FLORIDA AQUACULTURE PLAN

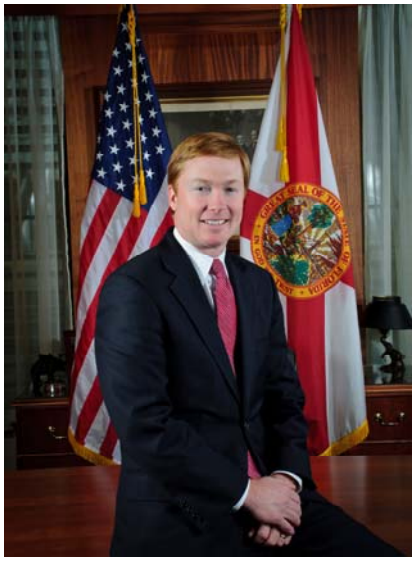
2013-14

Aquaculture Review Council

Applied aquaculture research and development recommendations that will trigger new industries, job opportunities, income for aquaculturists, and other benefits to Florida.

Florida Aquaculture Plan

2013 - 2014



Dear Floridians:

The Florida Department of Agriculture and Consumer Services and the Aquaculture Review Council, a stakeholder advisory group of commercial aquaculturists representing each of the largest farming segments and a commercial fishing representative, annually revise the Florida Aquaculture Plan. The Plan serves as a means to communicate the Council's recommendations for aquaculture research and development to the public and state government. Their priorities help improve state agency aquaculture efforts, the conservation and enhancement of aquatic resources, and provide a means to increase aquaculture production which can lead to the creation of new businesses, job opportunities, income for aquaculturists, and other benefits to the state.

Funds designated by state government for aquaculture research and development or for contracting for aquaculture research and development are used to address the projects and activities designated in the Plan. Entities receiving state funding for aquaculture research and development programs report to the department activities related to aquaculture to facilitate coordination and compliance with the Plan.

This Plan identifies a variety of applied research priorities focused on new species development, production cycle improvements, animal and plant health, and food processing technology. The department will be working with the Council over the next year to solve the questions they have identified and implement the results to immediately benefit Florida farmers.

Please visit our website http://www.freshfromflorida.com/ to learn more about Florida aquaculture or contact the Division of Aquaculture at (850) 488-5471.

Thank you,

Adam H. Putnam

Commissioner of Agriculture

The creation of an annual Florida Aquaculture Plan is authorized by statute to ensure information regarding the research and development needs of Florida's aquaculturists are communicated to the Governor, Commissioner of Agriculture, Legislature, state agencies, farming community and public. The goals of the Florida Aquaculture Plan are to:

- Create global trade parity.
- Increase farm-gate values.
- Produce and sell competitively priced products.
- Reduce unnecessary regulations.

The species and systems research issues identified in this Plan are also used to guide an annual, applied research grant program jointly managed by the Aquaculture Review Council and the department. This applied research answers biological or technically questions that benefits aquafarmers raising food, aquarium and bait fish, aquatic plants, clams and oysters, alligators and turtles, and crustaceans.

Research Priorities

Species

- Determine ornamental fish species reproduction and grow-out characteristics of priority species identified by the Florida Tropical Fish Farms Association.
- Diversify commercial species: ark and sunray venus clams.

Production Cycle Improvements

- Identify social/environmental cues necessary for marine ornamental fish to initiate and complete natural reproduction in captivity to produce viable larvae.

Technologies

- Compare effects of various types/designs of rearing tanks on marine ornamental fish production.
- Improve aquatic plant production techniques for new and existing species that will improve growth rate and production system design and operation.
- Develop closed system culture techniques for the aquatic plant *Egeria densa*.
- Develop remote technologies for shellfish growing area surveillance and security.
- Shellfish gear improvements: extend shellfish bag life, net materials.
- Test and improve shellfish broadcast planting, cover net use and mechanical harvesting methods.
- Determine optimal freshwater turtle water treatment and aeration requirements.
- Develop the means and/or methodology to assess shrimp densities during pond grow-out.
- Develop water quality specific mineral supplement recommendations for low-salinity marine shrimp grow-out.
- Develop and test the culture (production systems, costs, and market value) of the blue crab (*Callinectes sapidus*) as a tarpon bait (i.e., "dollar" crabs).
- Investigate and compare costs of alternative energy sources (i.e., electric, propane, solar) to heat small and large scale grow-out systems.

Animal and Plant Health

- Identify ornamental fish species emerging diseases including diagnostic tools and possible treatment options.
- Control microbial communities in marine ornamental fish hatcheries and larval rearing systems.
- Develop biocontrols (host specific predators) for whitefly, an aquatic plant parasite, that can be used in and outside greenhouses.
- Identify a hatchling alligator treatment or handling method to reduce or eliminate excessive umbilical scarring.
- Determine optimal freshwater turtle stocking rates.
- Complete a sturgeon health status assessment.
- Determine the causes and means or methods to control scoliosis (i.e., abnormal curving of the spine) in sturgeon.

Nutrition

- Develop live feed protocols for marine ornamental fish based on wild population diet data.
- Determine optimal nutritional requirements (i.e., balancing protein, lipid and carbohydrate) for a sturgeon grow-out diet.
- Determine freshwater turtle nutritional needs, commercial diet formulation and appropriate feeding rates for hatchlings, juveniles and adults.

Food Processing Technology

- Test and evaluate the means and methods to freeze and package fresh or cooked hard and sunray venus clams and re-heat the processed product for the restaurant trade to yield a tender product when served to the public.
- Evaluate and improve product quality effects of a second cooking on frozen, cooked hard clam shellstock products.

Environmental Issues

- Compile and summarize data proving the value of riparian aquatic plants to reduce nutrients in surface water flow from land to water.
- Develop recommendations that identify correct plant species to use in the appropriate setting (i.e., upland, shoreline, emerged, littoral, or submerged plantings) when designing and constructing a wetland mitigation/restoration project.
- Evaluate environmental effects of shellfish grow out and harvesting and compile information on the environmental benefits of shellfish aquaculture farming generally including improved understanding of shellfish farm environmental interactions on water quality, benthic soils and bathymetry.
- Compare various techniques/methods to prevent and control bio-fouling of shellfish farming gear and products.
- Develop protocols and parameters to improve candidate shellfish growing area assessment methods.

Regulatory or Legislative Priorities

State Statutory or Regulatory Changes

Department of Environmental Protection/Water Management Districts

- Create a simple, automatic consumptive water use renewal process for aquaculture operations that have made no changes to their operations or facilities.
- Maintain the water use allocation during permit renewals even if historical usage is less because facilities may need that water during drought or cold.
- Create a seamless, straightforward process for agricultural operations to transfer consumptive use permits within the same basin.
- Develop a wetland mitigation/restoration certification of competency.

Federal Statutory or Regulatory Changes

U.S. Food and Drug Administration

- Create a general label that allows therapeutic use of any drug or chemical by non-food, ornamental fish producers.
- Achieve a label use for methyltestosterone to improve ornamental fish secondary sexual characteristics (color and finnage).

U.S. Fish and Wildlife Service

- Amend Endangered Species Act (ESA) to include a "captive bred" designation that is exempt from ESA prohibitions
- Remove existing prohibitions on the production and marketing of aquacultured products whose wild counterparts may be state or federally listed.
- Revise the "fish and wildlife" definition within the Lacey Act to eliminate the phrase "whether or not bred, hatched, or born in captivity."
- Eliminate the extreme penalties associated with the Lacey Act that are provided in 18 USCA §3571.

Glossary

Aquaculture – Culture of aquatic organisms.

Bathymetry – Underwater equivalent of topography that illustrate the bottom contours.

Bio-fouling – The attachment and growth of unwanted marine algae and animals (e.g., barnacles, oysters, calcareous worms) on hard or soft surfaces that add weight, restricts water flow, or creates a safety hazard.

Benthic – Soils (clay, sand or mixture) found on the bottom of a water body.

Consumptive use permit – A water well associated permit acquired from Water Management Districts that regulates the withdrawal and use of groundwater (volume and quality).

Closed system – Water is filtered and recirculated within a tank or raceway system.

Endangered Species Act – Federal legislation passed by the U.S. Congress and signed into law during 1973 to protect and recover imperiled species and the ecosystems upon which they depend. The Act is administered by the U.S. Fish and Wildlife Service and National Marine Fisheries Service.

Farm-gate – At the farm boundary and usually refers to product value (e.g., farm-gate sales) received by the farmer.

Grow-out systems – Tanks, raceways, ponds or combination thereof in which aquatic species are held captive, fed, monitored, and maintained.

Lacey Act – Federal legislation passed by the U.S. Congress and signed into law during 1900 that makes it unlawful to import, export, sell, acquire, or purchase fish, wildlife, or plants that are taken, possessed, transported, or sold: 1) in violation of U.S. or tribal law, or 2) in interstate of foreign commerce involving any fish, wildlife, or plants taken possessed or solid in violation of State or foreign law. The Act also authorizes the Department of Interior to declare certain animals to be injurious to man, agriculture or wildlife resources. The Act is implemented by the U.S. departments of Agriculture, Interior and Commerce.

Larvae – Any early motile life stage that develops from a fertilized egg and which may include a variety of life forms to survive in changing aquatic environments.

Methyltestosterone – A synthetic hormone that triggers secondary male sexual characteristics.

Ornamental fish – Culture for appearance (color and/or finnage) for placement in aquariums or garden ponds.

Shellfish – Bivalve molluscs grown for human consumption (oysters, clams, scallops, and mussels).

Stocking rate – The number of animals placed into a pond, tank, raceway or sovereign submerged lands lease for culturing to a marketable size.

For additional information, please contact:

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Front cover images (clockwise starting from top left): tropical fish provided by the Florida Tropical Fish Farms Association; tropical water lily, alligators, hard clams by Division staff; and Siberian sturgeon provided by Mote Marine Laboratory.

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