

# Marine Debris Removal, Research, and Prevention



Staff Report  
July 23, 2020



Florida Fish & Wildlife Conservation Commission

This presentation will provide the Commission and the public with an overview of the FWC Marine Debris Removal Program.

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Photo credit: Jennifer L. McGee, FWC

# Marine Debris



Any manufactured or processed persistent solid material disposed of or abandoned into the marine environment.



This presentation will cover the following topics:

- Overview of marine debris and its impacts
- FWC marine debris reduction projects and programs
- Statewide action plans
- Hurricane response
- Emerging FWC marine debris removal, research, and prevention projects
- Plans moving forward

“Marine debris is defined as any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment or the Great Lakes.”

-NOAA Marine Debris Program

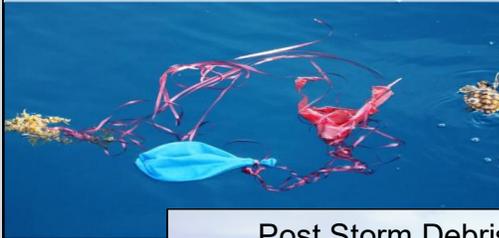
Photo credits:

Left: Jennifer L. McGee, FWC

Right: Scripps Media, Inc.

# Types of Marine Debris

Consumer Debris



Microplastics <5mm



Post Storm Debris and Derelict Vessels



Abandoned or Derelict Fishing Gear



Marine debris comes in many forms; however, the most common types of debris we see are consumer debris, storm debris, derelict vessels, abandoned fishing gear and microplastics.

- An estimated **80%** of all marine debris pollution is from land based sources (UNEP-GESAMP)
- Up to **95%** of marine debris pollution is plastics (UNEP-GESAMP)

UNEP-GESAMP – United Nations Environment Programme-Joint Group of Experts on the Scientific Aspects of Marine Environmental Pollution

Photo credits:

Upper left: Blair Witherington, FWC

All other photos: Jennifer L. McGee, FWC

# Marine Debris Impacts

- Wildlife Impacts
- Habitat Damage
- Invasive Species Transport
- Navigation Hazards
- Human Health and Safety
- Economic Loss



There are numerous impacts from marine debris.

- Wildlife Impacts
  - Ingestion
  - Entanglement
  - Ghost Fishing
- Habitat Damage
  - Broken corals or mangroves
  - Smothered sea grass beds
- Invasive Species Transport
- Navigation Hazards/Boater Safety
  - Submerged debris
  - Prop entanglement
- Human Health and Safety
  - Trophic transfer
  - Diver entanglement
- Economic Loss
  - Tourism/Recreation
  - Fisheries

Photo credits:

Top left: Bryant Holsenbeck

Bottom left: John Tiger

Top Right: FWC

Bottom right: WPLG Local 10 News, Miami-Fort Lauderdale

# Marine Debris in Florida

## Unique qualities:

- 2nd longest coastline
- Offshore currents: beginning of the Gulf Stream System
- High hurricane activity
- Economy centered around the coastline and marine resources
- Dynamic ecosystems
- Numerous listed species



Vinegar Bottle from Haiti  
with sea turtle bite mark



Drifting Fish Aggregating Devices  
(dFADs) from West Africa

Florida has unique qualities that contribute to not only marine debris presence in Florida, but also highlight why reducing marine debris is so important.

Being the second longest coastline in the United States, much of the economy centers around the coastline and marine resources. The offshore currents around peninsular Florida that support the state's unique marine ecosystems, form the beginning of the Gulf Stream System. These currents contribute to the transport of debris to Florida from Central and South American countries as well as from West and South Africa while transporting Florida debris as far as the United Kingdom. This also make a Florida a target for severe weather events, having the highest number of direct hurricane hits on the mainland U.S. (40% of hurricanes hit Florida).

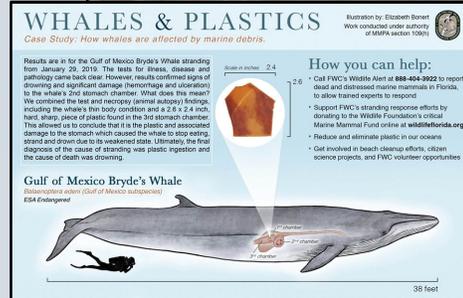
## Photo credits:

Vinegar bottle and far left dFAD Photos: Jennifer L. McGee, FWC

Center and right dFAD Photos: FDEP, Guana - Tolomato – Matanzas National Estuarine Research Reserve and John D. MacArthur Beach State Park

# Marine Debris Projects and Programs

- Derelict Vessel Removal Grant Program
- Derelict Trap Retrieval and Debris Removal Program
- Coastal Wildlife Conservation Initiative: Don't Cut the Line!
- Marine Mammal Pathobiology Lab



FWC has numerous marine debris related projects and programs spread across multiple divisions. These programs target debris reduction through research and response (e.g. wildlife health, stranding data), removal (e.g. derelict traps and vessels), and prevention (e.g. outreach and education materials/campaigns). This is a challenging and pervasive threat that requires a holistic approach to addressing the issues as well as extensive collaboration and coordination (both inter-and intra-agency) to reduce marine debris and its impacts.

Below is a list of some of our projects and programs that address and/or provide data on marine debris and its impacts.

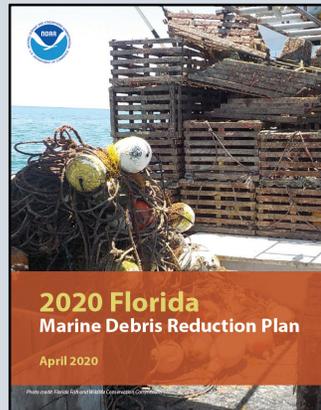
- Derelict Vessel Removal Grant Program
- Derelict Trap Retrieval and Debris Removal Program
- Coastal Wildlife Conservation Initiative (CWCI): Don't Cut the Line!
- Marine Mammal Pathobiology Lab
- Florida Sea Turtle Stranding and Salvage Network
- Right Whale Research and Disentanglement
- Imperiled Species Management
- Monofilament Recovery and Recycling Program (MRRP)

Photo credits:  
Boat photo: FWC

# Action Plans

Collaborative efforts to address a complex and widespread issue:

- 2020 Florida Marine Debris Reduction Plan
- Florida Marine Debris Emergency Response Guide: Comprehensive Guidance Document



FWC staff have been involved in the development and updates to both statewide and regional marine debris action plans. These are examples of two recently updated state plans. FWC staff are also involved in the Gulf of Mexico Alliance (GOMA), a Regional Ocean Partnership working to sustain the resources of the Gulf of Mexico. This partnership includes 6 priority teams and 3 cross teams, including the marine debris cross team currently chaired by FWC.

Photo credits:

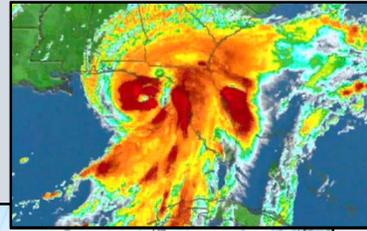
Left: FWC

Right: NOAA

# Hurricanes: Marine Debris Response

## Assessment, Removal and Mapping

- Derelict Vessels
- Aquaculture Gear
- Trap Removal
- Hot Spot Mapping
- Fisheries Disaster
- Derelict Vessels and Structural Debris



FWC currently manages several largescale hurricane response grants targeting marine debris removal, hot spot mapping, assessment and mitigation (FWC Principal Investigator (PI) on two statewide Hurricane Irma grants and the Co-PI on a multi-county Hurricane Michael grant). FWC staff also serve as Resource Advisors for post storm response assessment during Emergency Support Function 10 (ESF-10) activation.

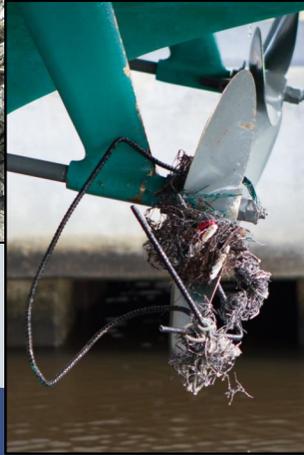
Photo credits:

Left photo: FWC

Middle photo: U.S. Coast Guard, Chief Petty Officer Gail Dale

# Preventing Fisheries Plastics

Plastic material alternatives: research, development, and field testing



FWC is involved in marine debris prevention through outreach, education, and research. One of our current research focuses involves research, collaborative development, and field testing of sustainable alternative materials to replace traditional plastics needed for conservation management work, specifically coastal habitat restoration.

Photo credits:

Right photo: Florida Oceanographic Oyster Restoration

Left photo: Alex Cook-WUSF News Tampa

Middle photo: John and Debbie Daigle

## Microplastics and Wildlife

- Increasingly detected in wildlife
- Threats to health of aquatic resources
- Plastic can both bind and release toxic chemicals
- Microplastic toxins transfer up food chain



Microplastics passed by a juvenile green sea turtle



Plastic fiber and a grain of sand



Microplastics are nearly ubiquitous in the marine environment; are increasingly detected in wildlife; and pose multiple threats to the health of our aquatic resources. Plastic debris can both bind and release toxic chemicals. There is evidence of trophic transfer (movement and accumulation of marine debris and/or impacts up the food chain) of microplastics and their associated toxins as smaller marine-life are consumed by larger organisms.

Photo credits:

Top right and bottom middle: Jennifer L. McGee, FWC

Top Left: University of Connecticut

## Prevention Efforts

2014 – 2019 Agency Strategic Initiative

### Boating as a Gateway to Conservation and the Outdoors

“Strengthen and promote the conservation connections of boating while protecting people and natural resources, and improving boating related opportunities”



One of our newest marine debris prevention campaigns is associated with a strategic initiative from the 2014-2019 Agency Strategic Plan: “Boating as a Gateway to Conservation and the Outdoors”. The Boating as a Gateway team created the “Stash the Trash” campaign as a way to produce and promote conservation messaging centered around marine debris. Team members sought to better understand and engage both internal staff and external members of the public to promote conservation connections to boating. Through innovative approaches to inreach and outreach, these efforts resulted in reaching more than 2,900 agency employees and more than 5 million people (~30.5% of Florida’s population) with ways boaters can exercise good stewardship of our waterways. FWC continues to implement this important effort.

Photo credits: Jennifer L. McGee, FWC

## Moving Forward

- Mapping and modeling
- FWC marine debris website and resources
  - Data clearinghouse
  - Increased outreach
  - Improved reporting and tracking
- Wildlife and habitat impacts research
- Program development, enhancements and partnership expansion



"We cleaned the beach, we saved the world from contamination" – Veruschka, International Coastal Cleanup 2016



Marine debris is a complex, global, and growing threat. FWC's marine debris work covers a wide breadth of actions and strategies to reduce marine debris and its impacts. FWC is working to increase intra-agency coordination related to marine debris efforts and serves as a resource and partner in marine debris management.

Photo credits: Jennifer L. McGee, FWC



This presentation was for informational purposes only;  
staff welcomes questions or feedback from Commissioners.

