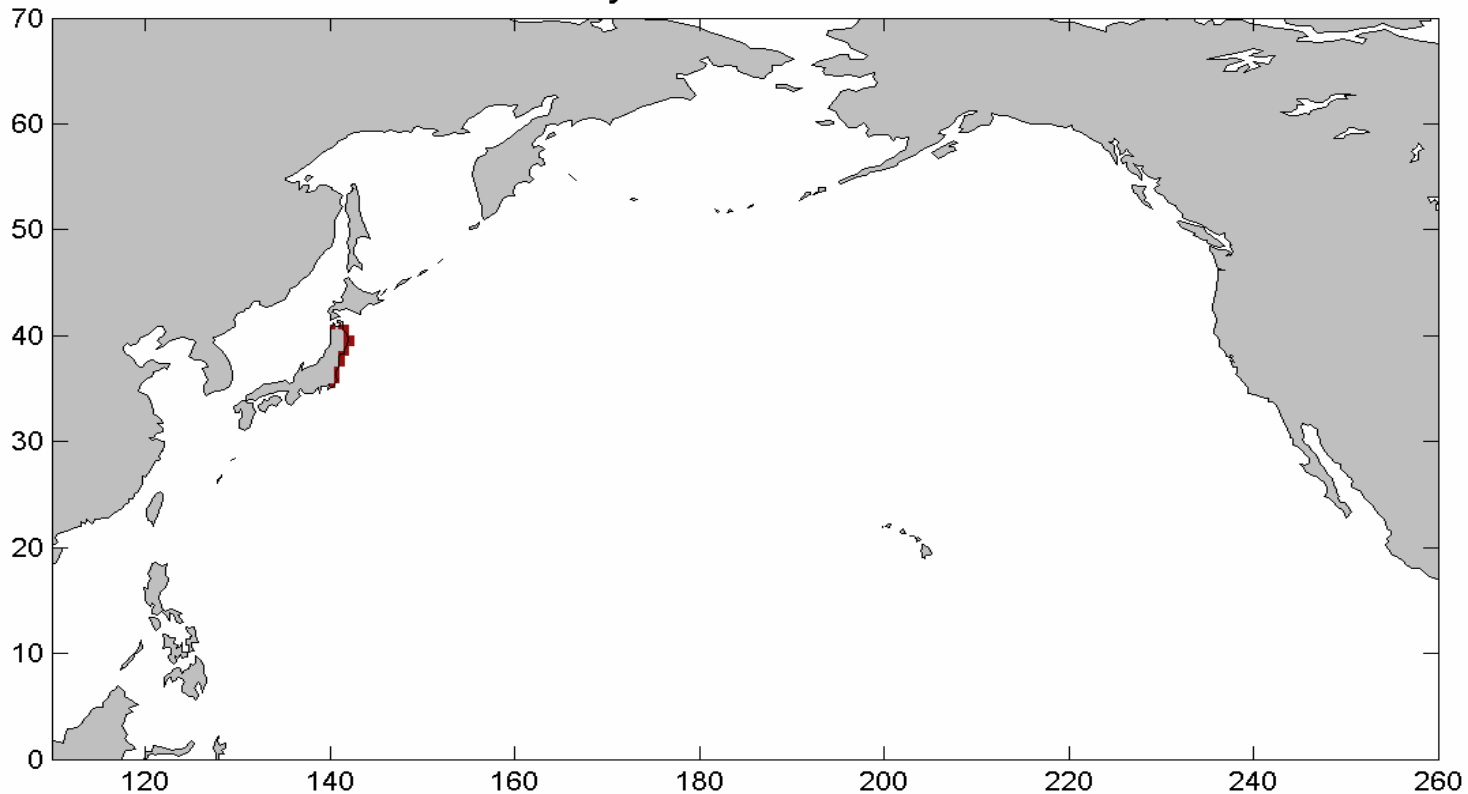


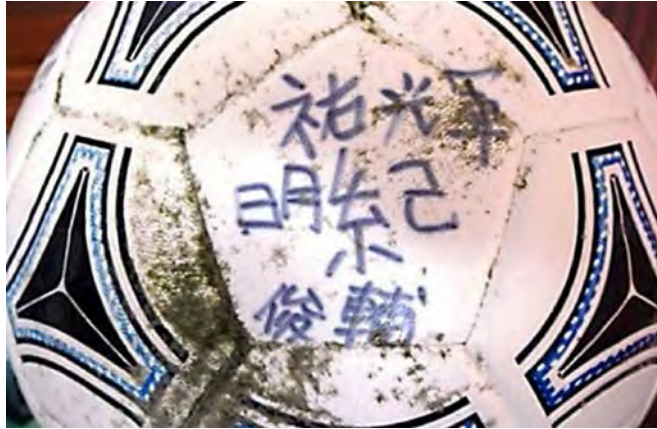
An aerial photograph of a rugged, rocky coastline. A small boat is visible in the water near the shore, surrounded by debris. The background shows a dense forest of evergreen trees. A large, semi-transparent white box with a dark border is overlaid on the image, containing the title and authors.

Surveillance of debris from the Great Japan Tsunami

Cathryn Clarke Murray, Kirsten Moy, Miguel Castrence, Brian Neilsen,
Tomoya Kataoka, and Atsuhiko Isobe

Day # 0 Year # 0



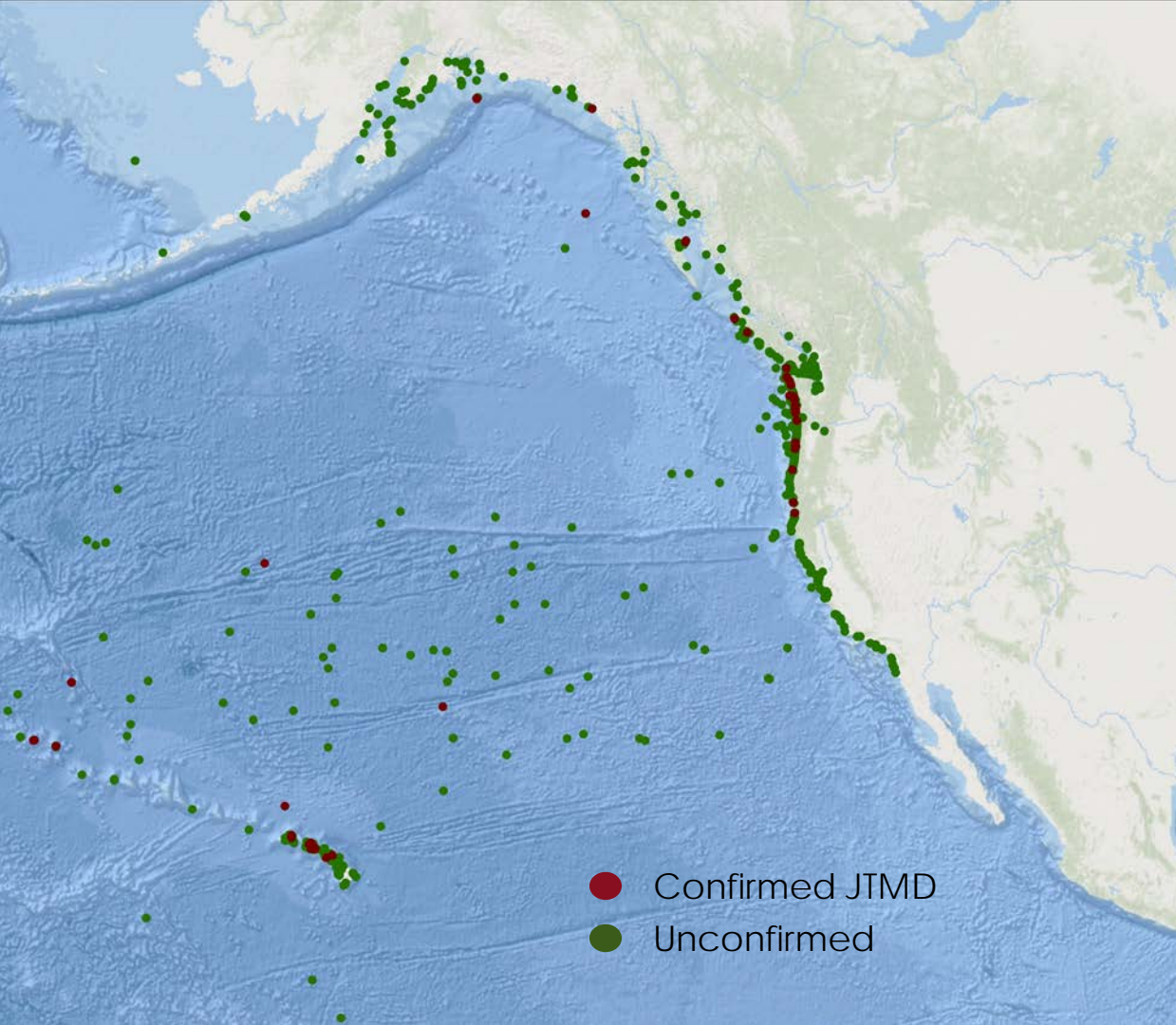


Debris with history





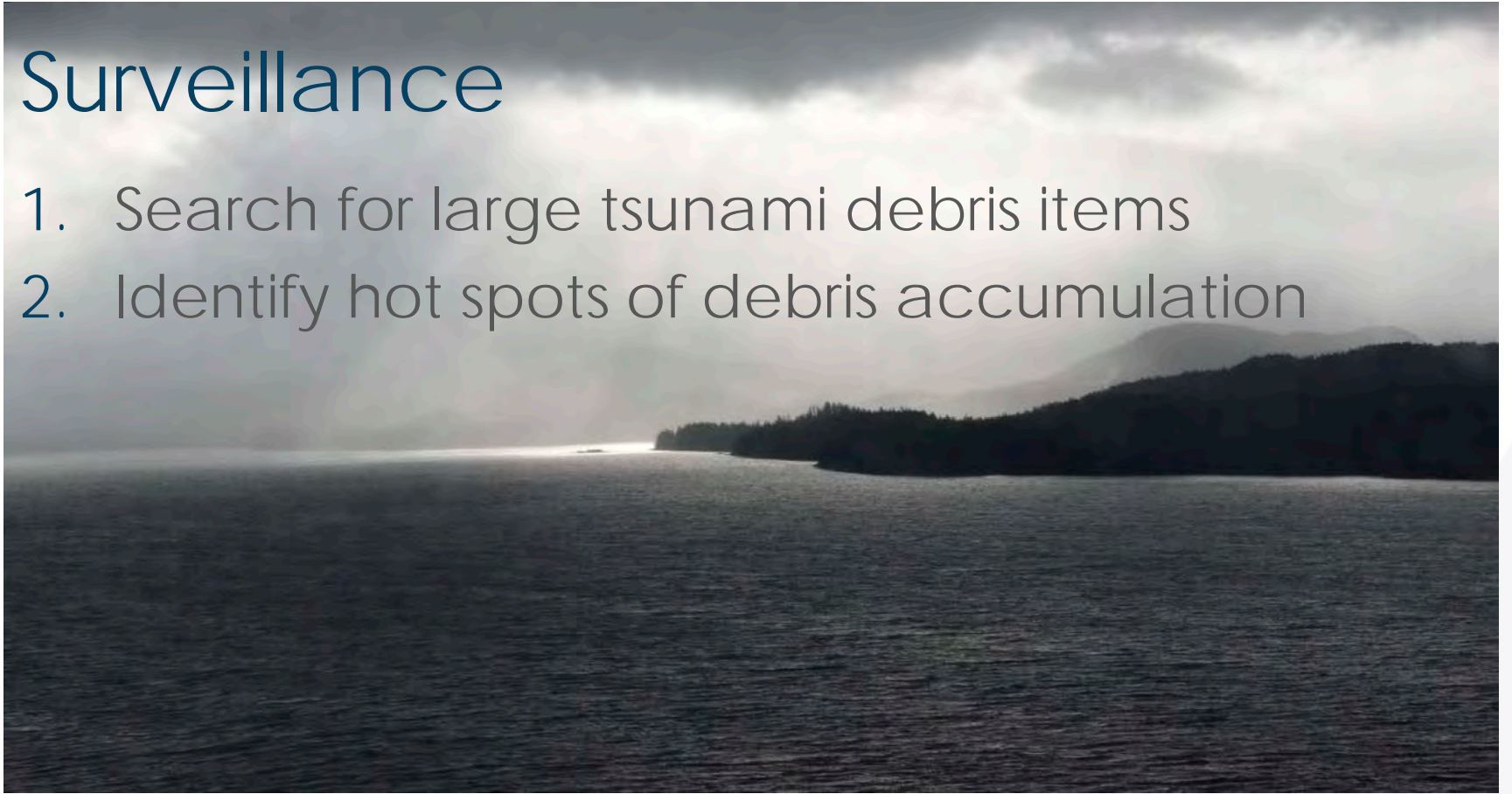
NOAA's
Disaster Debris
Reporting Hotline



- Confirmed JTMD
- Unconfirmed

Surveillance

1. Search for large tsunami debris items
2. Identify hot spots of debris accumulation



British Columbia, Canada

Aerial survey

- Oblique, overlapping photographs
- Post-processing: Tag images for debris items, Qualitative rankings



Aerial Surveys

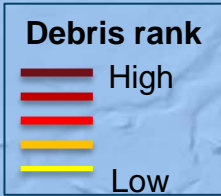
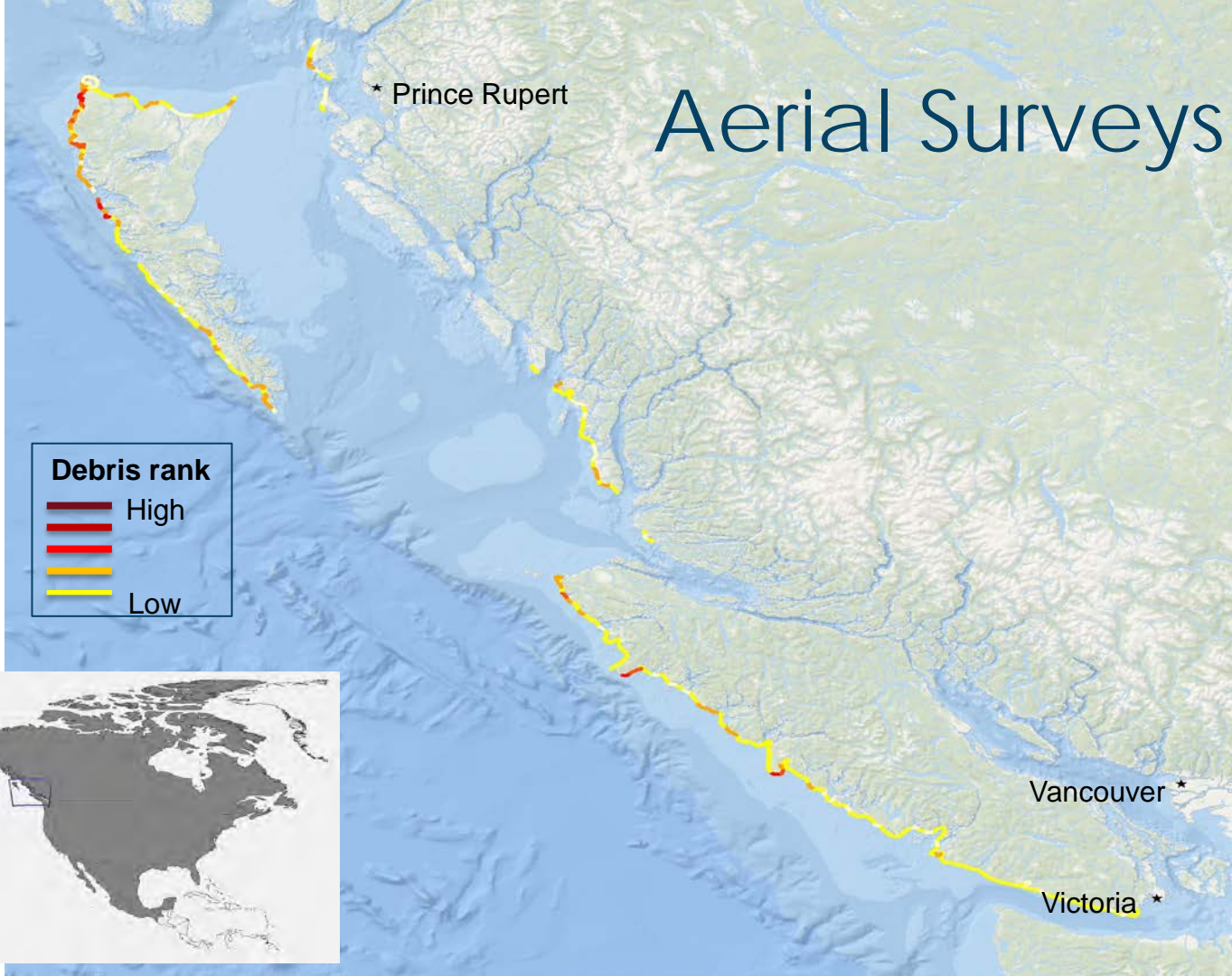


Photo credit: Lightspeed Digital



Photo credit: Lightspeed Digital



Photo credit: Lightspeed Digital



Photo credit: Lightspeed Digital



Photo credit: Lightspeed Digital



Photo credit: Lightspeed Digital

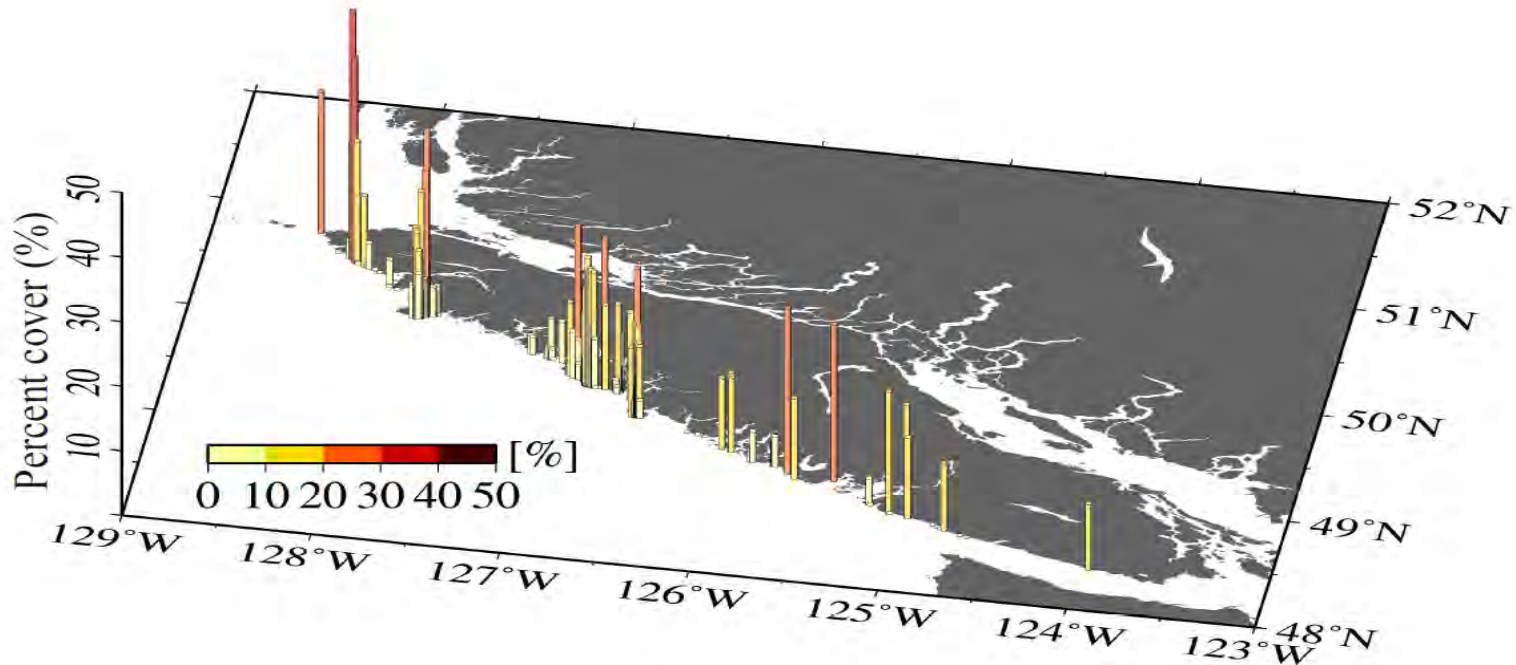


Image analysis

- Image analysis: percent cover
- Ground truthing comparison to cleanup



Accumulation of marine debris



Details | Basemap | Share | Print | Measure | Find address or place

About | Content | Legend

Contents

- PICES Photo Points
- 5km Debris Ratings
- Light Gray Canvas


(1 of 2)

PICES Photo Observations

Longitude: -127.68
Latitude: 50.13
Keywords: foam,plastic drum,logs,buoy
Debris Rating: 4

_2041area5_web

Click thumbnail to view a larger photo.



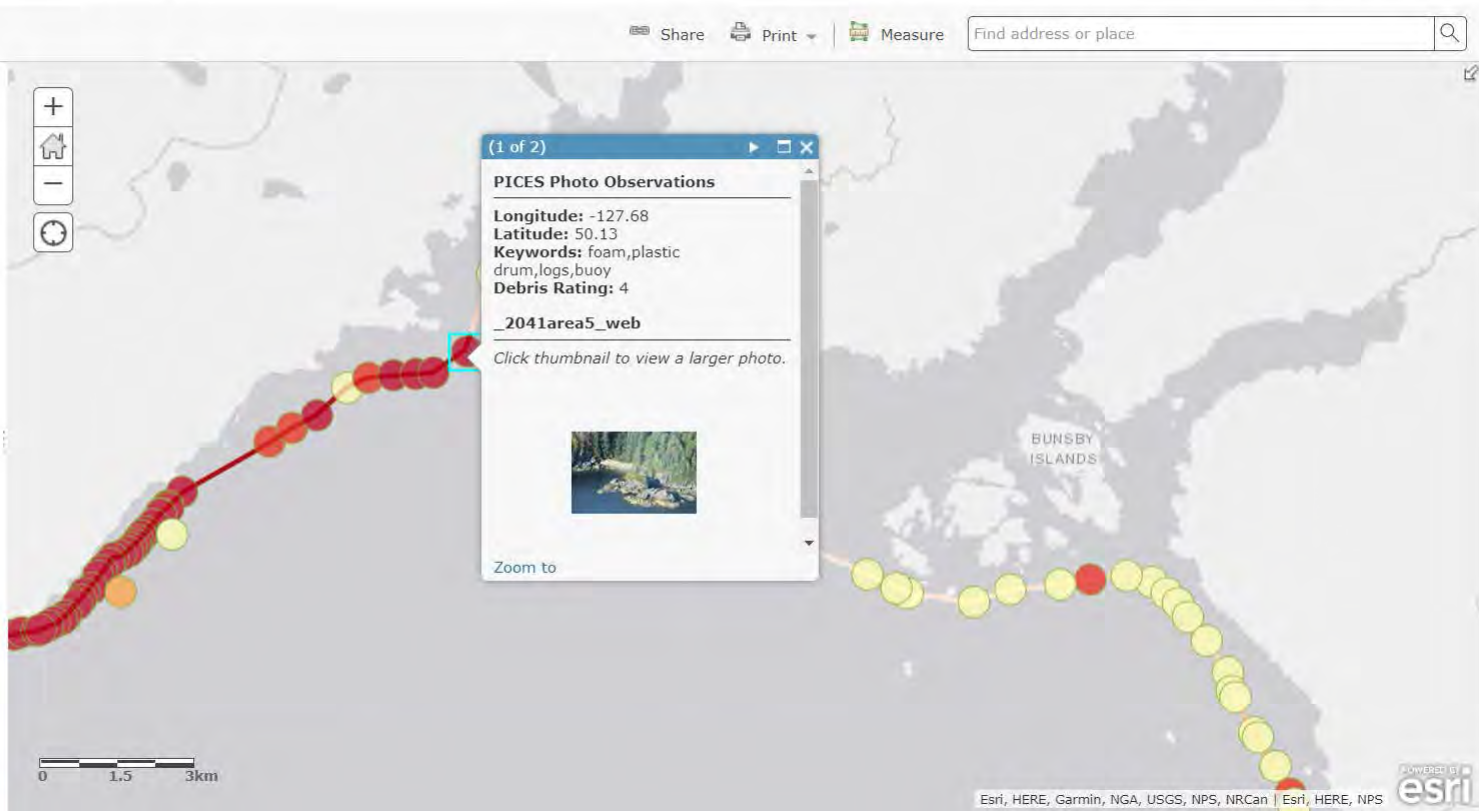
Zoom to

BUNSBY ISLANDS

0 1.5 3km

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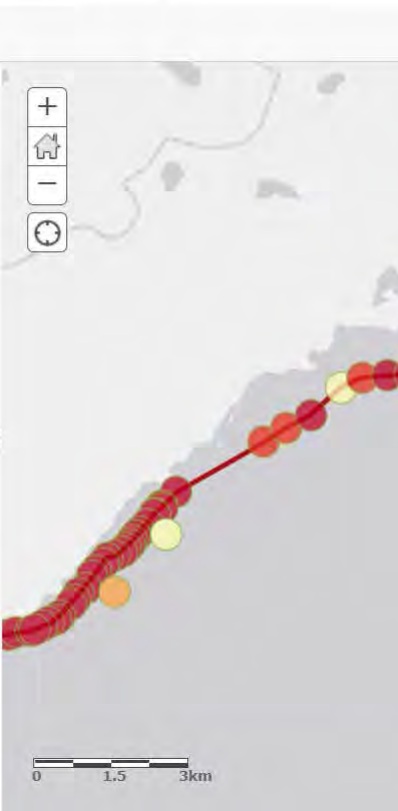


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Hawaiian Islands, USA



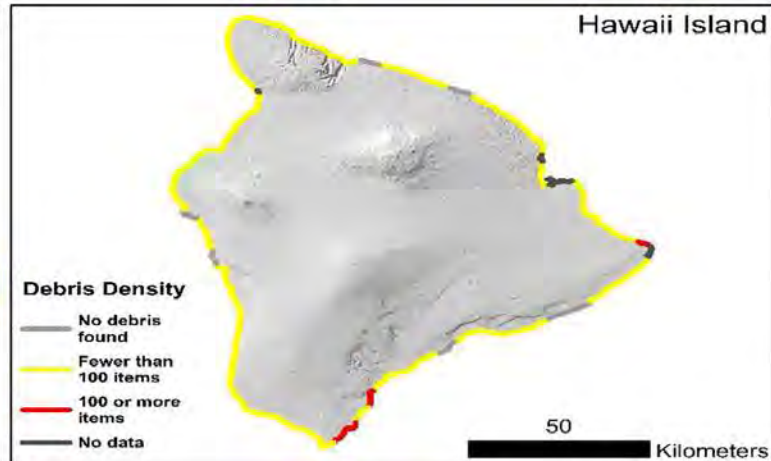
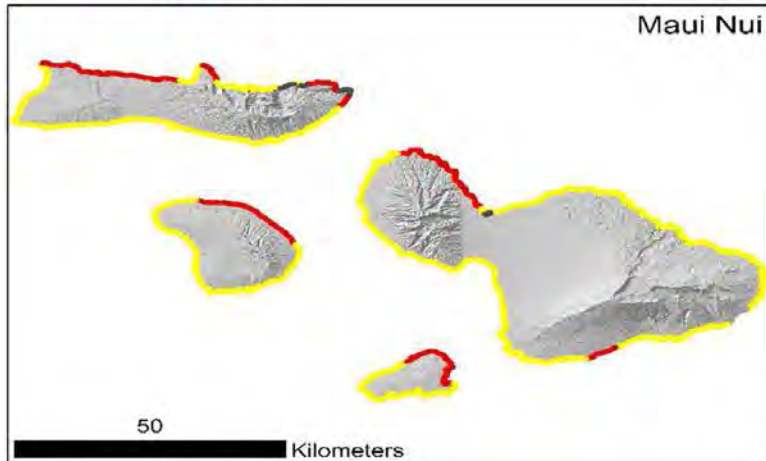
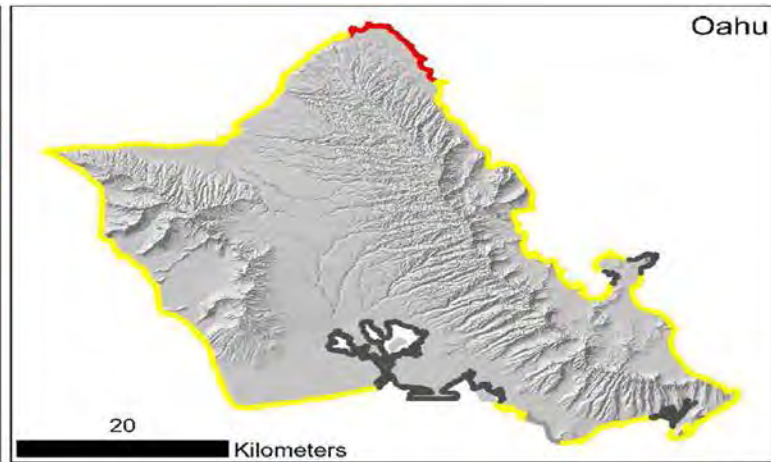
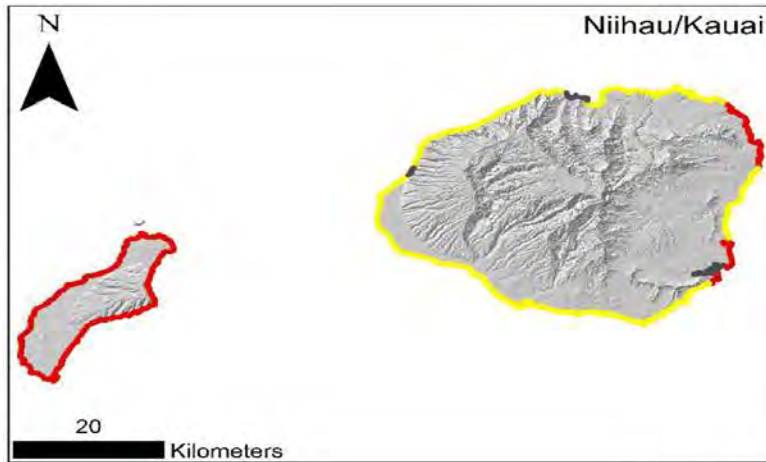
Hawaiian Islands, USA

- High resolution ortho-rectified aerial surveys
- Post-processing: tag and identify individual items, estimate debris density
- Ground truthing



Image processing








Ground truthing



Mapping Marine Debris in the Main Hawaiian Islands

DLNR Marine Debris   

A Hawai'i Department of Land and Natural Resources (DLNR) project funded by the Ministry of Environment of Japan via the North Pacific Marine Science Organization (PICES) and Japan Gift Fund to the Pacific Coast states, administered by NOAA's Marine Debris Program



Statewide Marine Debris Density

Plastics

Buoys

Derelict Fishing Gear (DFG)

Wildlife

Cleanups

How to help: Info from DLNR

MARINE DEBRIS poses numerous risks to Hawai'i's fragile reef environment:

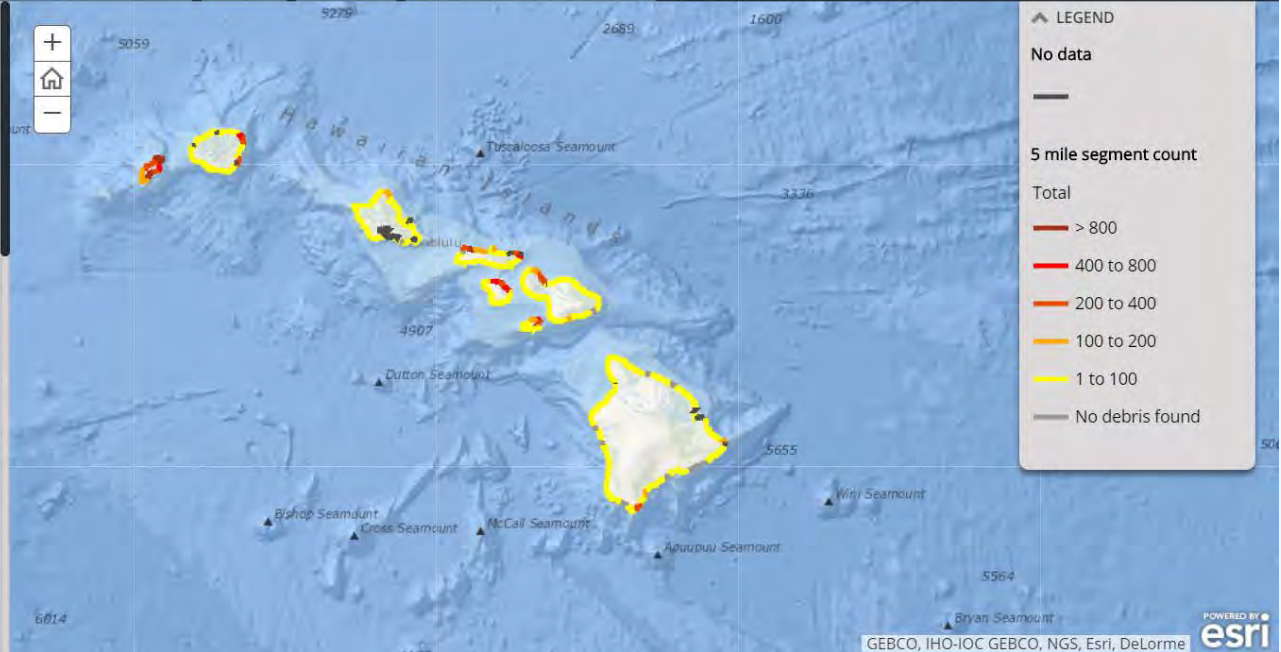
- Introduction of aquatic invasive species
- Ingestion and entanglement of wildlife
- Smothering and physical breakage of coral reefs
- Potential chemical and biological consequences

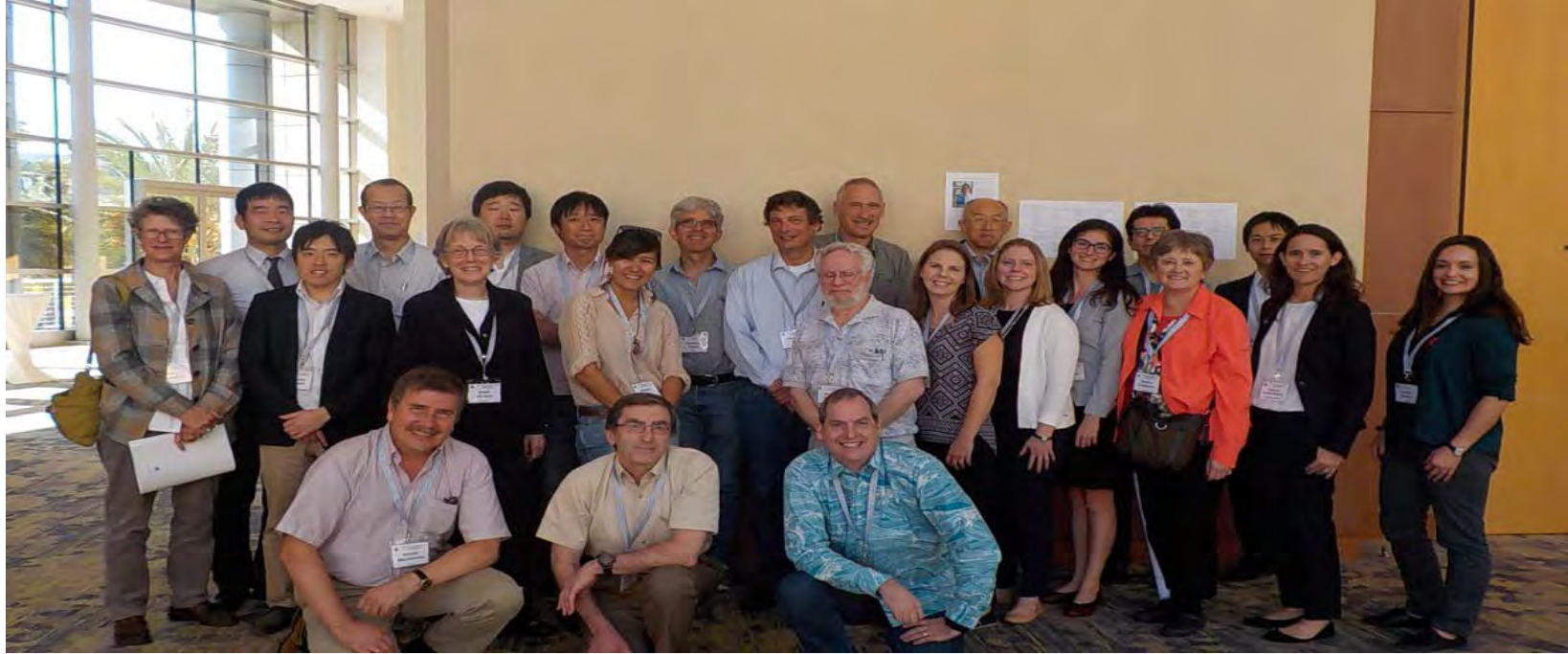
Additional threats are numerous and understudied. Due to the vast extent and remoteness of coastlines in the main Hawaiian Islands (MHI), large scale surveillance efforts are necessary to identify and quantify accumulations of shoreline marine debris.

In 2015, the Department of Land and Natural Resources (DLNR) project "[Japanese Tsunami Marine Debris Aerial Imagery Analysis and GIS Support in the main Hawaiian Islands](#)"

was funded by the [Ministry of the Environment of Japan](#) via the [North Pacific Marine Science Organization \(PICES\)](#) as well as the Japan Gift Fund to the Pacific Coast states, administered by [NOAA's Marine Debris Program](#).

This resulted in a unique collaboration between the [Division of Aquatic Resources \(DAR\)](#) of DLNR, NOAA's Marine Debris Program, [Resource Mapping Hawai'i \(RMH\)](#) and the [Hawai'i Coral Reef Initiative \(HCRI\)](#).





This research was supported by the Ministry of the Environment of Japan through the North Pacific Marine Science Organization (PICES)
