



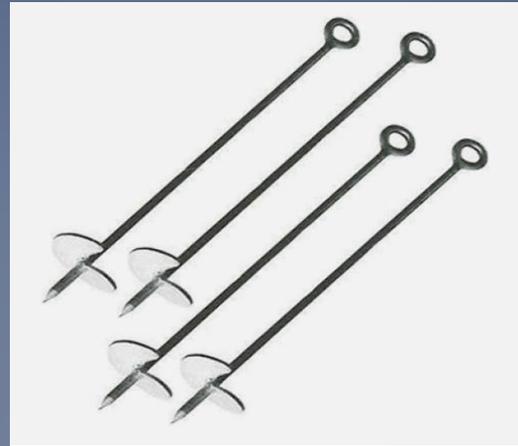
Shellfish Aquaculture Gear Management Regulations

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Primary Concerns for Shellfish Debris

Routine Gear Loss



Primary Concerns for Shellfish Debris

Hurricanes



Photo: NOAA



Shellfish Gear - Regulations

- ▶ Non-natural materials placed in the water or on submerged lands shall be anchored to the bottom.
- ▶ *This includes any protective netting used to cover clam bags.*



Shellfish Gear - Regulations

- ▶ All culture materials, cover nets, bags or other designated markers placed on or in the water shall be clean and free of pollutants.
 - ▶ *Including petroleum based products such as creosote, oils and greases or other pollutants.*
 - ▶ *Compounds used as preservatives must be used in accordance with the product label.*



Shellfish Gear - Regulations

- Bags, cover nets, and/or trays used in the culture operation shall be removed from the water during all mechanical cleaning, maintenance and repair operations.
 - *During harvest, culture bags and cover nets shall be rinsed/cleaned over the grow-out area to allow sediments to remain in the lease area.*
 - *Mechanical or hydraulic devices shall not be used below the water for the cleaning of the submerged structures.*
 - *Use hand tools for cleaning shellfish, bags and other structures in the water.*



Shellfish Gear - Regulations

- ▶ The aquaculturist is responsible for the collection and proper disposal of all bags, cover netting or other materials used in the culture of shellfish on submerged lands or when such materials are removed during maintenance or harvesting or become dislodged during storm events.
- ▶ The aquaculturist must remove all works, equipment, structures and improvements from sovereign submerged lands within 60 days following the date of expiration or termination of the lease.



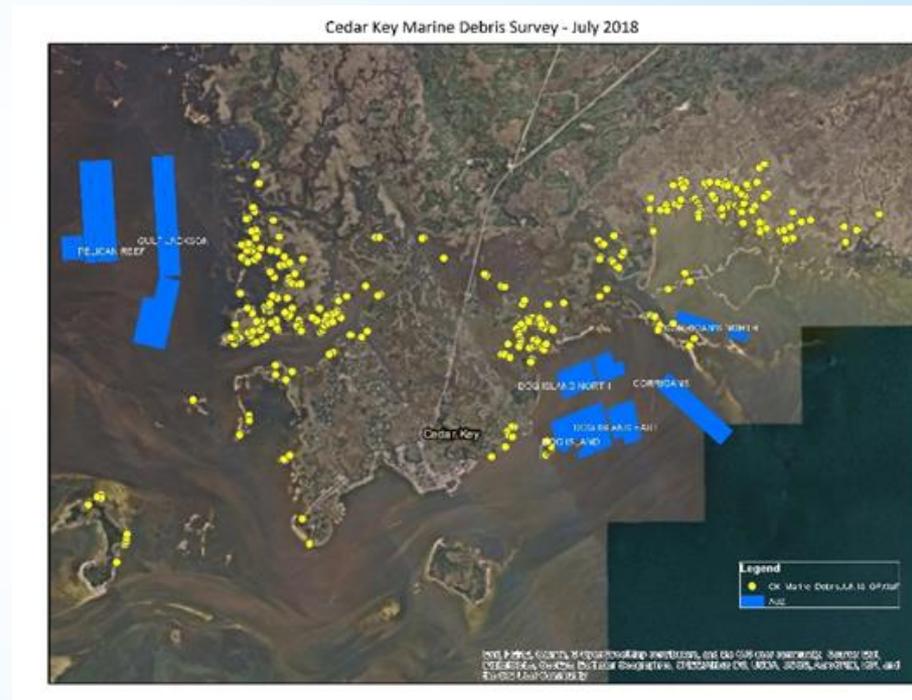
Shellfish Gear - Regulations

- ▶ The leaseholder's identification information shall be attached to all floating or off-bottom culturing structures.
 - ▶ *In the events that floating or off-bottom culturing structures become dislodged from the lease site, **it is the leaseholder's responsibility to retrieve the structures** form the shoreline, seagrass beds, or submerged bottom with minimal damage to the resources affected.*
 - ▶ *The structures shall be removed and properly disposed of or returned to the lease site.*



Monitoring Shellfish Lease Areas

- ▶ FDACS conducts routine surveys in aquaculture use zones.
- ▶ Recently incorporated post-hurricane debris assessments into monitoring program.



Publications: Shellfish Aquaculture Gear Management

Management



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Shellfish Aquaculture

GEAR MANAGEMENT

FDACS-P-01914 Technical Bulletin #10 - January 2019

Overview:

- Marine Debris Facts
- Lease Stewardship and Public Perception
- Best Management Practices for Shellfish Gear
- Reduce, Reuse, Recover and Recycle Shellfish Gear Management Strategies
- Preparing for Severe Weather
- Important Resource



Lease Stewardship and Public Perception

Safeguarding the public and supporting Florida's agricultural economy.

This publication was produced from information gathered at a shellfish aquaculture gear management workshop held in Cedar Key in September 2018. For a video copy of the entire workshop and presentation slides, visit the Shellfish Gear Management Webinars website or contact the division for a DVD copy.

Impacts of Marine Debris

- **Hazard to Navigation**
Marine debris is difficult to see and can result in damage to vessels and motors.
- **Entanglement & Ghostfishing**
Marine life can get caught and killed in lost or abandoned nets and traps.
- **Habitat Damage**
Large marine debris, such as nets, can entangle and suffocate critical habitats such as submerged reeds and seagrasses.
- **Ingestion**
Numerous marine animals consume plastic and other debris by mistake, often resulting in illness or death.
- **Economic Cost**
Cleaning up marine debris costs coastal communities time and money, and may also reduce the economic benefits of recreation and tourism.

Information provided by NOAA Marine Debris Program.



From plastic straws and bottles to large derelict vessels, marine debris is a growing problem worldwide. Up to 165 million tons of plastic debris is currently thought to exist in the world's oceans, with an additional 4 to 13 million tons destined to end up in the oceans annually. In addition to being an aesthetic nuisance, marine debris can complicate navigation, entangle and kill marine life, harbor communities of pathogenic bacteria, and leach harmful chemicals into the environment.

Shellfish aquaculture is nationally renowned for its sustainability and environmental benefits. Maintaining the nation's public image as a steward of the nation's coastal ecosystems requires diligent management of gear. Not only can lost aquaculture gear cause fish, bird, sea turtle and marine mammal deaths, mismanagement of gear and the accumulation of unsightly debris in coastal areas could result in negative public perception and economic damage to the industry as a whole.

Environmental stewardship, at its core, requires planning, action and investment to reduce, reuse, recycle and recover the gear and equipment used everyday on or off the farm. An unhealthy aquatic environment cannot support a healthy shellfish crop. Careless farming practices are unsustainable for current and future generations of farmers and processors that depend on shellfish aquaculture products to make a living. While the reader may consider themselves a



Florida's pristine and highly productive coastal waters provide excellent conditions for shellfish aquaculture.

diligent and conscientious steward of their local environment, it is important to remember that the industry will be viewed as a whole by consumers. Encouraging negligent farmers to practice proper gear management and disposal can be an effective tool to ensure that shellfish gear is accounted for and the environment is not impacted.

While the greatest contributor of plastic debris to the marine environment is trash from land-based sources, shellfish aquaculture activities are highly visible to the public. Maintaining a positive image as stewards of the public waters must be a key consideration for Florida's shellfish farmers. Consumer and coastal stakeholder perception will play a significant role in the longevity and growth of aquaculture farms and market demand for farmed shellfish products.

Florida Department of Agriculture and Consumer Services

FDACS-P-01914 Rev. 01/2019

Publications: Preparation and Recovery from Hurricanes

Resources



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Preparation and Recovery from
HURRICANES
FDACS-P-01461 - Technical Bulletin #07 - Revised January 2019

Overview:
Florida's Hurricane History
Family and Farm Disaster Planning
Shellfish Harvest Area Closures
Post Hurricane Shellfish Plant Inspection
Disaster Recovery Information

Florida's Hurricane History

Safeguarding the public and supporting Florida's agricultural economy.

Hurricane Facts

- The official Atlantic hurricane season is from June 1 to Nov. 30. These dates encompass 97 percent of tropical hurricane activity.
- There were 884 hurricanes in the Atlantic basin from 1851-2016, an average of 5.4 per year.
- September is the most active month of hurricane season, representing 39 percent of total hurricane occurrence from 1851-2016.
- 40 percent of all U.S. hurricanes have hit Florida.
- 83 percent of Category 4 or higher hurricanes have hit either Florida or Texas.
- Approximately 90 percent of hurricane fatalities occur in water related incidents, with 49 percent occurring from storm surge.
- Hurricane Irma is now Florida's costliest hurricane to date, with an estimated \$58 billion in economic losses.

Florida leads the nation in direct hurricane hits for the period 1851 to 2010. Florida experienced 37 major hurricanes (category 3 or greater) during this period versus the next highest states: Louisiana (20), Texas (19), and North Carolina (13).

Forty percent of all U.S. hurricanes hit Florida, with 83 percent of Category 4 or higher hurricanes striking either Texas or Florida. The threat of major hurricanes increases from west to east as the hurricane season progresses each year. As such, Texas and Louisiana are the prime targets for early season hurricanes, while the east coast of Florida is most likely to be impacted in October each year. Regardless of this trend, September remains the peak of hurricane season with as many major hurricane landfalls as October and August combined. The earliest hurricane to strike Florida was Alma on June 9, 1966, while the latest to strike Florida occurred November 30, 1925, near Tampa.

Eight of the top ten costliest hurricanes in U.S. history have impacted Florida. The state's population is increasing an average of 1.6 percent annually, with 1.3 million more residents from 2010-2016. As Florida's population continues to expand, projected at 25 million by 2030, the economic impacts from hurricanes are also increasing. Population growth is predominantly occurring less than 50 miles from a coastline, further exacerbating the potential economic damage. For example, all three hurricanes making U.S. landfall in 2008 made the top 30 list of costliest hurricanes in U.S. history, despite none of them being major hurricanes at landfall.

Fortunately, due to an increase in hurricane forecast and warning systems and preparation planning, the number of fatalities per hurricane is in decline. The perpetual threat of hurricanes in Florida, in combination with the state's growing population and economy, emphasizes the importance of wise business planning and storm preparedness.

Information from NOAA Technical Memorandum NWS NHC-6 (1997: NOAA.gov/pdf/other/6.pdf)

Florida Department of Agriculture and Consumer Services

FDACS-P-01461 Rev. 01/2019



Industry Cleanups and Disposal Points

- ▶ Cedar Key Aquaculture Association hosts annual cleanup event for 10+ yrs.
 - ▶ ~90,000 lbs. removed in Sept. 2018 event.
- ▶ Post-hurricane cleanups.
- ▶ Disposal dumpsters very successful in Cedar Key.



NOAA Marine Debris Program

- ▶ Funding being provided for aquaculture debris dumpsters.
 - ▶ ~\$50,000
 - ▶ 2 years
- ▶ Where would dumpsters be most effective?
 - ▶ Alligator Harbor?
 - ▶ Rock Landing?



Questions?

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