

# Marine Debris Expedition

## Journey To The Plastic Vortex

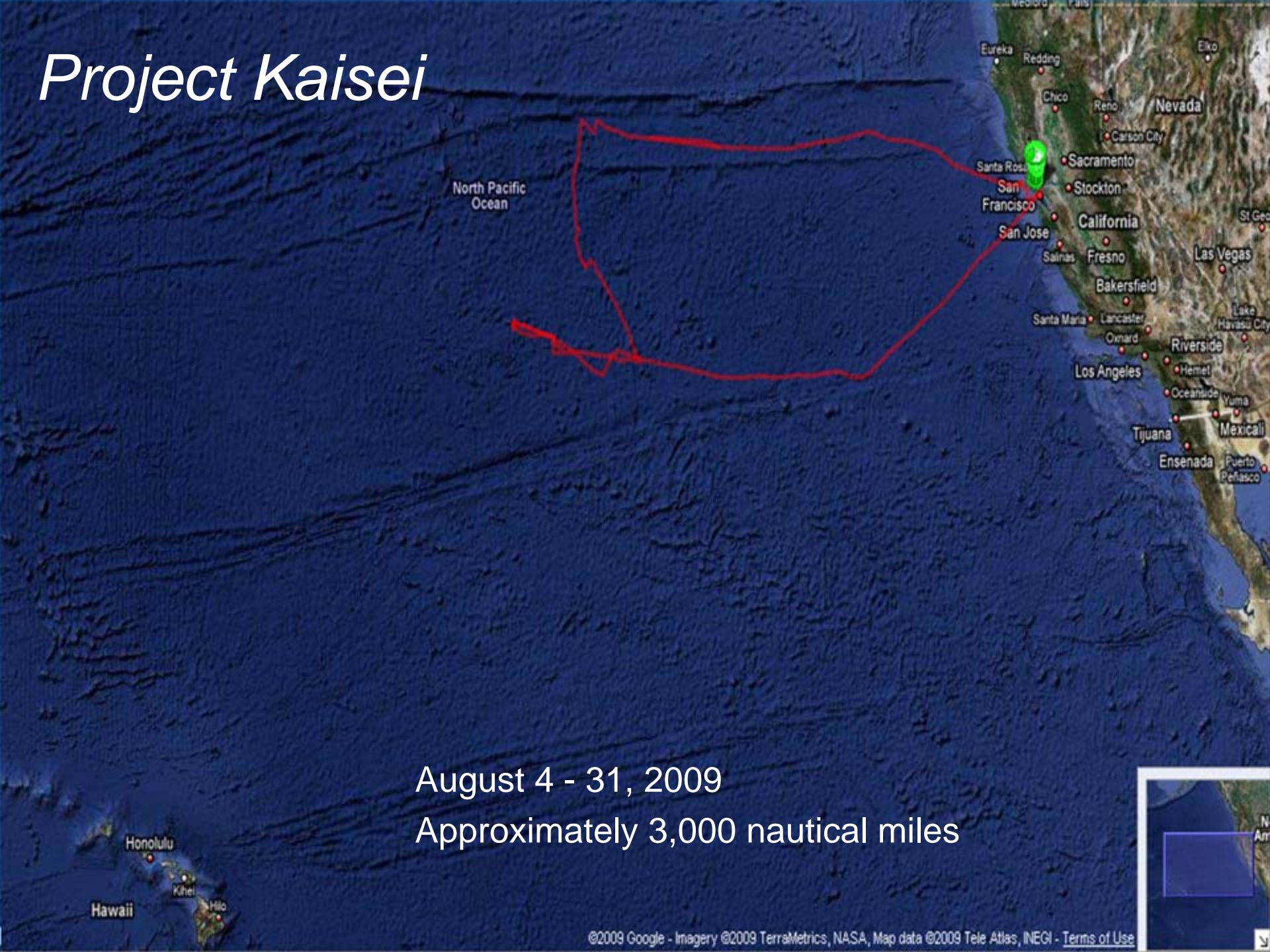


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# *Project Kaisei*



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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



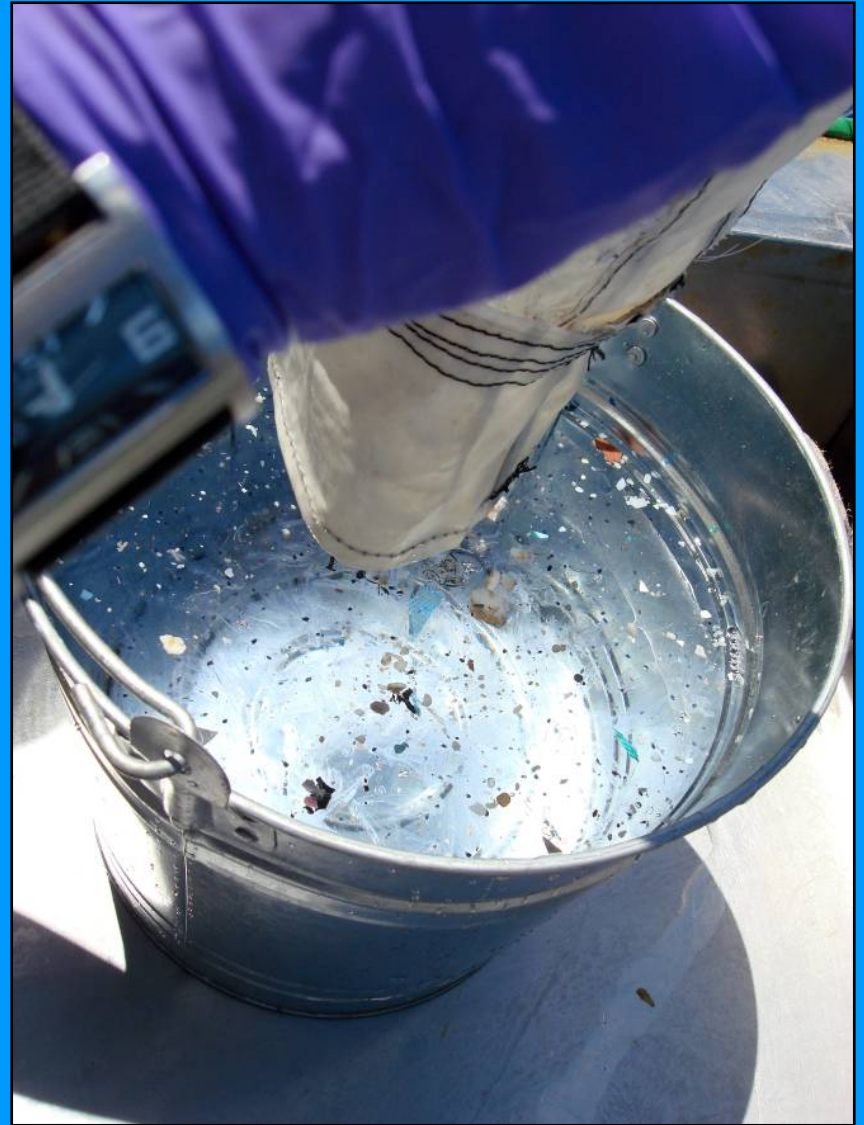


Cod end





# 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

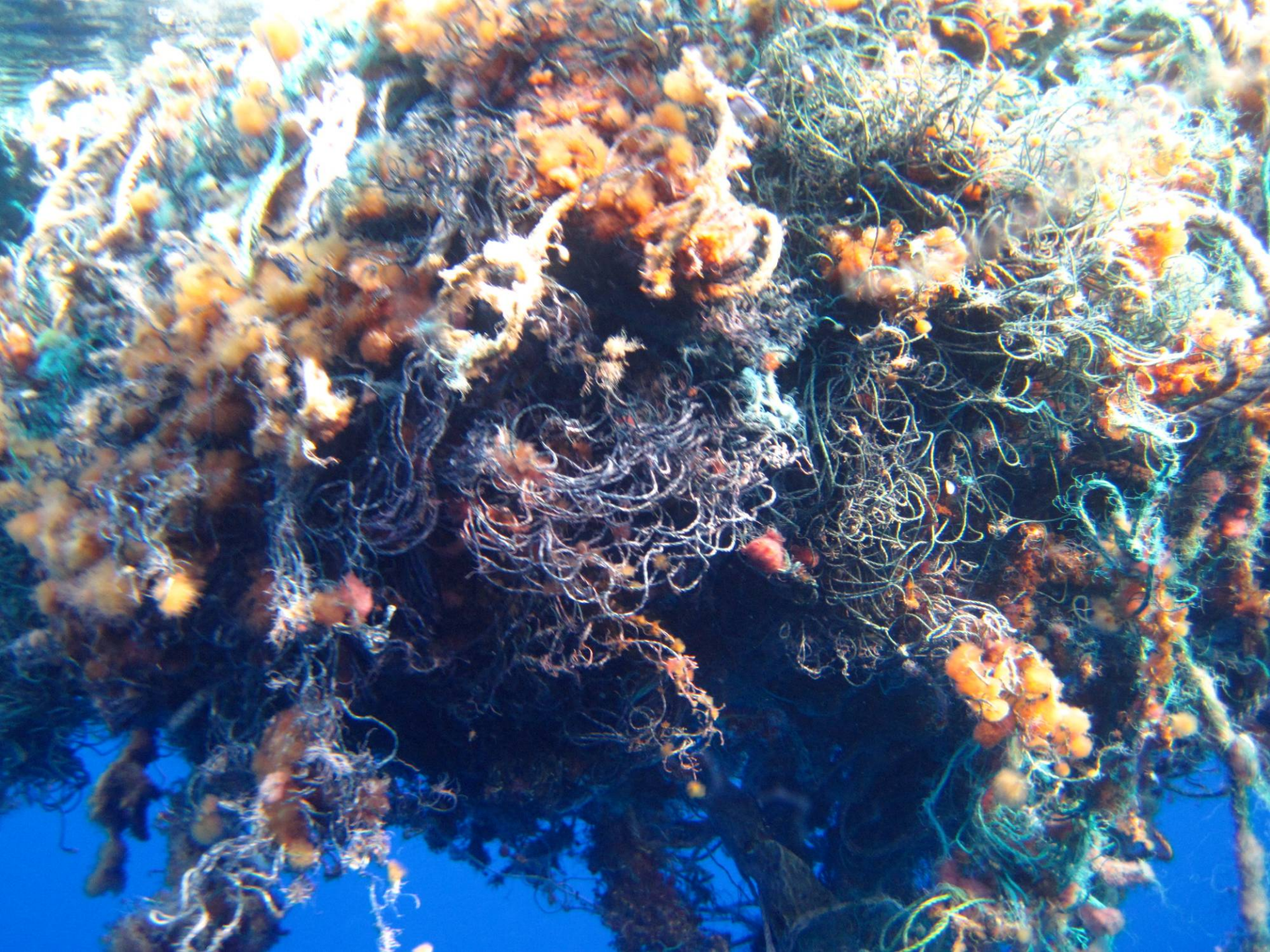
- Lantern fish feed on zooplankton —→
- Zooplankton is mixed with plastic debris at the ocean surface
- Tuna, mahi-mahi, yellowtail jack, —→ sharks, other fish, squid, and marine mammals feed on lantern fish













A school of yellow-striped snappers swimming in clear blue water. The fish are silvery with a distinct yellow stripe running along the side of their bodies. They are swimming in various directions, creating a sense of movement and depth.

# 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