete deadweight or embedment anchors) for the mooring, with a swivel and bridle system. The cage material for the proposed project is constructed with rigid and durable materials

[1] The Gulf AquaMapper tool is available at: https://coastalscience.noaa.gov/products-explorer/

[2] The BES guidance document is available at: https://www.fisheries.noaa.gov/content/fishery-management-plan-regulating-offshore-marine-aquaculture-gulf-mexico

(copper mesh net with a diameter of 4 millimeter [mm] wire and 40mm x 40 mm mesh square). The mooring lines for the proposed project will be constructed of steel chain (50 mm thick) and thick rope (36 mm) that are attached to a floating cage that will rotate in the prevailing current direction; this will maintain the mooring rope and chain under tension during most times of operation. The bridle line that connects from the swivel to the cage will be encased in a rigid pipe.

The CopperNet cage design is flexible and self-adjusts to suit the constantly changing wave and current conditions. Consequently, the system can operate floating on the ocean surface or submerged within the water column of the ocean. Normal operating condition of the cage is below the water surface. The cage will be submerged and only brought to the surface for brief periods to conduct maintenance, feeding, or harvest activities due to the high-energy open ocean environment.

When a storm approaches the area, the operating team uses a valve to flood the floatation system with water, causing the entire cage array to submerge. A buoy remains on the surface, marking the net pen's position and supporting the air hose. When the pen approaches the bottom, the system will maintain the cage several meters above the sea floor. Submerged and protected from the storm above, the system is still able to rotate around the MAS and adjust to the currents. After storm events, facility staff makes the cage system buoyant, causing the system to rise back to the surface or near surface position to resume normal operational conditions. The proposed project cage will have at least one properly functioning global positioning system device to assist in locating the system in the event it is damaged or disconnected from the mooring system.

One support vessel, expected to be a 70-ft-long Pilothouse Trawler (20 ft beam and 5 ft draft) with a single 715 horsepower engine, will be tethered to the facility. Another vessel would be used for harvest and transport of the fish. The exact harvest vessel is not known; however, it is expected to be a vessel already engaged in offshore fishing activities in the Gulf.

Construction Conditions

The applicant has agreed to follow a protected species monitoring plan (PSMP), which they developed with assistance from the NMFS Protected Resources Division. The purpose of the PSMP is to provide monitoring procedures and data collection efforts for species protected under the MMPA or ESA that may be encountered at the proposed project. The PSMP also contains precautionary measures including suspending vessel transit and all surface activities (including stocking fish, harvesting operations, and routine maintenance operations) when a protected species comes within 100 m of the activity until the animal(s) leave the area. The applicant also commits to following vessel strike avoidance guidelines developed by the NMFS. (i.e., NMFS Southeast Region Vessel Strike Avoidance Measures and Reporting for Mariners; revised February 2008).

Effects Determination(s) for Species the Action Agency or NMFS Believes May Be Affected by the Proposed Action

Species	ESA Listing Status[3]	Action Agency Effect Determination	NMFS Effect Determination
Sea Turtles			
Green (North Atlantic [NA] distinct population segment [DPS])	T	NLAA	NLAA
Green (South Atlantic [SA] DPS)	T	NLAA	NLAA
Kemp's ridley	E	NLAA	NLAA
Leatherback	E	NLAA	NLAA
Loggerhead (Northwest Atlantic [NWA] DPS)	T	NLAA	NLAA
Hawksbill	E	NLAA	NE
Fish			
Smalltooth sawfish (U.S. DPS)	E	NLAA	NLAA
Nassau grouper	T	NLAA	NE
Giant manta ray	T	NLAA	NLAA
Oceanic whitetip shark	T	NLAA	NLAA
Invertebrates and Marine Plants			
Elkhorn coral (*Acropora palmata*)	T	NLAA	NE
Staghorn coral (*Acropora cervicornis*)	T	NLAA	NE
Boulder star coral (*Orbicella franksi*)	T	NLAA	NE
Mountainous star coral (*Orbicella faveolata*)	T	NLAA	NE
Lobed star coral (*Orbicella annularis*)	T	NLAA	NE
Rough cactus coral (*Mycetophyllia ferox*)	T	NLAA	NE
Pillar coral (*Dendrogyra cylindrus*)	T	NLAA	NE
Marine Mammals			
Bryde's whales	E	NLAA	NE
Blue whale	E	NLAA	NE
Fin whale	E	NLAA	NE
Sei whale	E	NLAA	NE
Sperm whale	E	NLAA	NE

There are listed species for which you made NLAA determinations for the proposed project but for which we believe there are no effects. Our rationale for that determination for each of these species is as follows:

1. Hawksbill sea turtles have very specific life history strategies, which are not supported at the project site. Hawksbill sea turtles typically inhabit inshore reef and hard bottom areas where they forage primarily on encrusting sponges. The proposed facility is located in an offshore area that contains 3 to 10-ft deep unconsolidated sediments and not near any

[3] E = endangered; T = threatened; NLAA = may affect, not likely to adversely affect; NE = no effect; NP = not present

hardbottom habitat. Consequently, we believe that Hawksbill sea turtles will not be present, and that there are no potential rotes of effects on this this species.

2. The absence of Nassau grouper in the Gulf of Mexico (excluding around the Florida Keys and Dry Tortugas) is well-documented by the lack of records in Florida Fish and Wildlife Conservation Commission, Fisheries Independent Monitoring data as well as in various surveys conducted by NMFS, Southeast Fisheries Science Center. Nassau grouper are not found in or close enough to the action area for there to be any potential routes of effects to this species.
3. The proposed project will be placed in an area consisting of unconsolidated sediments and not near any hardbottom. In your analysis, you concluded that water quality effects are not expected to occur outside of 30 m (0.02 mi) due to the small size of the facility. You also concluded that sedimentation from the Velella Epsilon facility is not expected outside of 1,000 m (0.62 mi), and impacts resulting from the proposed facility are likely limited to within 300 to 500 m (0.12 to 0.31 mi) from the cage. Listed corals generally occur in the Gulf only near the Florida Keys and Dry Tortugas and in the Flower Banks National Marine Sanctuary, located off the coast of Texas and Louisiana. Listed corals do not occur in or close enough to the action area for there to be any potential routes of effects on these species.
4. Two strandings on the Louisiana and Texas coast comprise the only possible record of blue whales in the Gulf of Mexico and identifications for both strandings are questionable, thus we do not believe blue whales live in the Gulf of Mexico.
5. Water depth at the project site is only 40 m deep, and the site is approximately 80+ mi from Bryde's whale biological important areas, the 100-m depth contour, and the shelf break. Sperm whales are the most abundant large cetacean in the Gulf of Mexico, found year-round in waters greater than 200 m. Sei whales also typically occur in these deeper waters. Sei whales are generally found in oceans along the 100-meter depth contour with with sightings also spread over deeper water including canyons along the shelf break. Fin and sei whale do occasionally strand in the Gulf indicating they may occur, but neither is commonly observed in the waters of the Gulf of Mexico. We do not believe any of these species will occur in the action area for this project or close enough for there to be any potential routes of effects to these species.

Critical Habitat

We do not concur with your determination that the proposed action may affect hawksbill, leatherback, and loggerhead sea turtle critical habitat. The project is not located in or near designated critical habitat of these or any other species. The nearest critical habitat to the project is loggerhead nearshore nesting habitat (Units 29 and 30), more than 40 mi away from the action area.

Analysis of Potential Routes of Effects to Species

Potential routes of effects to the listed species that may occur in the action area (i.e., sea turtles [green NA and SA DPSs, loggerhead, leatherbacks, and Kemp's ridleys] and ESA-listed fish [i.e., smalltooth sawfish, giant manta rays, and oceanic whitetip sharks][4]) include disturbance, vessel strike, entanglement, and water quality changes.

[4] Hereafter, sea turtles and ESA-listed fish refer to these specific species.

Vessel strike

A vessel strike is a collision between any type of boat and a marine animal in the ocean. Collision with the hull, outboard motor, or propeller of a vessel can kill or injure marine animals including air-breathing whales and sea turtles as well as any other marine species when feeding, basking or even just swimming close to the surface (e.g., giant manta rays and oceanic whitetip sharks). Collisions may occur anywhere a vessel cross paths of a species. However, we have determined that the potential for a vessel strike on any listed species to result from this proposed action is discountable. The proposed project involves only two vessels. A support vessel will be present at the facility throughout the life of the project except during certain storm events or times when resupplying is necessary; a harvest vessel (expected to be a vessel already engaged in offshore fishing in the Gulf) will be used to transport the fish, once grown, to land. Vessels are expected to follow the vessel strike and avoidance measures that have been developed by NMFS[5]. A collision between any specific vessel and marine animal is extremely unlikely to occur. For example, when using the conservative mean estimate of a sea turtle strike every 193 years (range of 135-250 years) per vessel, it would require a moderately-sized marina project (*e.g.*, ~200 new vessels introduced to an area) to potentially result in a sea turtle take in any single year (Barnette 2018[6]). Given the limited vessel activity and duration of the project, a vessel strike is extremely unlikely.

Disturbance

ESA-listed fish and sea turtles may experience disturbance by stress via a startled reaction should they encounter the proposed facility, including the cage associated and the support vessel and/or harvest vessel or associated noise (e.g., vessel engine or barge generator), when moving through the area. A behavioral reaction could range from the animal approaching and investigating the facility to avoidance and moving away from the area. A potential source of disturbance from the proposed aquaculture facility would be vessel engine and barge generator noise. ESA-listed fish and sea turtles may also be attracted to aquaculture facilities as potential sources of food, shelter, and/or rest. However, any stress and behavioral effects on ESA-listed fish and sea turtles from disturbance are expected to be insignificant. The facility is not in an area known to be a hot spot or high-use area for any important activities (e.g., feeding, reproducing) of the sea turtle or ESA-listed fish species. Also, because this is a pilot study with only one cage in the open ocean, the proposed project site is small (each potential site <8 square kilometers) and will in no way limit movement or ability of a species to avoid the area or navigate through the area. As a result, disturbance from human activities and equipment and vessel operation resulting from the proposed action is expected to have only insignificant effects on ESA-listed fish and sea turtles.

Entanglement/Entrapment

The cage, mooring lines, and bridle line from the proposed project may pose an entanglement and an entrapment risk to ESA listed fish and sea turtles. Entanglements occur when lines, netting, or other man-made materials become wrapped around the body (e.g., flipper, fin) of the

[5] NMFS. Vessel Strike Avoidance Measures and Reporting for Mariners NOAA Fisheries Service, Southeast Region, February 2008. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Regional Office, Protected Resources Division, Saint Petersburg, Florida. https://www.fisheries.noaa.gov/southeast/consultations/regulations-policies-and-guidance

[6] Barnette, M. C. 2018. Threats and Effects Analysis for Protected Resources on Vessel Traffic Associated with Dock and Marina Construction. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Saint Petersburg, Florida.

animal. Entrapment can occur when an animal becomes restrained or stuck in man-made structure and cannot escape. However, we believe the effects to sea turtles or ESA listed fish from entanglement will be discountable because of how the cage will be constructed and deployed. The risk of sea turtles and ESA listed fish being entangled or entrapped is greatly reduced by using rigid cage materials and by keeping all lines taut. The cage and moorings for the proposed project are constructed with rigid and durable materials, and the mooring lines will be constructed of steel chain and thick rope that will be maintained under tension by the ocean currents during most times of operation. For example, the lines would likely remain taut even as the currents shift because of the weight of the chain and rope creating a negative buoyancy on the facility anchorage lines. The cage, even in storm conditions, will be at least several meters from the sea floor, allowing safe passage under the cage. Additionally, the bridle line that connects from the swivel to the cage will be encased in a rigid pipe. The limited number of vertical mooring lines (3) and the duration of cage deployment (less than 18 months) will also reduce the risk of potential entanglement. Because of the proposed project operations and duration, we expect that the effects of possible entanglement to be discountable.

Water quality

Sea turtles and ESA-listed fish species may be affected by water quality/habitat degradation if it leads to reduced habitat quality. However, we believe any potential water quality effects on ESA-listed fish and sea turtles from the proposed action will be insignificant. Effluent from the proposed action can adversely affect water quality, sea floor sediment composition, and benthic fauna through the additions of uneaten feed, ammonia excretions, and fish feces from the increased fish biomass. The release of nutrients, reductions of dissolved oxygen, and the accumulation of sediments under certain aquaculture operations lead to eutrophication and degradation of benthic communities. The EPA evaluated the proposed action's potential impacts to water quality and impacts of organic enrichment to the seafloor and benthic communities. The EPA also considered the potential water quality impacts from chemical spills, drugs, cleaning, and solid wastes. The discharge of wastewater from the proposed project are expected to have a minor impact on water quality due to factors concerning the low fish biomass produced; the relatively small amounts of pollutants discharged; depth of the sea floor; and current velocities at the proposed action area. The EPA anticipates that the proposed activity would add relatively small amounts of nutrient wastes (nitrogen, phosphorus, particulate organic carbon, and solids) to the ocean in the immediate vicinity of the proposed action area. The facility's effluent is expected to undergo rapid dilution from the prevailing current; constituents will be difficult to detect within short distances from the cage. Per EPA's analysis, (1) water quality effects are not expected to occur more than 30 m (0.02 mi) away from the cage site due to the small size of the facility, and (2) sedimentation from the Velella Epsilon facility is not expected to go more than 1,000 m (0.62 mi) from the cage, and impacts resulting from the proposed facility are likely limited to within 300 to 500 m (0.12 to 0.31 mi) from the cage. The discharges authorized by the proposed NPDES permit represent a small incremental contribution of pollutants and will have an insignificant affect any on the ESA-listed fish or sea turtles in the action area.

Conclusion

Because all potential project effects to listed species were found to be discountable, insignificant, or beneficial, we conclude that the proposed action is not likely to adversely affect listed species under NMFS's purview. This concludes your consultation responsibilities under the ESA for species under NMFS's purview. Consultation must be reinitiated if a take occurs or new

information reveals effects of the action not previously considered, or if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action. NMFS's findings on the project's potential effects are based on the project description in this response. Any changes to the proposed action may negate the findings of this consultation and may require reinitiation of consultation with NMFS.

In your letter to us, you also initiated consultation pursuant to the Fish and Wildlife Coordination Act (FWCA). NMFS's Southeast Regional Office, Habitat Conservation Division reviewed the information in the Draft Biological Evaluation pursuant to the FWCA, and based on that review, we anticipate any adverse effects that might occur on marine and anadromous fishery resources would be minimal. Therefore, we do not object to issuance of the permit per the FWCA.

We look forward to further cooperation with you on other projects to ensure the conservation of our threatened and endangered marine species and designated critical habitat. If you have any questions on this consultation, please contact Jennifer Lee, Fishery Biologist, at (727) 551-5778 or by email at Jennifer.lee@noaa.gov.

Sincerely,

David Bernhart
Assistant Regional Administrator
for Protected Resources

cc: F/SER – J. Beck
F/SER31 – J. Lee

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