**LEASING and REGULATORY CONDITIONS for OFFSHORE FINFISH AQUACULTURE in FLORIDA STATE WATERS**

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To obtain authority to produce, harvest and sell aquaculture products in Florida, individuals must acquire an Aquaculture Certificate of Registration from the Florida Department of Agriculture and Consumer Services, Division of Aquaculture (FDACS) on an annual basis. Certified aquaculturists must adhere to all applicable Aquaculture Best Management Practices (BMPs). These BMPs are intended to preserve environmental integrity while eliminating cumbersome, duplicative and confusing environmental permitting and licensing requirements. Unless authorized in statute, the BMPs do not supersede other applicable federal, state and local regulations not specifically listed.

FDACS is responsible for administering the leasing of sovereignty submerged state lands and the overlying water column for aquaculture production. Aquaculture production in state waters includes, but may not be limited to, the culture of marine bivalve mollusks (clams, oysters or mussels), food, bait or ornamental fish, crustaceans (shrimp, lobster or crabs) and live rock. To date, aquacultural activities on sovereignty submerged lands consists of growing bivalve mollusks and live rock. For detailed information regarding aquaculture on sovereignty submerged lands, see [FreshFromFlorida.com/content/download/76600/2214244/FDACS-p-01758-Aquapak\_2019.pdf](https://www.freshfromflorida.com/content/download/76600/2214244/fdacs-p-01758-aquapak_2019.pdf).

**Selections from Aquaculture Best Management Practices Manual (Nov. 2016) Chapter VII: Marine Net Pens and Cages, Incorporated into Rule 5L-3, Florida Administrative Code.**

Net pens and cages are submerged, suspended, floating or other holding systems that utilize a netting (fiber or metal) to contain and culture marine fish or crustaceans. This chapter pertains only to the operation of net pens or cages (hereinafter referred to as “net pens”) that are located in the marine waters of the State of Florida. Net pen operations must acquire: 1) an annual Aquaculture Certificate of Registration; 2) a sovereignty submerged land and water column lease (Figure 1 details the leasing process); and 3) if the aquaculture facility produces more than 100,000 pounds of live weight product annually, a National Pollution Discharge Elimination System (NPDES) permit. Net pen operators who do not operate their aquaculture facilities in compliance with the sovereignty submerged land and water column lease conditions and this *Aquaculture Best Management Practices Manual* risk the revocation of the lease instrument and/or Aquaculture Certificate of Registration and enforcement action including administrative fines.

SITING

* Select sites with good water exchange, sufficient depth, and adequate current velocity.
* Sites must have a sand or mud bottom.
* Sites for filter-feeding shellfish (mussels, clams, oysters or scallops) can only occur in Shellfish Harvesting Areas classified and managed by FDACS.

FACILITY OPERATION AND MAINTENANCE

* Farmers must conduct annual reviews of their operations and provide those reviews to FDACS personnel during compliance inspections.
* When considering modifications to existing farming practices, procedures or structures, growers must conduct a review of the type and extent of probable environmental impacts that may occur as a result of the new methods and amend their existing operational practices to mitigate potential impacts.
* Any modifications to existing farming practices, procedures or structures must be within the scope of the existing permit and must be approved by FDACS.
* When conducting activities such as stocking/seeding, harvesting, feeding, grading, thinning, transfer, cleaning, gear maintenance or fallowing, all standard operating procedures must include diligent efforts to minimize probable environmental impacts.
* Comprehensive stocking and production strategies that optimize production while minimizing environmental impacts must be used.
* Nets and moorings must be maintained in a whole and intact condition.
* Any net or gear accidentally dropped or lost during storm events that is not recovered immediately shall be tagged with a float, positioned using differential Global Positioning System, and reported to FDACS within 24 hours. The lost net or gear shall be recovered within 30 days of the date lost. FDACS shall be notified on the date the net or gear is recovered.
* Placement of nets or gear on the bottom is prohibited. Pre-approved anchoring systems are exempt from this rule.
* Nets, mooring and rigging lines, and anti-predator equipment must be stretched tight and held taut and maintained in a manner to diminish the likelihood of entangling finfish, decapod crustaceans, sea birds, marine mammals, and sea turtles.
* Maintain and make available to FDACS, upon request, a Marine Entanglement Log for finfish, decapod crustaceans, sea birds, marine mammals, and sea turtles. The Log should identify the species, size, number, date of entanglement, and disposition of the species.
* Consider potential impacts on water circulation patterns when installing net pens and their associated mooring systems. Gear deployment must optimize circulation patterns and maximize water exchange through the pens, thereby improving fish health and reducing benthic impacts.
* Design and operate harvest procedures and equipment in a fashion that reduces any associated discharges. Harvest and post-harvest vessel and equipment clean-up procedures must minimize wastes discharged overboard.
* Farm support vessels must be fueled at licensed fueling stations.
* All fuel or oil spills must be reported as required by law to the appropriate state and federal authorities. Appropriate clean-up and repair actions must be initiated as soon as possible.
* Farm support vessels of the appropriate size must have approved Marine Sanitation Devices (MSD) on board. All human wastes must be disposed of according to applicable state and federal regulations.

GENETICS

* Net pen culture of species not native to Florida waters, genetically engineered or transgenic species is prohibited.
* If genetic studies are not available that indicate broodstock are genetically similar to and originate from the same genetic stock as conspecific wild animals in the net pen locality, the following requirements for broodstock animals apply:
1. Broodstock must originate from waters of the Gulf of Mexico east of the Mississippi River outflow to produce juveniles for stocking net pens in state waters of the Gulf or broodstock must originate from waters of the Atlantic Ocean to produce juveniles for stocking net pens located in state waters of the Atlantic.
2. Broodstock for pelagic species may only be collected within a 300-kilometer (186 mile) radius distance from the net pen site or broodstock for estuarine species may only be collected within a 100-kilometer (62 mile) radius distance from the net pen site.
* Net pen facilities must maintain documentation identifying the source of all eggs, fry, fingerlings, or adult fish for at least two years. These records must be available for inspection by FDACS staff upon request.
* Pursuant to Rule Chapter 68B-8, F.A.C., Collection of wild broodstock requires an Aquaculture Broodstock Collection Special Activity License from the Florida Fish and Wildlife Conservation Commission.

HEALTH

* All stocking of live aquatic organisms, regardless of life stage, must be accompanied by an Official Certificate of Veterinary Inspection signed by a licensed and accredited veterinarian attesting to the health of the organisms to be stocked.
* Facilities must notify their aquatic animal health professional and the Florida Department of Agriculture and Consumer Services (FDACS), Division of Animal Industry, State Veterinarian’s Office in the event of a suspected or diagnosed outbreak of a State or Federal notifiable disease or pathogen at (850)-410-0900, or after hours at 1-800-342- 5869, or by email at RAD@FreshFromFlorida.com.
* Minimize cross-contamination between groups/lots of organisms through cleaning and disinfection of equipment and biosecurity practices.
* Implement quarantine/isolation or disinfection procedures to reduce the risk of pathogen translocation.
* Health management records must be a component of the farm records and include behavioral changes, other clinical signs of disease, treatment procedures, and unusual morbidity and mortality events. These records must be retained for at least two years and will be made available for inspection by FDACS upon request.

CONTAINMENT/ESCAPE PREVENTION

* Loss-control plans must be designed to address the principle causes of escape (equipment failure, operational errors, and predator attacks) and must include:
	1. minimum equipment and operating standards;
	2. emergency repair procedures;
	3. escape recovery procedures;
	4. practices and equipment that reduce the need for predator reduction/destruction (i.e., anti-predator nets or equivalent equipment); and
	5. preparations for severe weather (i.e., hurricanes).
* The Loss Control and Escape Recovery Plan must include a notification procedure to inform FDACS when fish are not recovered following an escape. The facility manager or designated representative will report, within 24 hours, any escape to FDACS. The report must include species identification, approximate size and number of fish and location.
* Fish transfers such as stocking, grading, transfer, or harvest must be conducted in appropriate weather conditions and under constant visual supervision. Equipment appropriate to the weather and net pen or cage designs must be used.
* Where necessary or appropriate, shields or additional netting must be used to prevent stray fish from escaping during transfer.
* All holding, transportation, and culture systems must be designed, operated, and maintained to prevent escape.
* All nets in use must be made from ultraviolet light stabilized compounds.
* Net pen design, specification, and installation must be commensurate with the prevailing conditions and capable of withstanding the maximum weather and sea conditions prevailing at the site. A written statement from the net pen manufacturer certifying that net pen(s) have been assembled and moored to their specifications must be available to FDACS personnel during compliance inspections.
* To prevent fish from jumping out of the primary containment nets, surface net pens must have jump nets installed that are an appropriate height for the species being cultured.
* Nets must be secured to the cage collar such that the collar bears the strain and not the handrail of the net pen.
* Net weights, when used, must be installed to prevent chafing. A second layer of net must be added one foot above and below wear points. The use of weight rings is recommended at appropriate sites.
* A Net Pen Structure and Mooring System Preventative Maintenance Program must be submitted with an application and maintained, updated, implemented, and made available to FDACS personnel during compliance inspections. The program must have the ability to: 1) Identify individual nets, net pen structures, mooring systems and; 2) Schedule and document regular maintenance and testing. Nets or net pen structural components that fail testing standards must be retired and disposed of properly.
* Mooring system designs must be compatible with the cage systems they secure. Mooring systems must be installed in consultation with the net pen manufacturer or supplier. Mooring system design, specification and installation must be commensurate with the prevailing conditions and capable of withstanding the maximum weather and sea conditions prevailing at the site. A mooring system schematic must be included and updated as a component of the Farm Site Plan. Design maximums must be recorded in the Net Pen Structure and Mooring System Preventative Maintenance Program.
* Facility operators must inspect and adjust mooring systems on a biannual basis and prior to and immediately following a tropical storm or hurricane. New components must undergo their first inspection no later than six months after deployment. A diver or remote camera must regularly and visually inspect subsurface mooring components. Special attention must be given to connectors and rope/chain interfaces. Chafe points must be identified, inspected, and biofouling removed. With the exception of anchors, mooring systems must be hauled out of the water for a visual inspection of all components at least every five years. When considering what inspection method to employ, net pen operators must consider the relative risks and benefits associated with the inspection method.
* Shackles used in mooring systems must be either safety shackled, wire-tied, or welded to prevent pin drop-out.
* Where appropriate, bird nets must be used to cover net pens in order to reduce the risk of escape due to bird predation. Bird nets must be constructed using appropriate materials and mesh sizes designed to reduce the risk of bird entanglement.
* Develop a service vessel Standard Operating Procedure (SOP). Vessel operations around a net pen site can cause escapes. All vessel operators must receive appropriate training in the operation of the vessel. The service vessel SOP must be made available to FDACS prior to compliance visits.

FEEDING

* Operate feed storage, handling, and delivery methods to minimize waste and the creation of fine particles of feed.
* The feeding of wet feeds (ground or whole fish or shellfish and other raw meat or plant materials) is prohibited.
* Maintain feed conversion ratio records by using feed and fish biomass inventory tracking systems.
* Minimize nutrient and solids discharges through optimization of efficient feed formulations. Use formulations designed to enhance nitrogen and phosphorus retention efficiency and reduce metabolic waste output.
* Feed manufacturer labels, or copies thereof, must be retained for the prior two years of operation. Labels must be made available for review by FDACS personnel during compliance inspections.
* Use efficient feeding practices, monitor active feed consumption, and reduce feed loss. Feeding behavior must be observed to monitor feed utilization and evaluate health status.
* Maintain and properly operate feeding equipment.
* Feeding at slack tide is prohibited.
* Conduct employee training in fish husbandry and feeding methods to ensure that workers have adequate training to minimize overfeeding and to optimize feed conversion ratios.
* Wherever practical, interactive feedback feeding systems such as video, “lift-ups,” Doppler, sonar, infrared, or equivalent methods should be used to monitor feed consumption and reduce feed waste.
* Color video or still photographic surveys will be conducted twice per year (January 1 and June 30) of the sea floor under and adjacent to each net pen on a 100 meter transect up the prevailing current from the edge of the net and 100 meters down the prevailing current from the edge of the net pen to determine solids loadings and whether eutrophication of the local environment is occurring as a result of food loss and fish excretion. Monitoring will include recording the date(s) on which monitoring was conducted, a site schematic of the video track(s) or still photos in relation to the net pen, and Global Positioning System (GPS) locations of the beginning and end points for the transects. The video survey shall be continuous. Still photographs shall be taken at least every 5 meters. The video or photographic survey will document sediment type and color as well as features such as erosional and depositional areas, flora and fauna and their relative abundance, feed pellets, and any other manmade debris. Images shall be of sufficient detail and clarity to allow for the accurate assessment of benthic conditions. The camera must be positioned at a height above the substrate that will provide approximately one square meter of bottom coverage and illuminated with sufficient artificial light to enable the accurate identification of epibenthic organisms and sediment conditions. A brief written narrative with the tape or photographs describing current speed and direction and reference points shall be included. The tape or photographs with narrative will be submitted to FDACS within 60 days of the survey completion.
* Physical disturbance of the bottom, such as harrowing, dragging or other mechanical means, shall not be used to mitigate the benthic impacts of feed or fish excretion.

WASTE

* Develop a Solid Waste Management plan. This plan must identify all wastes generated on a site or from an aquaculture facility. The Solid Waste Management Plan must be submitted with an Aquaculture Certificate of Registration application and maintained, implemented, and made available, upon request, to FDACS personnel. At a minimum, waste management plans must address:
	+ - * + Human waste
				+ Feedbags
				+ Scrap rope and netting
				+ Buoys and weights
				+ Fish mortalities
				+ Spoiled feed
				+ Packaging materials
				+ Fouling organisms
* Mortalities must be collected regularly and as frequently as possible (weather permitting) to avoid accumulation at the net pen bottom.
* Farmers must use collection and removal methods that do not stress remaining animals or compromise net integrity.
* Mortalities must be stored and transported in closed containers with tight fitting lids.
* Mortalities must be returned to shore, disposed of and notification given in accordance with Disposal of Dead Animals BMPs.
* Farmers must avoid the discharge of substances associated with in-place net cleaning. Implement gear and management strategies to reduce biofouling that will minimize or eliminate the need for on-site net cleaning.
* On site mechanical cleaning must include methods to prevent the accumulation of solids on the sea floor or the release of solids that cause or contribute to water quality impairment.
* Copies of antifoulant coating product labels must be provided to FDACS for approval prior to use. Antifoulant coating use and restrictions as described in Chapter 376, Pollutant Discharge Prevention and Removal, F.S.; Chapter 487, Pesticide Regulation and Safety, F.S.; Federal Insecticide, Fungicide and Rodenticide Act, Title 7, Chapter 6, Code of Federal Regulations; and Organotin Antifouling Paint Control Act, Title 33, Chapter 37, Code of Federal Regulations must be followed.
* The use of biocidal chemicals for cleaning nets on site is prohibited.
* The use of organotin or petroleum based antifoulant products such as creosote, oils, bitumen, coal tar, or greases are prohibited.
* All feed bags, spoiled feed, packaging materials, waste rope and netting, or worn structural components must be collected, returned to shore and disposed of properly. Recycling is strongly encouraged.

RECORDS

* Maintain the records required by the Aquaculture Best Management Practices for a minimum of two years in a form readily and immediately available to FDACS personnel during compliance visits or to FDACS upon request.
* The processes and procedures utilized to collect and analyze environmental data (physical, chemical or biological) must be documented in a Quality Assurance Project Plan. Farm operators must submit such plans to FDACS during the aquaculture certification process.

PRODUCT LANDINGS

* Aquaculture products must be identified with an Aquaculture Certificate of Registration number, while possessed, transported or sold from harvest to point of sale. The receipt, bills of sale, bills of lading, or other such manifest must show the certificate number and where the product originated. If the product is sold to a Florida grow-out facility, the Aquaculture Certificate of Registration number of the buyer must also be included. Sale records must contain at least the following information:
	+ Date of Sale
	+ Name and address of Seller
	+ Seller’s Aquaculture Certificate of Registration number
	+ Name and address of the Purchaser
	+ Purchaser’s Aquaculture Certificate of Registration number (if a Florida Certified Aquaculture Facility) or Wholesale Saltwater Dealers License number, which ever is appropriate
	+ Quantity and species identification of aquaculture product sold
* Aquaculture products must be transported in containers that separate aquaculture products pursuant to Identification of Aquaculture Products, Section 597.004(4), F.S., from wild stocks, and such containers must be identified by tags or labels which are securely attached and clearly displayed. Tags/labels must contain information describing the source location, species identification, quantity and date of harvest.
* Facilities must maintain records of all live purchases and/or all live sales of sturgeon, marine shrimp, marine bivalves and live rock/marine life. These records must include the date of shipment, name, address, and Aquaculture Certification of Registration number(s) of the Florida supplier and the Aquaculture Certification of Registration number(s) or Wholesale Saltwater Products License of the Florida seafood dealer if landed and sold in Florida. Records must be retained by the hatchery or farm and made available for inspection for at least two years. Invoices or bills of lading containing the above information is sufficient to meet this BMP requirement.

KEYWORDS: leasing, best management practices, regulations, permitting

Figure 1. Current sovereignty submerged land leasing process for shellfish aquaculture leases in Florida state waters.

