



Marine Debris

OFFICE OF RESPONSE AND RESTORATION • NOAA'S NATIONAL OCEAN SERVICE

Marine Debris and Derelict Fishing Gear

The Importance of Understanding the Impacts to Fisheries and Finding Solutions

*Council Coordination Committee Meeting
Crowne Plaza, Silver Spring, MD
February 26, 2009*

Holly Bamford, Ph.D.
NOAA Office of Response & Restoration
Marine Debris Program, Director



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Assisted in presentation information:

Megan Forbes
Carey Morishige

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Science Center
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NOAA Pacific Island Regional Office, Observer
Program





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Today's Outline

- Marine Debris
 - What are we talking about?
 - Why should we care? - Impacts
 - Requirements for NOAA
- NOAA Marine Debris Program
- Projects of Interest
 - Fisheries observer partnership
 - Derelict gear disposal & recycling
 - Fishermen DFG removal partnership
 - Other related projects
- Next steps and collaboration
- National Research Council
 - Recent report on marine debris
 - Recommendations





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What is Marine Debris?



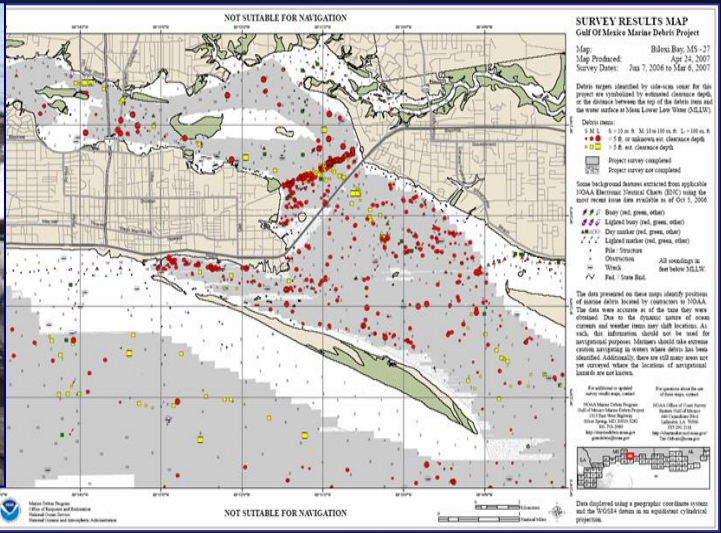
© Morishige, NOAA Marine Debris Program



- *Any persistent solid material that is manufactured or processed and directly or indirectly disposed of or abandoned into the marine environment and the Great Lakes.*
- Marine debris enters the water in many ways.
- One of the most harmful form of debris - **Ghostnets** - lost or abandoned fishing gear that continues to trap fish and other marine resources.
- The rising concern of **microplastics** has grown over the last couple of years.

Impacts of Marine Debris

- Impacts on human safety and navigation
 - In 2005, collisions with floating and submerged objects caused 269 boating accidents, resulting in 15 deaths, 116 injuries and \$3 million in property damage (U.S. Coast Guard).
 - NOAA surveyed 700 square nautical miles of Alabama, Mississippi, and parts of eastern Louisiana nearshore waters
 - > 5,000 objects located
 - ~ 50 % having a clearance depth of < 5 feet
 - Summers of 1987-88, beaches in New York and New Jersey were closed when medical waste washed ashore.





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Impacts of Marine Debris continued

- Impacts on the Economy
 - In 1987, estimated between \$380M and \$1.60B lost as a result of medical debris wash-ups in New Jersey.
 - Estimated lost crab pots kill 744,000 pounds of Dungeness crab per year in Puget Sound worth approximately \$1.2M.
 - Estimated debris created by Hurricane Katrina 100 million yds³





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Impacts of Marine Debris continued

- Impacts on the Environment
 - Debris such as lost fishing gear can damage coral reefs by smothering or breaking apart corals.
 - Lost gear can also result in “ghost fishing”.
 - Ingestion of small plastics can lead to starvation or malnutrition
 - 267 animal species worldwide have reported incidents of entanglement and ingestion





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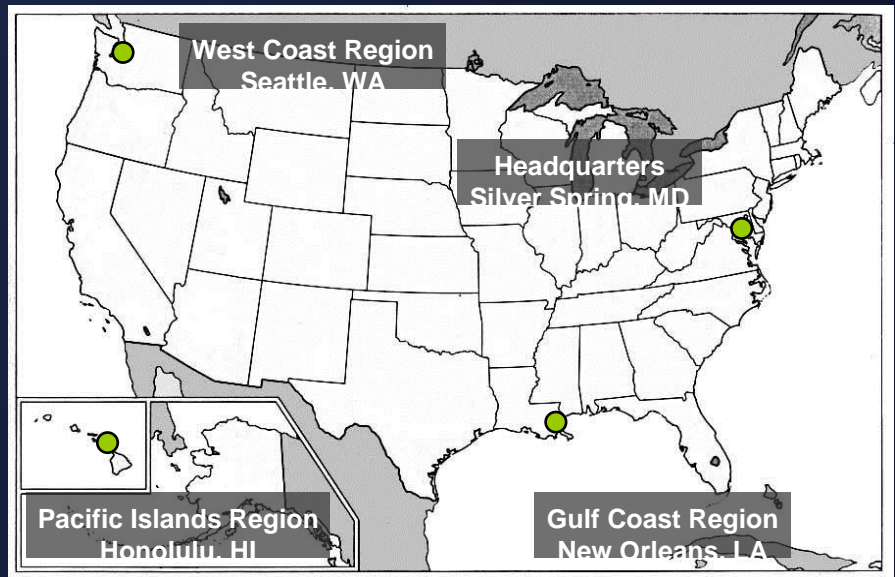
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NOAA's MD Mandates

- Coastal Zone Management Act, as amended 1990
- Marine Plastic Pollution Research and Control Act
- Coral Reef Conservation Act of 2000
- Marine Debris Research, Prevention, and Reduction Act of 2006
 - **Established the NOAA Marine Debris Program**
 - *Non-Regulatory, focus on research and prevention*
 - MAPPING, IDENTIFICATION, IMPACT ASSESSMENT, REMOVAL, AND PREVENTION
 - REDUCING AND PREVENTING LOSS OF GEAR
 - OUTREACH TO STAKEHOLDERS
 - GRANTS, COOPERATIVE AGREEMENTS, AND CONTRACTS
 - **USCG - take actions to reduce violations of and improve implementation of MARPOL Annex V and the Act to Prevent Pollution from Ships**
 - NRC REPORT TO CONGRESS
 - **Establishment of Interagency Marine Debris Coordinating Committee**

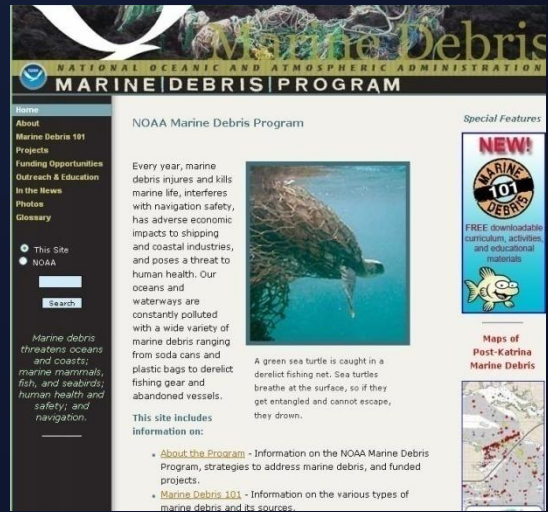
NOAA Marine Debris Program

- Established in 2005
 - National budget ~\$4M
 - NOAA wide program – resides in NOS
- Program Staff
 - Director and 9 full-time staff
- Regional coordination of projects
 - > 100 projects to date
 - Three competitive Federal Funding Opportunities



- Goals:
 - Prevent
 - Assess
 - Reduce

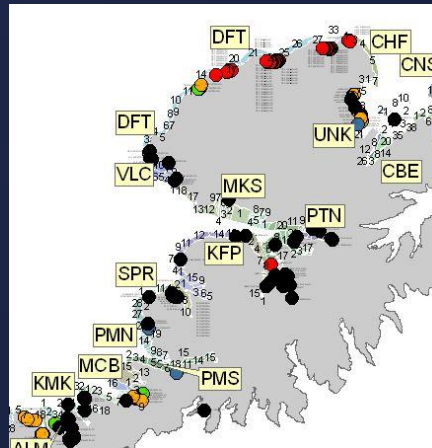
• Website: marinedebris.noaa.gov



Program Focus Areas



Derelict fishing gear



Data collection and monitoring



Research



Coordination



Outreach and education

MARINE DEBRIS

- 1 nautical mile**
 - Illegal to dump
 - All other garbage
 - 100 lbs of debris
 - 100 lbs of debris
 - 100 lbs of debris
- 3 to 12 nautical miles**
 - Illegal to dump
 - Plastic
 - Debris
 - Other garbage if not permitted in the other 2 zones
- 12 to 25 nautical miles**
 - Illegal to dump
 - Plastic
 - Debris
 - Other garbage if not permitted in the other 2 zones
- Beyond**
 - Illegal to dump
 - Plastic
 - Debris
 - Other garbage if not permitted in the other 2 zones

Under the MARPOL agreement and U.S. Federal law, it is illegal for any vessel to discharge plastics or garbage containing plastics into any waters. Additional restrictions on the disposal of non-plastic wastes are outlined above. All discharge of garbage is prohibited in the Great Lakes or their connecting tributary waters. Each violation of these requirements may result in a fine of up to \$500,000 and six years imprisonment. Other state or local laws on disposal of garbage may also apply. Report illegal disposal to the U.S. Coast Guard (USCG) on VHF marine radio Channel 16 or call the TOCC Sector Office near you.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
www.noaa.gov



On-the-ground efforts

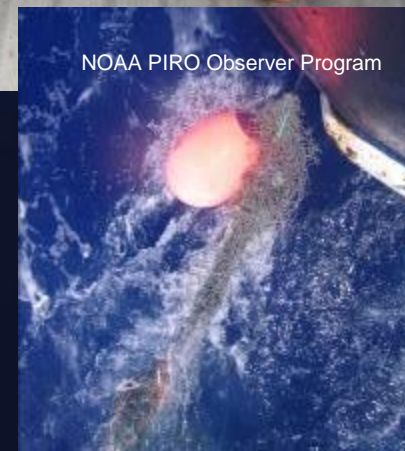


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Fisheries Observer Partnership - Background

- Anecdotal information of marine debris interaction from Hawaii longliners
 - Interaction with marine debris at sea was an obvious issue for Hawaii's longliners
 - Interactions were part of "doing business" -- Fishermen seemed "used to it"
- Anecdotal information from NOAA PIRO Observer Program on marine debris encounters at sea





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Fisheries Observer Partnership - Economic Impact to Longline Fishing Industry in Hawai'i?



NOAA PIRO Observer Program

Lack of data and information

- Types of impacts?
- Downtime?
- Damage to gear? to vessel?
- Fishing effort/time lost?
- What is the COST?

Data Collection Process

1. Marine Debris Encounter Reports filled out & submitted by observers
2. Data entered into spreadsheet (encounter ID # assigned)
3. Photos collected
4. Data analyzed



GOAL: quantified economic impact to Hawaii's longline fishery

NOAA Pacific Islands Regional Office, Observer Program

Marine Debris Encounter Report

This information is being used to help determine the economic cost of marine debris impacts to fisheries.

Trip Number: _____

Position of Encounter with Debris (includes vessel, gear and animals)
 Latitude: ____° ____' N/S Longitude: ____° ____' E/W (positions to nearest whole minute)
 Date: _____ Time: _____

Incident Type:
 Gear Interaction
 Vessel Interaction
 Entangled Species Caught (e.g. entangled swordfish)

Other Observations:
 Noteworthy Sightings (e.g., large collection of small debris items, large debris objects, etc.)
 Other (includes recovered ingested debris items): _____

Debris Type:
 Net
 Rope
 Monofilament line
 Metal (describe): _____
 Other (describe): _____

Cloth
 Plastic sheeting
 Floats
 FAD (Fish Aggregating Device)

Biota Type (on or living in net) – List species names if known:
 Fish

Describe the type of incident in more detail, diameter

Debris brought on board? Y/N

During downtime (e.g. propeller disentangled by divers)

Hulu Harbor version 21.10.08

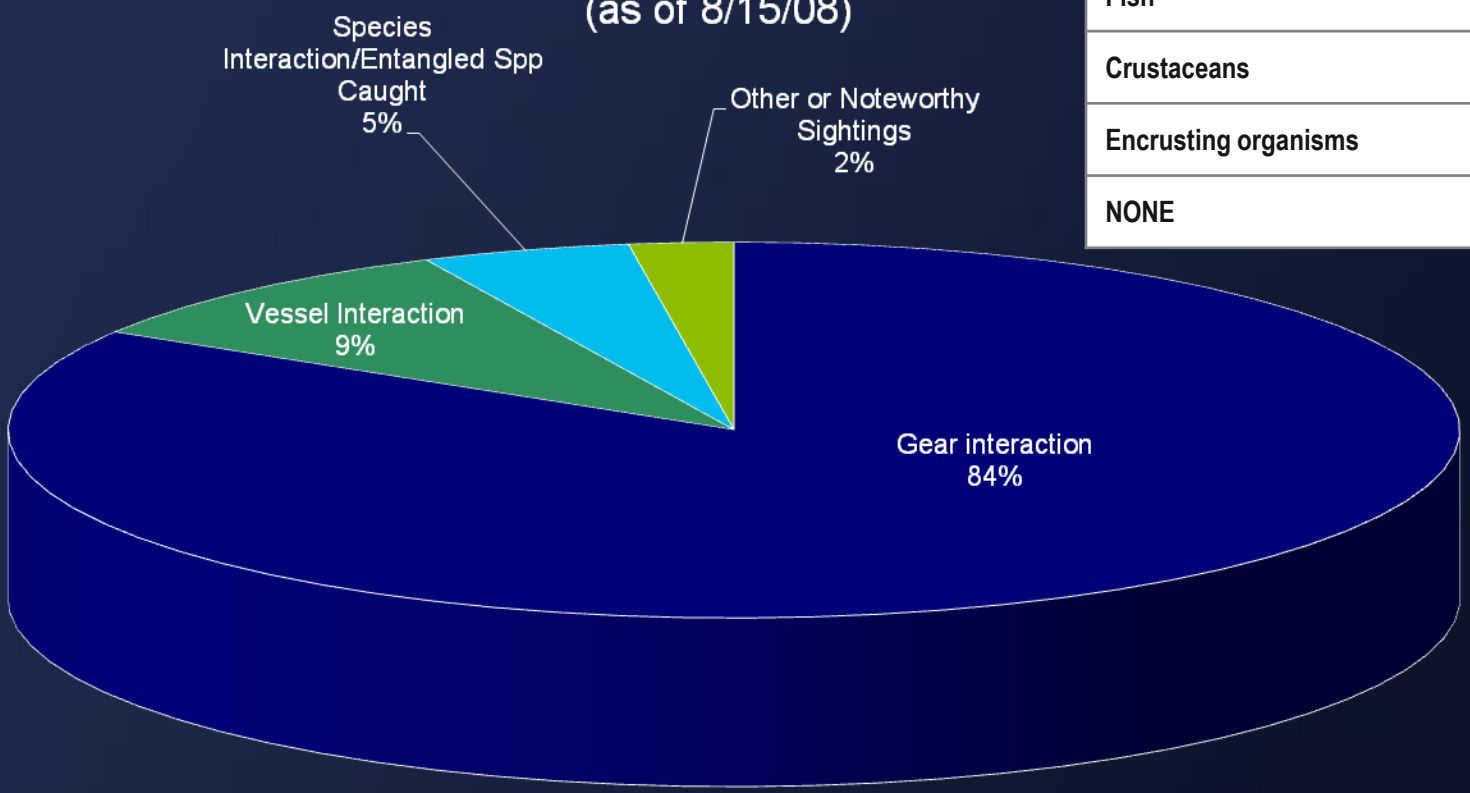


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Preliminary Results

Incident Type (as of 8/15/08)



Biota Type - on or living in net	#	%
Fish	20	12.99%
Crustaceans	31	20.13%
Encrusting organisms	28	18.18%
NONE	75	48.70%

154

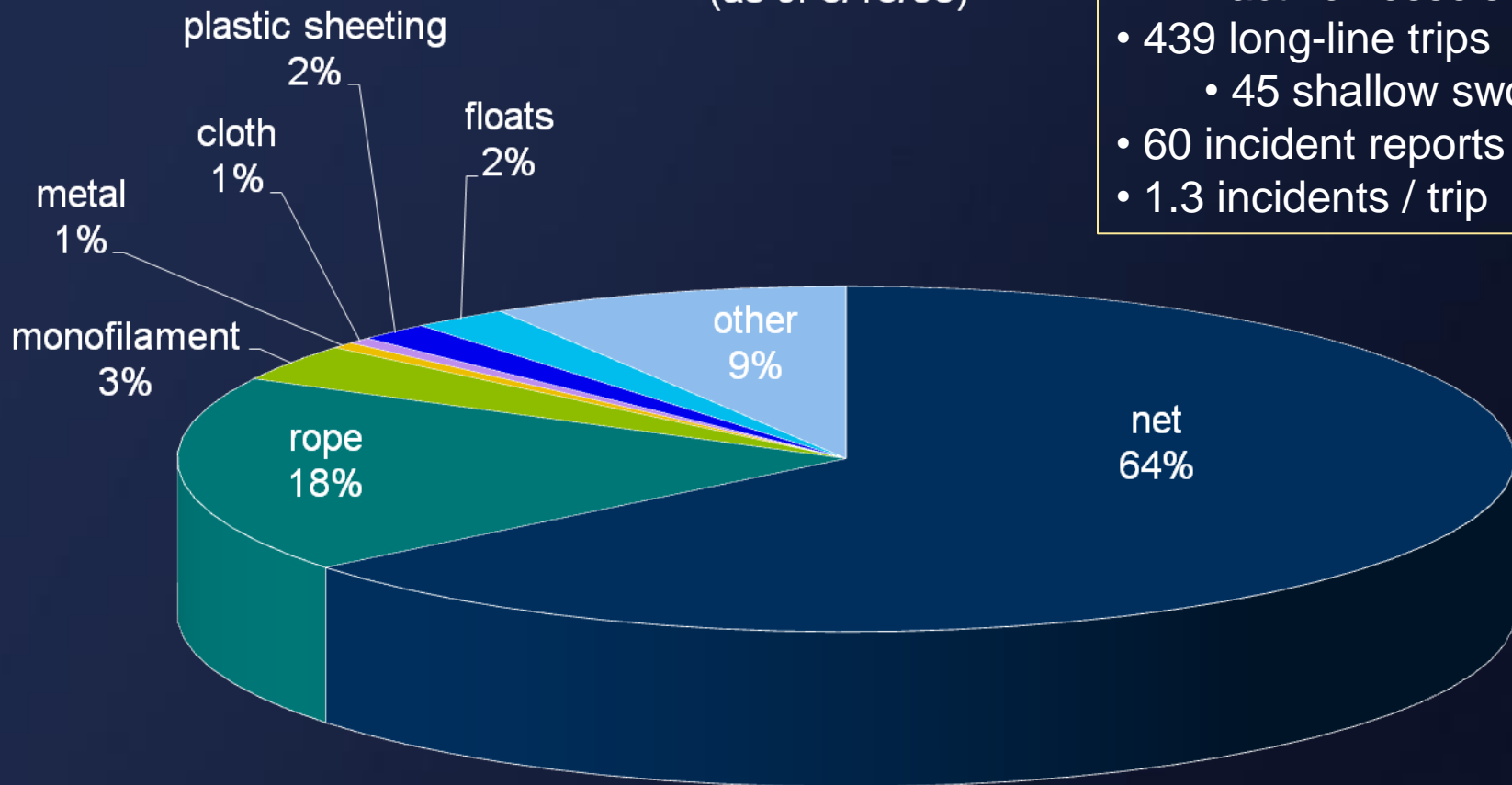


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Preliminary Results

Debris Types
(as of 8/15/08)



Quarter 1 2008

- 127 active vessels
- 439 long-line trips
 - 45 shallow swordfish
- 60 incident reports
- 1.3 incidents / trip



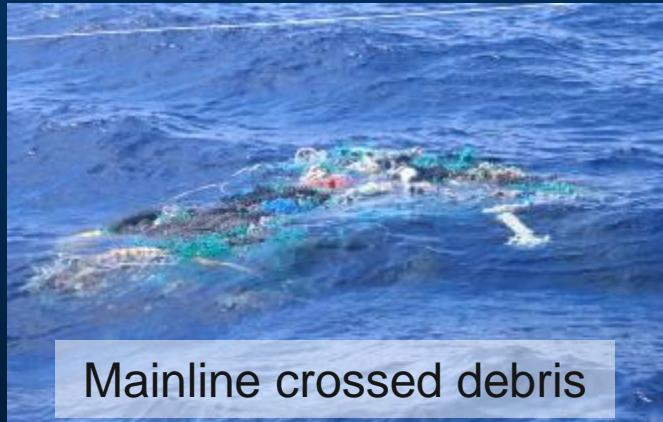
FAD?



Typical debris haul



Biota on debris



Mainline crossed debris



Entangled spp caught



Biota on debris





Biota on debris



Other observations:
Other



Entangled spp caught



Debris on mainline



Other observations:
Other



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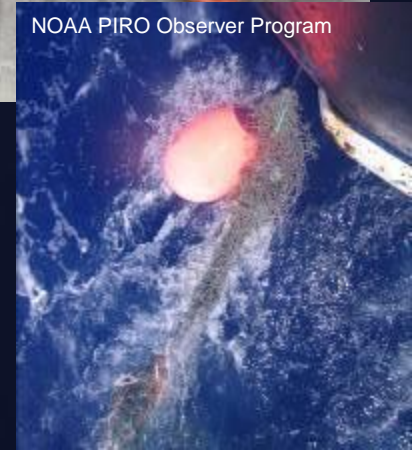
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Fisheries Observer Partnership - Next Steps

- Establish as standard data collection for longline observer program
 - Conducting training - data record
 - Modify datasheet to capture impact; input from observers and fishermen
- Engage fisheries economist to help assess economic impact to fishing community.
 - Are we collecting all needed information to reach project objective



NOAA PIRO Observer Program



Derelict Gear Disposal & Recycling

Honolulu Port Reception Feasibility Study and Derelict Net Recycling Program

Funded by NOAA Marine Debris Program in 2005

- Feasibility study: Would Hawaii's longliners use a port reception bin? Do they bring back enough debris? **YES**
- Honolulu Derelict Net Recycling Program: Launched 1/13/06
- Location: Pier 38, Honolulu Harbor – for longliners & general public usage
- 38 tons derelict net and monofilament longline



Hawaii's Nets to Energy



Derelict
nets & line

Transported to facility of Schnitzer
Steel Hawaii Corporation where nets
are chopped into small pieces.



**100 tons of net =
enough energy to power
43 homes for a year!**

Combusted to create electricity
at City & County of Honolulu's
HPower facility run by Covanta
Energy.

Expanding on a good idea – the Fishing for Energy Program

- Partnership between NOAA, Covanta, NFWF, and the fishing community
 - Active involvement in addressing DFG
 - Reduce the amount of unused fishing gear in the community and marine environment
- Launched Feb. '08 in New Bedford, MA
- Locations throughout New England, close to Covanta facilities
- One ton of DFG collected is recycled into energy to power a home in New England for 25 days.





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Fishing for Energy – Opportunity for Expansion

- Continue to provide free disposal of unused and derelict fishing gear
 - Only can be successful if needed by fishing community
- Areas of high need?
 - East coast and northwest region
- Fishing ports of interest?
- Issue – Regulations preventing removal.





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Sea Debris: Fishermen DFG Removal Partnership

- Massachusetts Bay - Partnered with local fisherman to locate and remove DFG found in Stellwagen Bank National Marine Sanctuary
 - Assessment
 - Retrieval
 - Disposal
- Collaborating with commercial fishermen to develop solutions
 - Reduce fishermen fixed cost
 - Reduce entanglement hazard
 - Understanding scope of the problem
 - Conserving fishery resources
- Issue – Restrictions on removal



Capt. Frank Mirarchi (above) and the trawler *Barbara L. Peters* (at left)

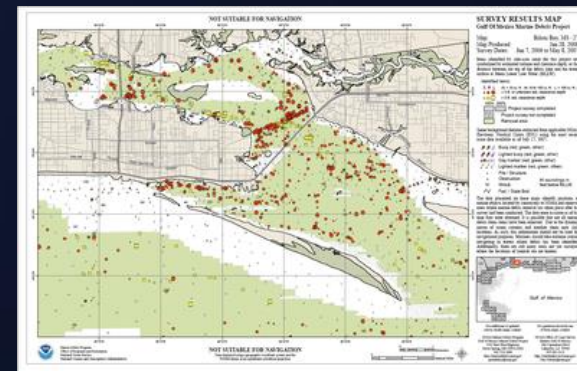


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Other Related Projects

- Identification, Mapping, and Assessment of Derelict Fishing Gear in the Chesapeake Bay
 - Estimated 41,971 SE+/- 4234 Derelict Traps in Maryland (Condition unknown)
 - ~61% crab mortality in pots
- Monofilament line recycling program - *Reel in and Recycle Program*
 - BoatUS, Pure Fishing, and Berkeley Recycling
 - Recycle recreational monofilament line at recreational fishing sites throughout the country
 - To date, 750 recycling bins constructed and put into use
- Gulf of Mexico Debris Survey and Removal
 - Alabama, Mississippi, and Louisiana surveys outside navigational channels.
 - Provide debris charts for removal operations and fishing community.
- Recovery and Disposal of Ghost Black Sea Bass Traps in the U.S. South Atlantic Fishery Management Area





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Next Steps

- Identify specific marine debris issues for fisheries around the U.S. solely for reducing harm to commercial and recreational catch
 - Work to develop strategies for removal
 - Review existing regulations that prevent debris removal
- Expand observer MD project
- Expand opportunity for free DFG disposal
- Federal Funding Opportunities through MDP
 - Apply for grants
- Emergency disaster funds – putting fishing community to work removing crab pots in the Chesapeake Bay.
- Legacy gear vs. accumulation debris



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Opportunities for Collaboration

- How can the MDP assist the Councils?
 - What kind of DFG research would the Councils like to see?
 - What kind of removal programs would you like implemented?
- What fisheries do the Councils find particularly problematic in terms of generating DFG?
- Expand opportunity for free DFG disposal
 - What areas of the coast needs gear disposal?
 - Suggested locations
- Federal Funding Opportunities through MDP
 - How do we better target the fishing community?

For more information on marine debris please visit:

www.MarineDebris.noaa.gov



Holly A. Bamford, Ph.D.
Director, NOAA Marine Debris
Ph: (301) 713-2989 x106

Email: Holly.Bamford@noaa.gov



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Back-up Slides



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The National Academies, National Research Council Study

- Per MDRPRA – Report to Congress
 - Committee on the Effectiveness of International and National Measures to Prevent and Reduce Marine Debris and its Impacts
 - “Tackling Marine Debris in the 21st Century”
 - Released September 18, 2008
- Statement of Task
 - An evaluation of the implementation of MARPOL Annex V and the Act to Prevent Pollution from Ships
 - Review and assessment of management practices for reducing the impact of marine debris, including DFG.
 - An evaluation of the role of FADs in the generation of marine debris and existing legal mechanisms to reduce impacts of such debris.
 - An overview of the existing federal statutes on marine debris with a description of the responsibilities of the designated federal agencies





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Recommendations – Fishing Gear

- Overarching Findings
 - DFG and abandoned or lost FADs fall under both MARPOL Annex V and fisheries management treaties and regulations. This overlap has complicated implementation of measures to prevent and reduce these sources of debris.
 - Current regulations do not include accountability measures for gear loss and fishermen and fisheries management organizations have few incentives and several disincentives to take responsibility for the impacts and for cleanup.
 - Inadequate port facilities and high disposal costs are an impediment to disposal of waste and DFG.
- Overarching Recommendations
 - MARPOL Annex V (and corresponding domestic laws) and international and domestic fisheries treaties and regulations should be revised to clearly identify and prohibit preventable losses of fishing gear, including FADs.
 - IMO, fisheries management councils and organizations, and other relevant entities should incorporate gear accountability measures and facilitate proper disposal of fishing gear, including FADs.