Introducing Florida Aquaculture
Training Guide

SART Training Media
Introducing Florida Aquaculture
Training Guide

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**Acknowledgments:**
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Florida Tropical Fish Harms Association

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SART Training Media are available for download from the Florida SART Web site <www.flsart.org>.
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About Florida SART

• SART is a multi-agency coordination group.
• SART is made up of over 25 partner agencies (state, federal and non-governmental organizations).
• SART provides preparedness and response resources for Emergency Support Function 17 [(ESF 17) Animal and Agricultural Issues].
• SART statutory authority
  o State Emergency Management Act (Section 252.3569, Florida Statutes)

SART Mission

Empower Floridians through training and resource coordination to enhance all-hazard disaster planning and response for animal and agricultural issues.

SART Goals

• Support the county, regional and state emergency management efforts and incident management teams.
• Identify county resources available for animal and/or agricultural issues.
• Promote the cooperation and exchange of information of interested state, county and civic agencies.
Specific Learning Objectives

At the end of this training module, participants will be able to:

- Describe why aquaculture is a viable industry in Florida
- List and discuss characteristics of Florida aquaculture relating to water use, farm size, commodities and commodity value
- Discuss United States aquaculture imports, exports and market flows
- Name the collaborating agencies involved with the national and state aquatic animal health plans and describe their collaborative roles
- Identify key resources that participants can easily access for more information
Resources

The following are sources of additional information about the subjects mentioned in this introduction.

Florida Division of Emergency Management
http://www.floridadisaster.org

United States Department of Agriculture
http://www.usda.gov

Florida Department of Agriculture and Consumer Services
https://www.freshfromflorida.com/

Florida Tropical Fish Farms Association
http://www.ftffa.com

Florida Division of Aquaculture
https://www.freshfromflorida.com/Divisions-Offices/Aquaculture

eXtension Freshwater Aquaculture Community

USDA APHIS
https://www.aphis.usda.gov/aphis/home/

Safety for Fish Farm Workers, a video in English and Spanish, available from the National Ag Safety Database (NASD)
http://nasdonline.org/search.php?query=safety+for+fis[farm+workers

Spawn, Spat, and Sprains book by the Alaska Sea Grant College Program available in entirety for a fee via the following link
https://seagrant.uaf.edu/bookstore/pubs/AN-17.html
Appendix A: Slides 1-3
Acknowledgements

- Craig Watson
  Tropical Aquaculture Laboratory, University of Florida
- Florida Tropical Fish Farms Association

Learning Objectives

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Production and Collection

Appendix A: Slides 4-6
Why Florida?

Resources are here!
- Infrastructure
- Climate
- Water

Tropical Fish Farms in Florida

Above the freeze-line, heating is required

Aquaculture Land Use
- 127 farms with sales
- 7-8 ponds per acre of land
- 131.1 acres of water
- Average 1.2 acres of water per farm
Water Use

Ponds
• Small (100,000-300,000 liters/pond)
• Mostly self-filling, water table pond

Recirculating Systems
• Reuse system
• Require filtration

Florida Freshwater Ornamental Production
• Produced in tanks and ponds
• Over 400 varieties in production
• Livebearer and egg-layer categories
• Many compete with wild-caught equivalents
Florida Saltwater Ornamental Production

- Limited to ~4 dozen species, all with strong parental care, and small spawn size
- Requires controlled, indoor facilities except for live rock
- Competes head-on with wild caught specimens

Ornamental Invertebrate Culture

- Live Rock still dominates
- “Value Added” Live Rock
- Tank-raised corals (“soft” and “hard”)

Live Rock and Open Water Sites

- Expanded initially after ban on wild harvest, but more indoor facilities have since been added.
- Gulf of Mexico and Florida Keys
- State and federal leases
### Industry Statistics

#### Top States in Sales in 2013

<table>
<thead>
<tr>
<th>State</th>
<th>US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington</td>
<td>235,000,000</td>
</tr>
<tr>
<td>Mississippi</td>
<td>203,600,000</td>
</tr>
<tr>
<td>Alabama</td>
<td>111,200,000</td>
</tr>
<tr>
<td>Louisiana</td>
<td>90,600,000</td>
</tr>
<tr>
<td>California</td>
<td>83,600,000</td>
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<tr>
<td>Florida</td>
<td>77,900,000</td>
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<tr>
<td>Texas</td>
<td>69,800,000</td>
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<tr>
<td>Arkansas</td>
<td>61,000,000</td>
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<tr>
<td>Hawaii</td>
<td>58,700,000</td>
</tr>
<tr>
<td>Maine</td>
<td>57,300,000</td>
</tr>
</tbody>
</table>

#### Industry Statistics:

- 2013 farm gate value of $27M
- 127 active certified aquafarms in 2013 – 45% of U.S. industry
- 400 varieties of fish
- 95% of ornamental fishes produced in the U.S. come from Florida

#### Industry Statistics: 2013 Florida Farm Gate Value

<table>
<thead>
<tr>
<th>Category</th>
<th>US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>27,269,000</td>
</tr>
<tr>
<td>Shellfish</td>
<td>11,889,000</td>
</tr>
<tr>
<td>Other Fish</td>
<td>7,995,000</td>
</tr>
<tr>
<td>Catfish</td>
<td>5,327,000</td>
</tr>
<tr>
<td>Other Aquaculture</td>
<td>2,978,000</td>
</tr>
<tr>
<td>Aquatic Ornamentals</td>
<td>1,227,000</td>
</tr>
<tr>
<td>Aquatic Ornamentals</td>
<td>390,000</td>
</tr>
<tr>
<td>Aquatic Ornamentals</td>
<td>373,000</td>
</tr>
</tbody>
</table>
Industry/Commodity Group

- Crop Groups
  - Freshwater and saltwater aquatic ornamental animals
  - Bait fish
  - Freshwater and saltwater food aquatic animals
  - Shrimp and clams
  - Sport fish

- Commodity
  - Producers/farmers
  - Wholesalers
  - Retailers
  - Hobbyist

Worldwide Markets

Market Flow Chart for Wild-Caught Ornaments

Appendix A: Slides 22-24
Market Flow Chart for Farm-Raised Ornamentals

Export/Wholesaler

Importer/Transhipper

Farmer

Wholesaler

Retailer

Hobbyist

Domestic-Produced

Foreign-Produced

Interagency Collaboration

• Roles of different agencies
  – Private stakeholders
  – University/college
  – State
  – Federal

Florida Aquatic Animal Health

Federal
  • USDA-APHIS Vet Services, Wildlife Services, Emergency Programs
  • NOAA-Fisheries
  • FWS

State
  • DACS
  • Div. of Animal Industry
  • Div. of Aquaculture
  • FWC

Private
  • Veterinarians
  • Fish Health Professionals
  • Hobbyists

Industry Stakeholders
  • Farmers/Producers
  • Wholesalers
  • Retailers

University
  • UF/IFAS
  • Faculty and Staff
  • Diagnostics
  • Teaching
  • Research
  • Extension
  • Others: HCC, IRCC

Appendix A: Slides 25-27
Private and Stakeholder Role

- **Who?**
  - Farmers/Producers
  - Wholesalers
  - Retailers
- **Advisory committees**

University-College Role

- **University of Florida**
  - Extension Programs and Diagnostics
    - Facilities
      - Tropical Aquaculture Laboratory
      - Fisheries and Aquatic Sciences
    - Non-regulatory
    - Education-oriented
  - Research
  - HCC, IRCC

State Role

- **Department of Agriculture and Consumer Services**
  - Division of Animal Industry
  - Division of Aquaculture
Division of Animal Industry

- Mission: To protect Florida’s agriculture, including aquaculture, industries
- Enforce animal health regulations
- Protect the state from animal pests and diseases
- Players:
  - State veterinarian
  - Bureau of Diagnostic Laboratories
    - Test development
    - Perform diagnostic tests
  - Bureau of Animal Disease Control
    - Provide assistance to farmers to control diseases of concern

Division of Aquaculture

- Mission includes:
  - Enhance the growth of aquaculture while protecting Florida’s environment
  - Coordinate and assist the development of aquaculture
  - Provide a means of communication between the aquaculture industry and the regulatory agencies through the Aquaculture Review Council and the Aquaculture Interagency Coordinating Council
  - Issue aquaculture certificates that identify aquaculture producers and aquaculture products (i.e., BMPs)
  - State aquaculture plan

State Role

Florida Fish and Wildlife Conservation Commission

- Recreational fisheries
- Commercial fisheries
- Stock enhancement
- Habitat issues
- Wild stock assessment
- Wild fish kill investigations
- Research and education
- Prohibited and restricted species list
- And much more...
Federal Role
USDA-APHIS, Wildlife Services

- APHIS - Animal and Plant Health Inspection Service
- WS - Predator control on aquaculture farms

Federal Role
USDA-APHIS, Veterinary Services

- Lead agency for aquaculture health in the United States
- International exportation of animals and animal products
- Laboratory approval
- National Aquatic Animal Health Plan

The National Aquatic Animal Health Plan’s Mission Statement

Develop and implement a national aquatic animal health plan (NAAHP) for aquaculture in partnership and cooperation with industry, regional organizations, state, local, and tribal governments, and other stakeholders
NAAHP Objectives

- Improve the health and productivity of cultured aquatic animals
- Facilitate safe interstate and international commerce
- Ensure availability of diagnostic, inspection, and certification services
- Protect cultured and wild aquatic animals from foreign diseases
- Define the roles and responsibilities of private industry and government in health management

Key Resources

- Florida Department of Community Affairs, Division of Emergency Management’s Emergency Response Team
  [http://www.floridadisaster.org](http://www.floridadisaster.org)
- United States Department of Agriculture
- Florida Department of Agriculture and Consumer Services
  [https://www.freshfromflorida.com/](https://www.freshfromflorida.com/)
- Florida Tropical Fish Farms Association
  [http://www.ftffa.com](http://www.ftffa.com)
- Florida Division of Aquaculture
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- eXtension Freshwater Aquaculture Community
- USDA APHIS
Key Resources

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- **Spawn, Spat, and Sprains** book by the Alaska Sea Grant College Program available in entirety for a fee via the following link
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Summary

- Aquaculture is viable in Florida because of water, infrastructure and climate
- Water use, farm size, commodities and commodity value characteristics of Florida aquaculture
- Comparisons between United States aquaculture imports and exports and the products’ destinations
- Roles various agencies have in the aquatic animal health
- Resources for further information