

# Marine Debris Expedition

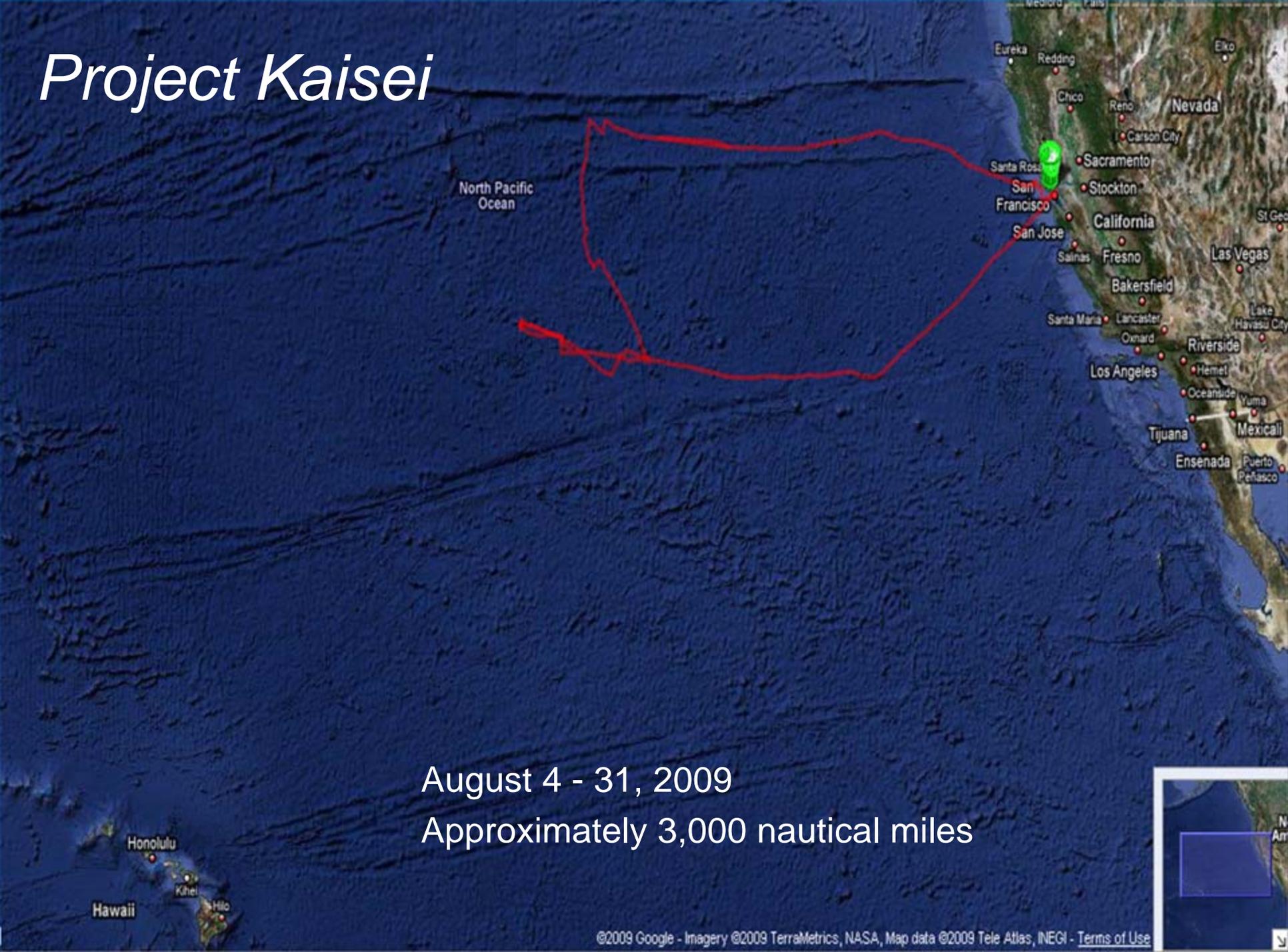
## Journey To The Plastic Vortex



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# Project Kaisei



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Approximately 3,000 nautical miles



# Capturing Large Floating Debris







# Common Types of “Larger” Debris

- Buoys
- Plastic detergent and other plastic bottles
- Caps
- Strainers
- Crates
- Laundry baskets
- Pieces of chairs
- Buckets



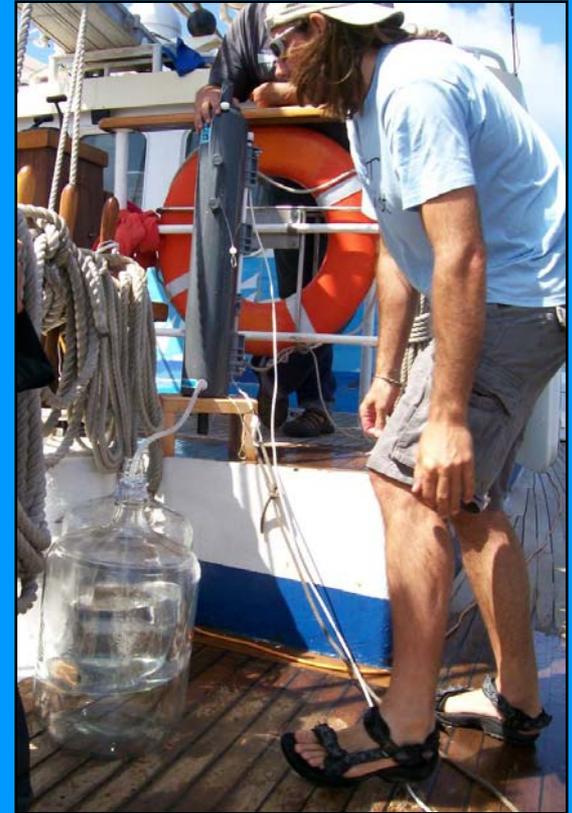
# Fisherman's Catch



# Impacts of Marine Debris on the Ocean Environment



# Sampling: Water column



Sampled to 180 meters

# Dissolved Organic Matter (DOM)



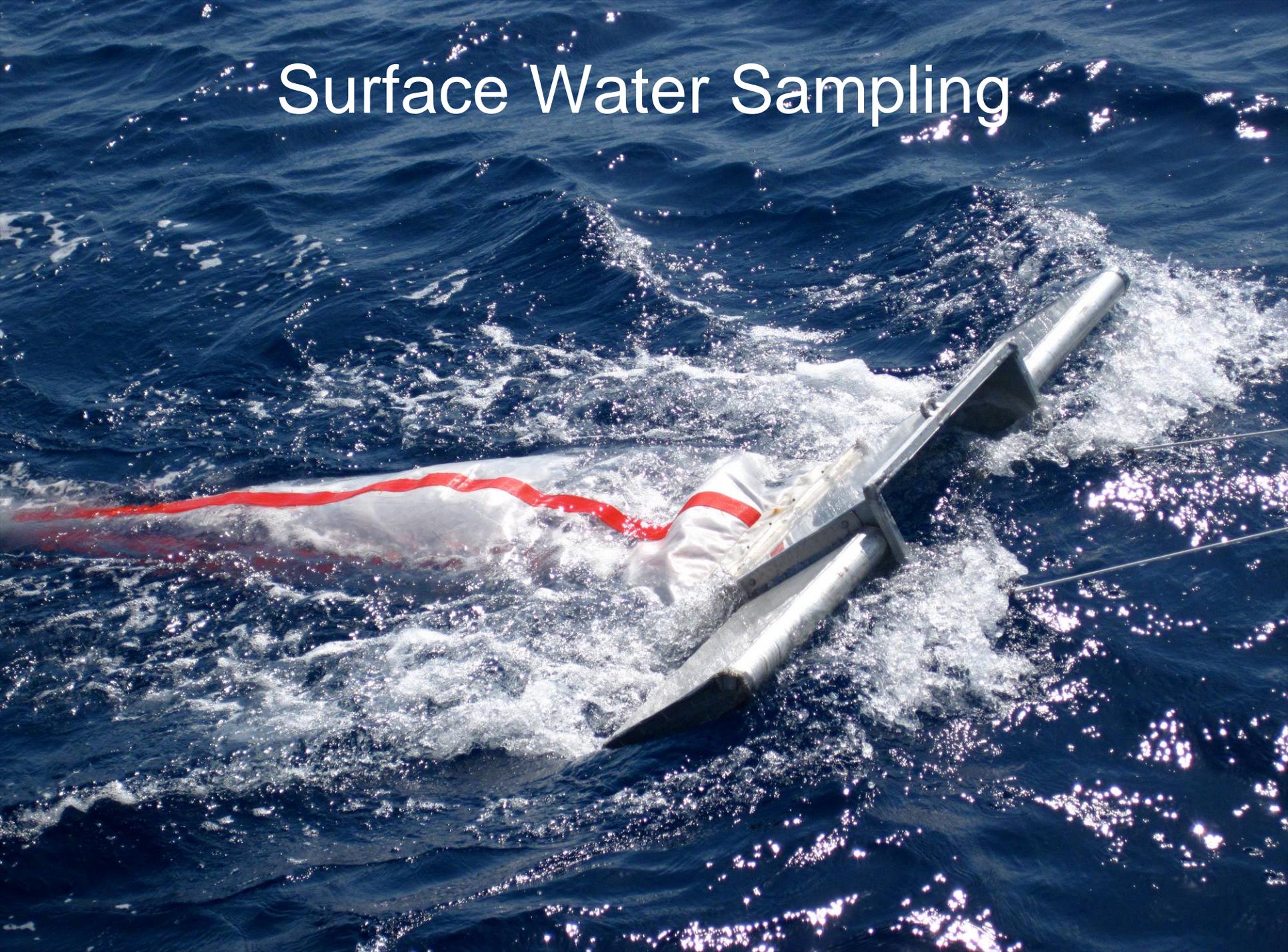
- Extract dissolved carbon molecules
- Evaluate whether marine debris contributes to DOM

# Reactive Oxygen Species

- Increased hydrogen peroxide production in presence of plastic
- Increased oxidative stress for organisms



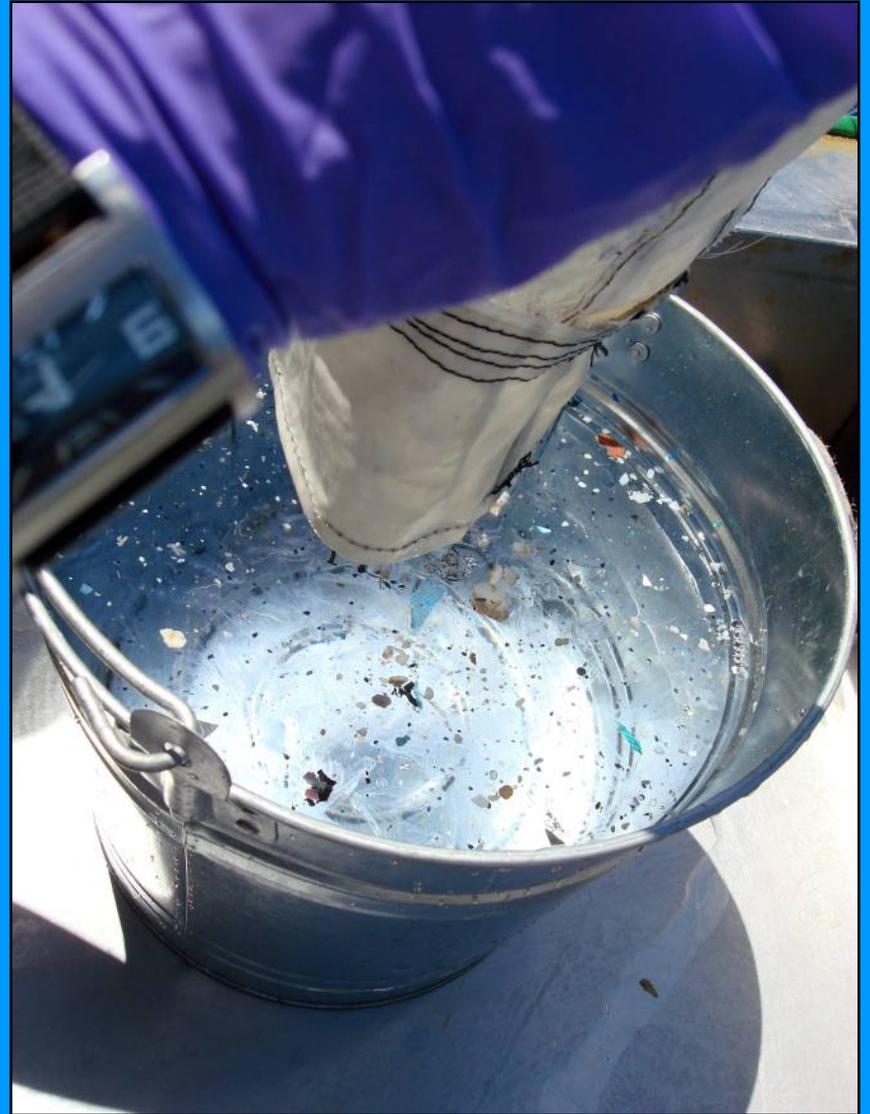
# Surface Water Sampling



Cod end



# Processing Trawl Samples







Pre-production  
plastic pellets –  
with biofilm



# Impacts of Plastic Debris on Marine Life



# Organisms Ingesting Plastic Debris

- More than 180 species reported to ingest plastic debris
- Studies show chemical contaminants adsorb onto plastic surface
- Is marine polymer debris a new transport mechanism for contaminants into the food web?



# Mesopelagic Fishes

## Lantern fish (Family Myctophidae)



Sample size range: 20-100 mm Total Length

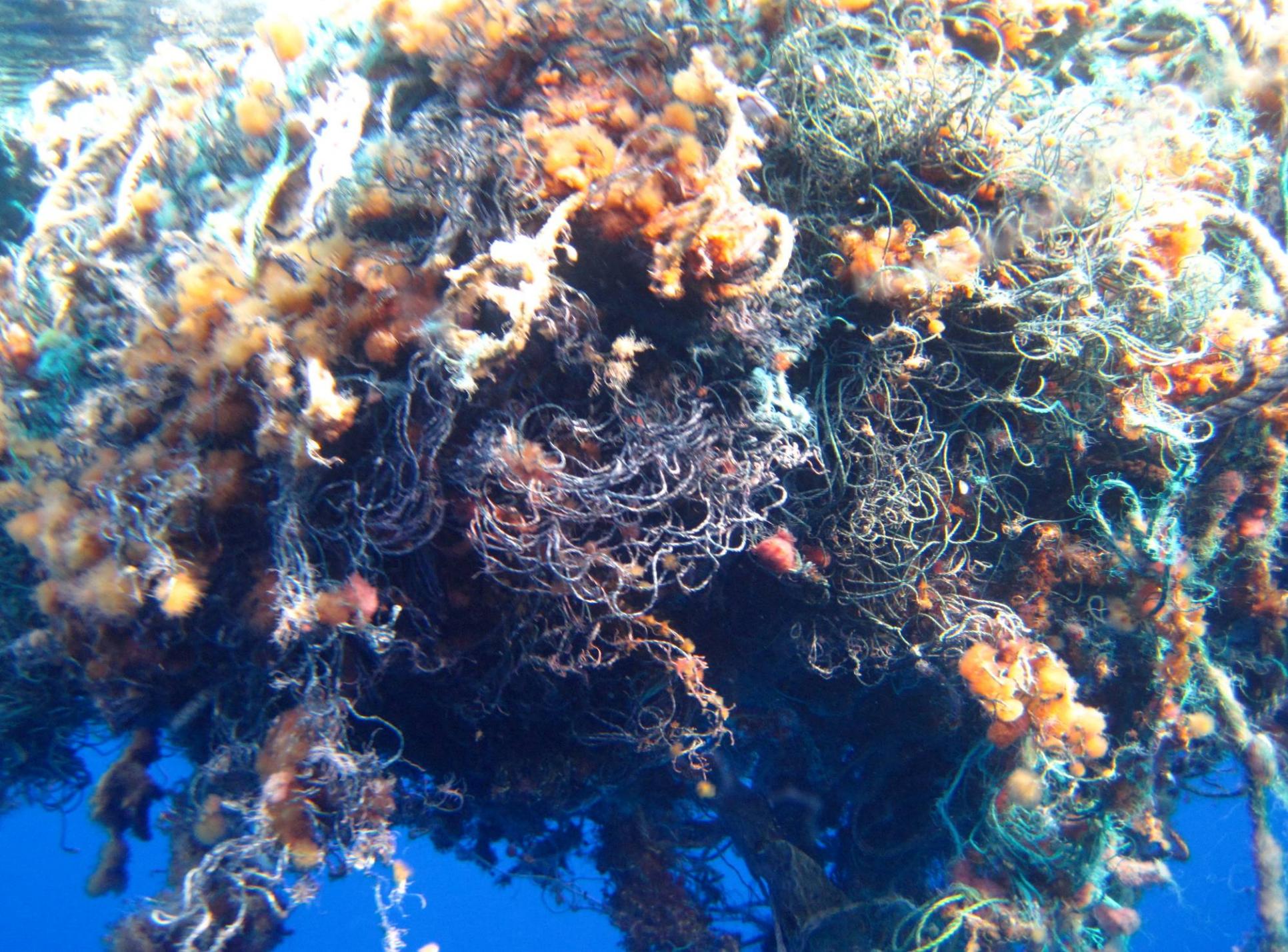


# Investigating Food Web Contamination

- Lantern fish feed on zooplankton →
- Zooplankton is mixed with plastic debris at the ocean surface
- Tuna, mahi-mahi, yellowtail jack, → sharks, other fish, squid, and marine mammals feed on lantern fish







A school of yellow-striped snappers swimming in clear blue water. The fish are silvery with a prominent yellow stripe running along their sides. They are scattered throughout the frame, swimming in various directions.

# Threats to Marine Life

## Photo Credits:

- Troy Brajkovich, photographer & cinematographer
  - Andrea Neal, principal investigator
  - Michael Gonsior, co-principal investigator
  - Margy Gassel, co-principal investigator
  - Heather Coleman, co-principal investigator
  - Nicole Argyropoulos, co-principal investigator
  - Corinne Hume, co-principal investigator
  - Jo Ruxton, producer
  - Adrian Thibeault-Stone, first mate
  - Aleui Lyman, crew
  - Mike Smith, captain