



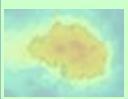
# Sourcing Marine Debris in Hawaii

Jennifer Lynch, Katherine Stevens, Nakamoto, Clare Collins, Paige White, Harley Wahl, Raquel Corniuk, Andrew McWhiter, Kevin O'Brien, James Morioka, Scott McCubbins, Cynthia Welti, Barbara Wiedner, Carl Berg, Hank Lynch, Eric, Cheryl King, Megan Lamson, Sarah-Jeanne Royer, and Mafalda de Freitas

**Jennifer Lynch, Ph.D. given by  
Mafalda de Freitas**

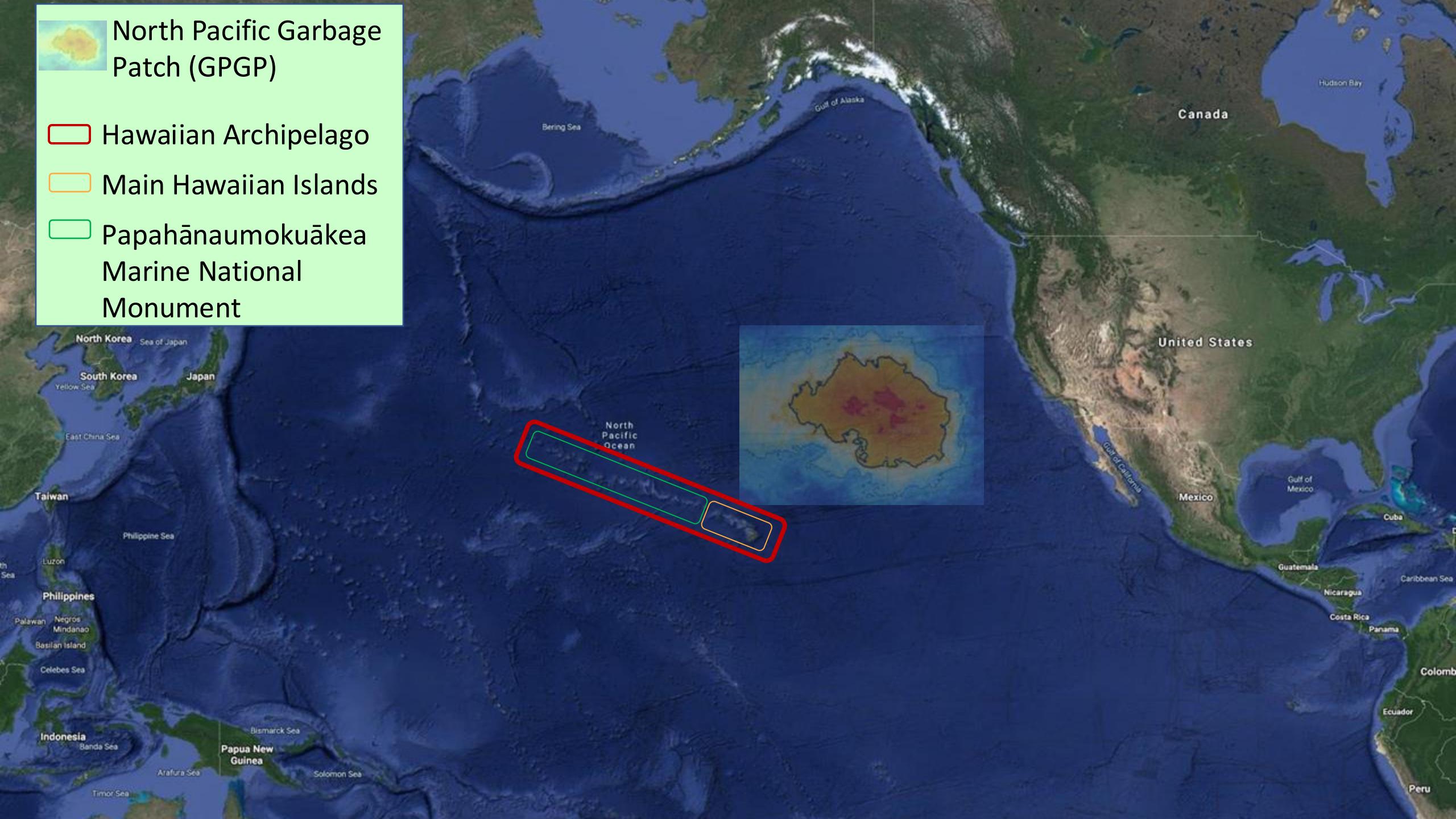
Center for Marine Debris Research

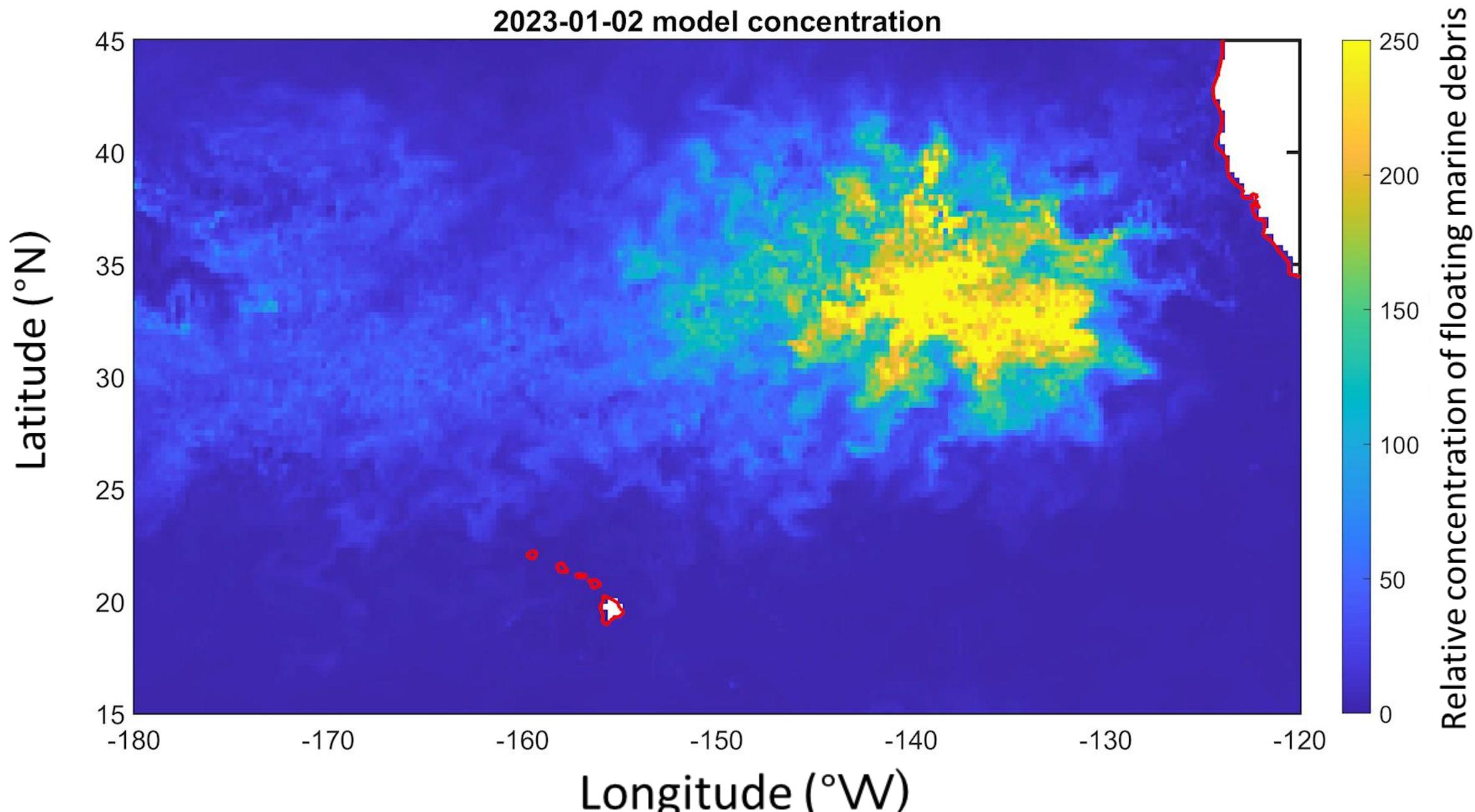
**PICES JAPAN 2025 – S-MPP**



North Pacific Garbage Patch (GPGP)

- Hawaiian Archipelago
- Main Hawaiian Islands
- Papahānaumokuākea Marine National Monument





# MARINE DEBRIS IN HAWAII



# PARTNERS ACROSS THE ARCHIPELAGO



200 TONS A YEAR





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# ARRIVAL FOR SORTING



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# DEBRIS DATA COMPILED - 2023

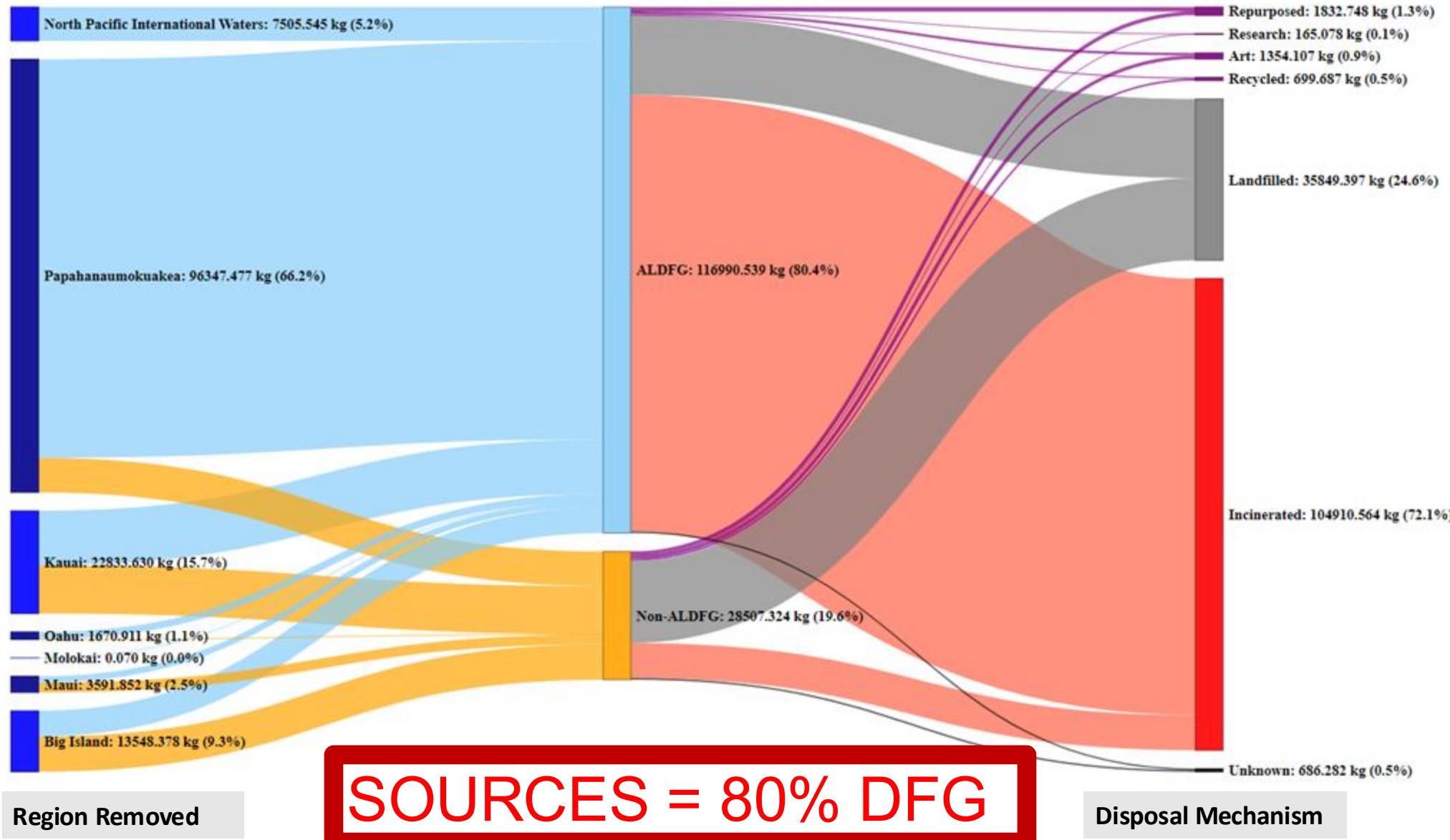


Chart made in collaboration with Dr. Win Cowger, Moore Institute for Plastic Pollution Research

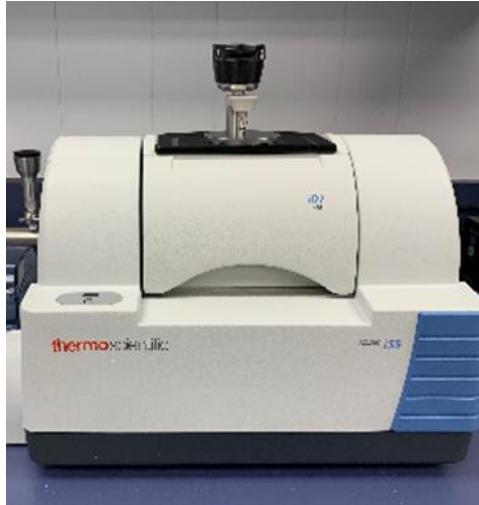


# SORTING

DEBRIS TYPE + POLYMER = SOURCES



+



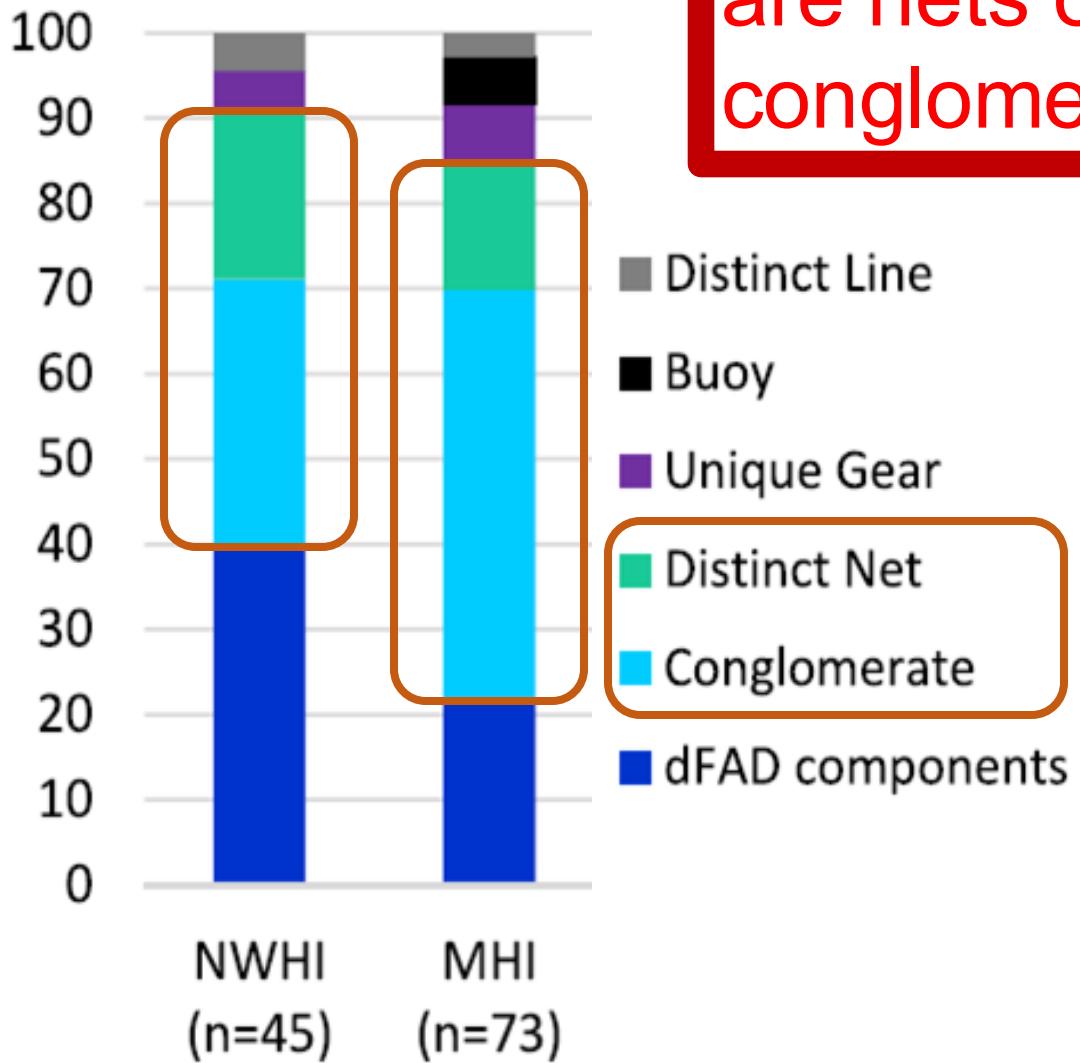
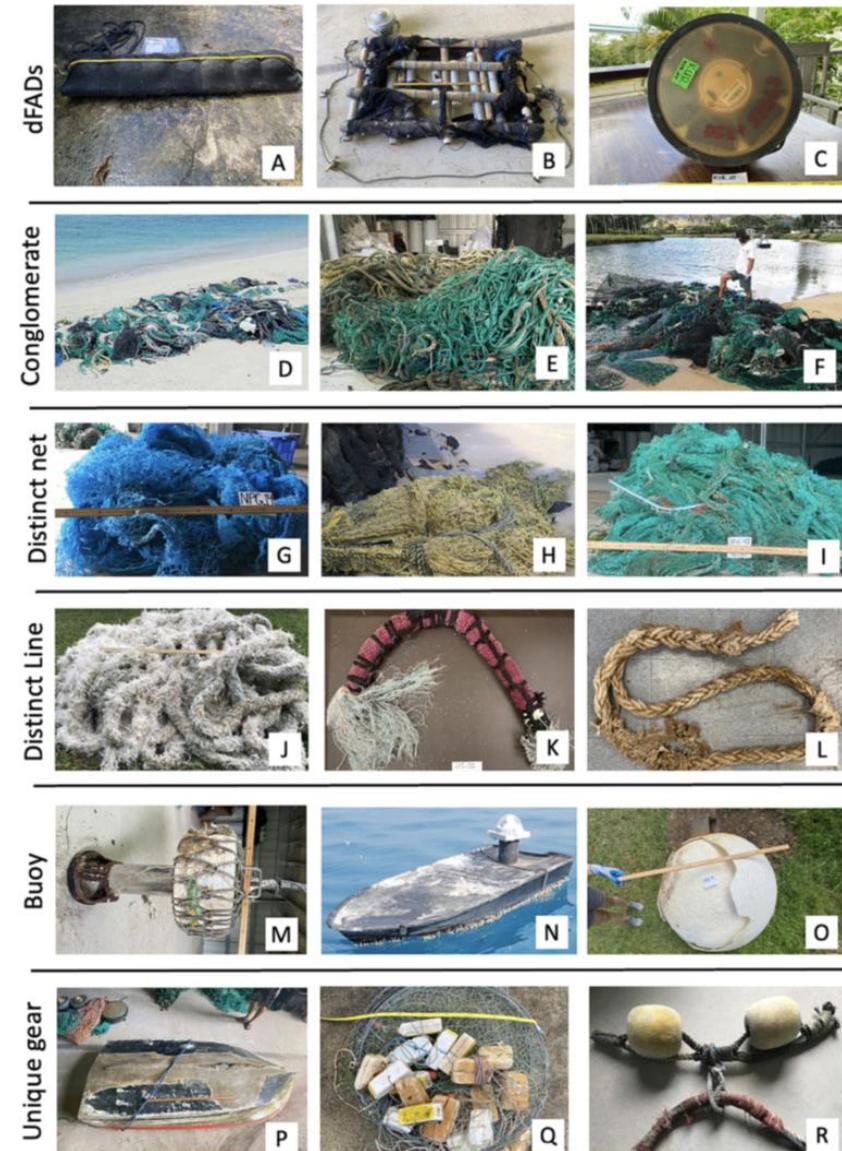
Net  
Line  
Float  
Trap

Polyethylene  
Polypropylene  
Nylon

Trawl

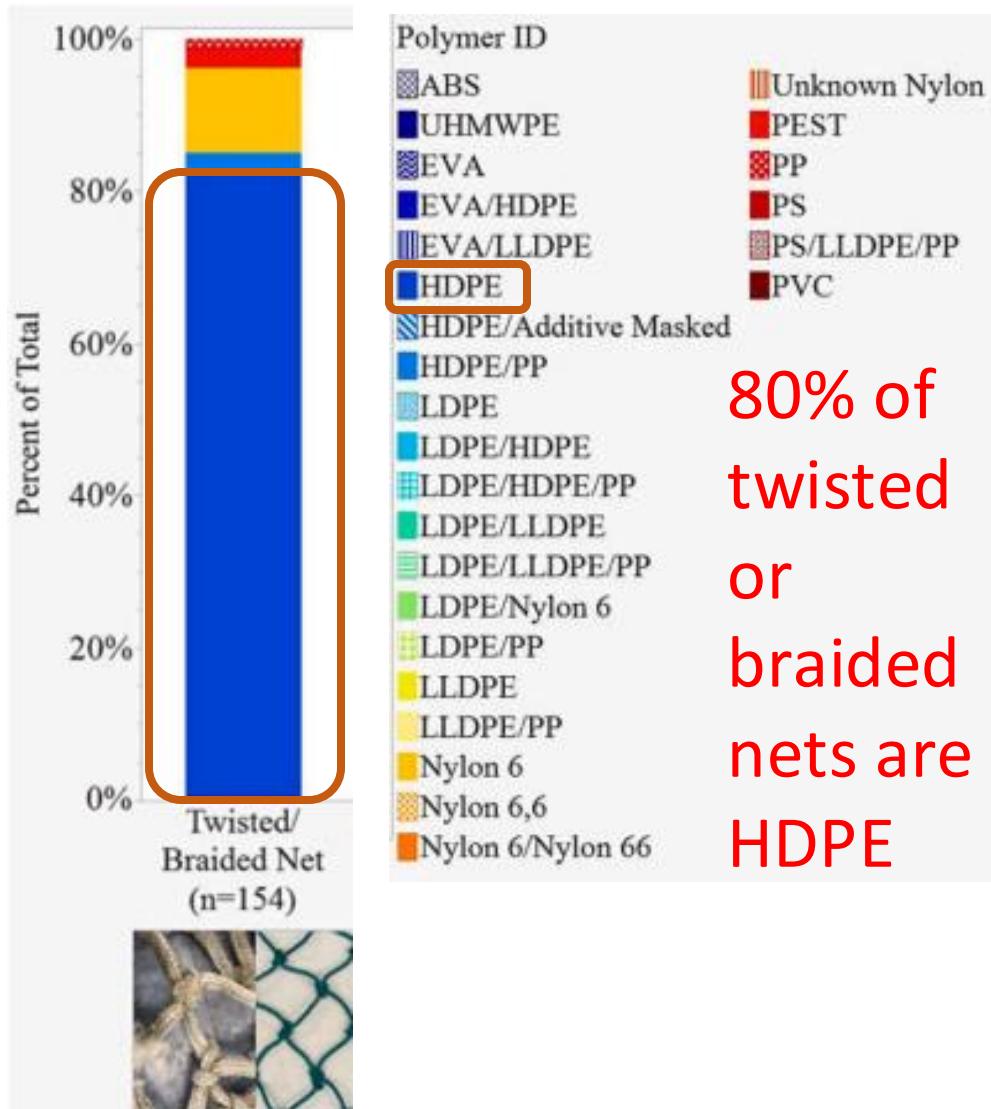
Purse Seine  
Gillnet

# DFG TYPES



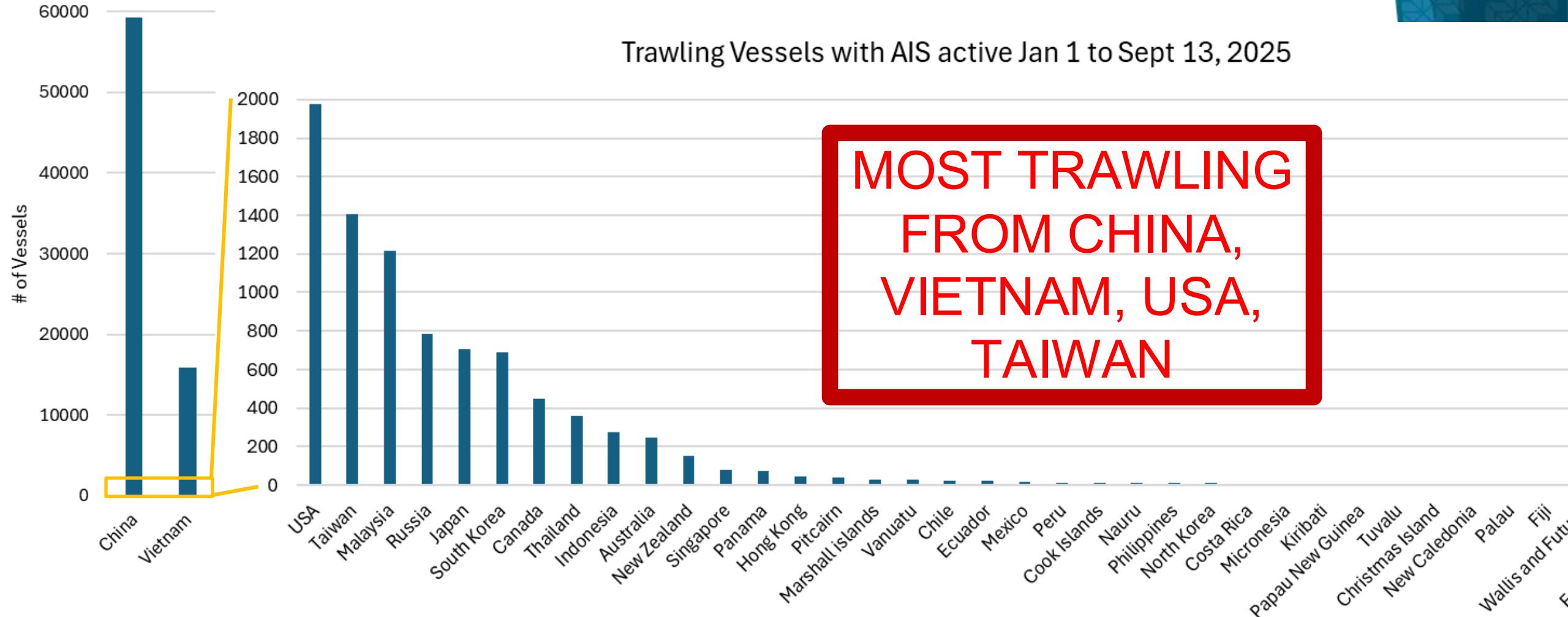
60% of DFG  
are nets or  
conglomerates

# DFG POLYMER IDENTIFICATION



20% of marine debris mass in Hawaii is foreign TRAWL nets

# TRAWL FLEETS FLAGGED TO PACIFIC COUNTRIES



# ASIAN VS. AMERICAN TRAWLING

Twisted  
knotted  
nets

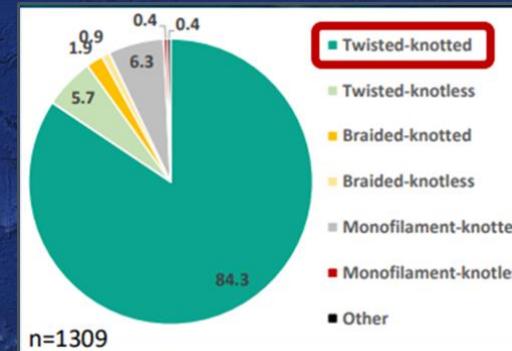
Black  
floats

74-84% debris  
matches Asian  
trawl gear

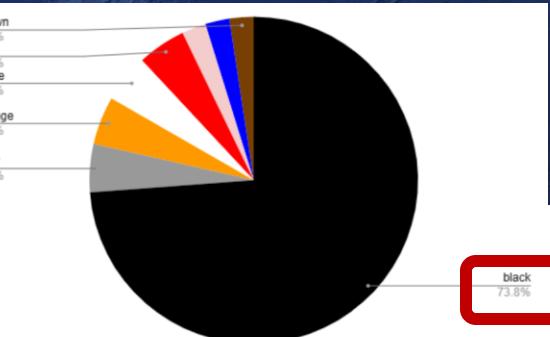
Braided  
knotless  
nets

Orange  
floats

Net construction



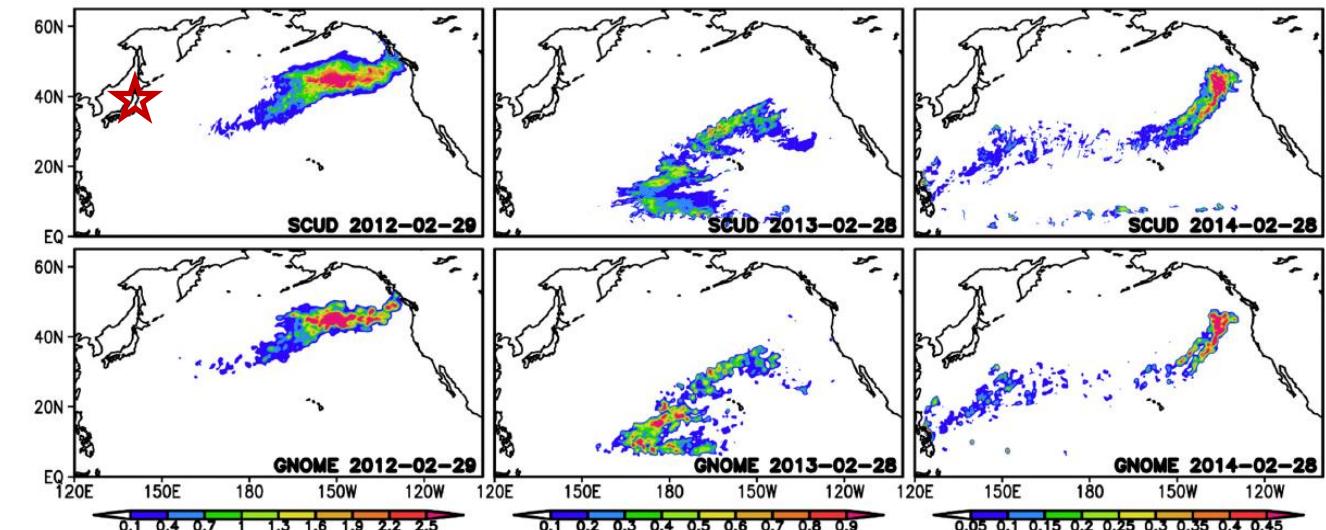
Trawl float color



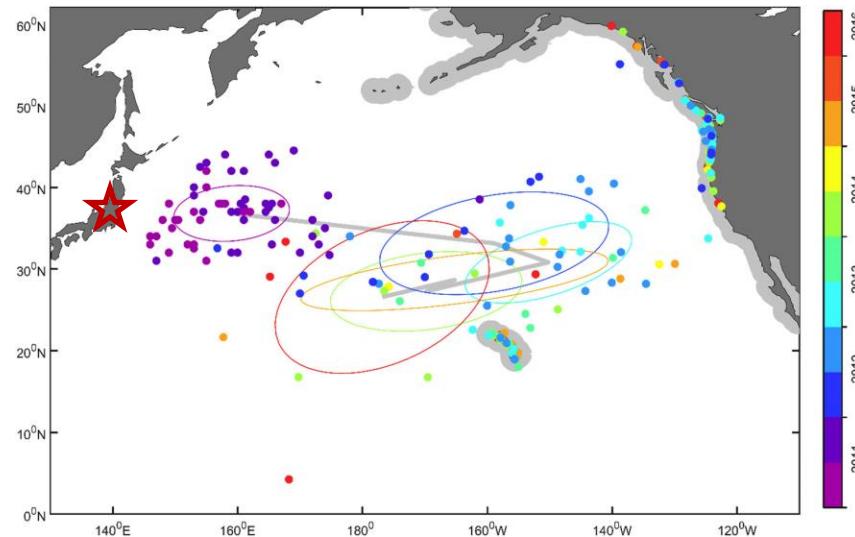
# PROVEN TRANSPORT of ASIAN DEBRIS



Modeled Japanese Tsunami debris transport  
across Pacific from 2011 to 2014



327 Japanese tsunami boats located



Marine Pollution Bulletin 132 (2018) 5–25



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Contents lists available at ScienceDirect

Marine Pollution Bulletin

journal homepage: [www.elsevier.com/locate/marpolbul](http://www.elsevier.com/locate/marpolbul)

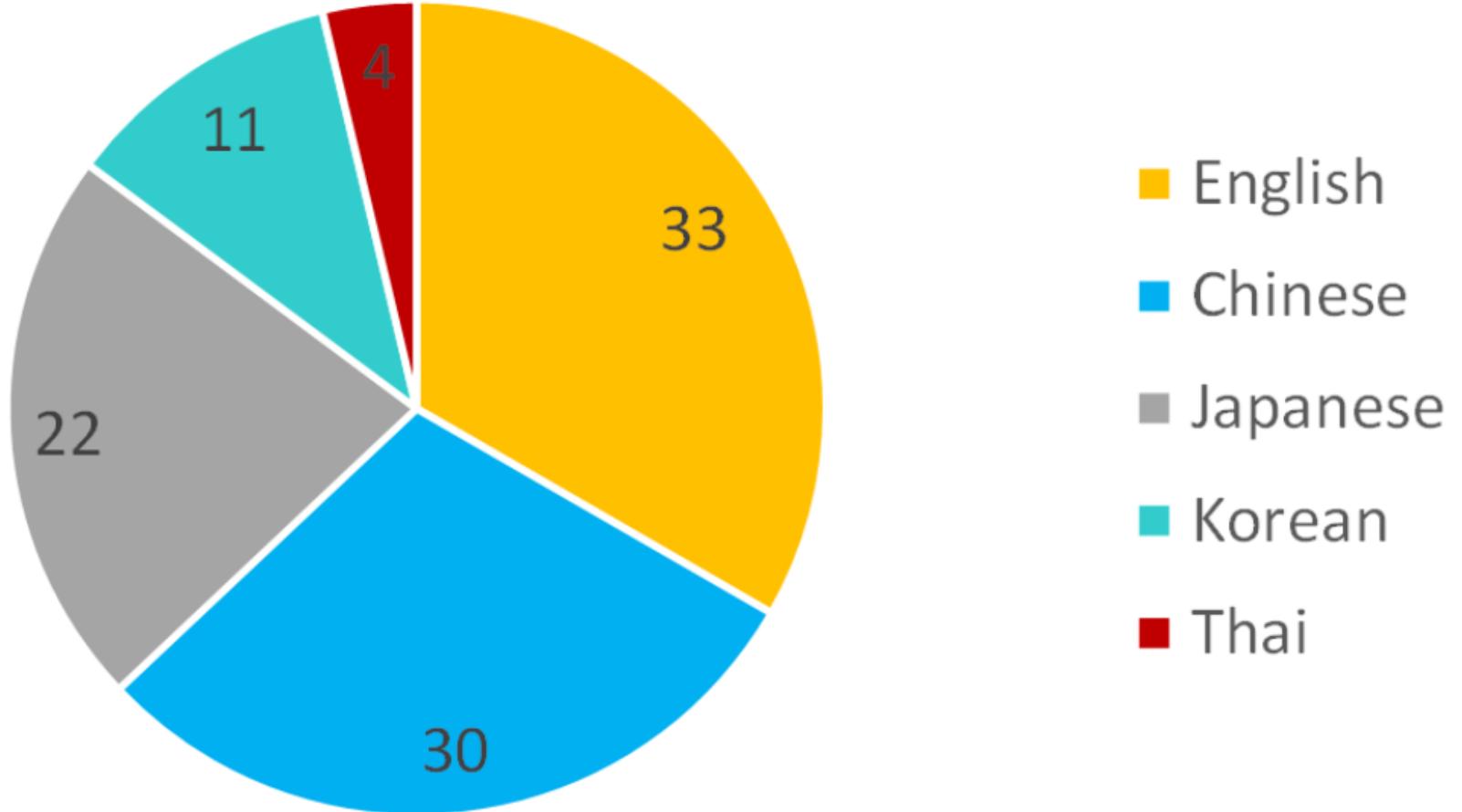
Numerical simulations of debris drift from the Great Japan Tsunami of 2011  
and their verification with observational reports<sup>☆</sup>

Nikolai Maximenko<sup>a,\*</sup>, Jan Hafner<sup>a</sup>, Masafumi Kamachi<sup>b</sup>, Amy MacFadyen<sup>c</sup>

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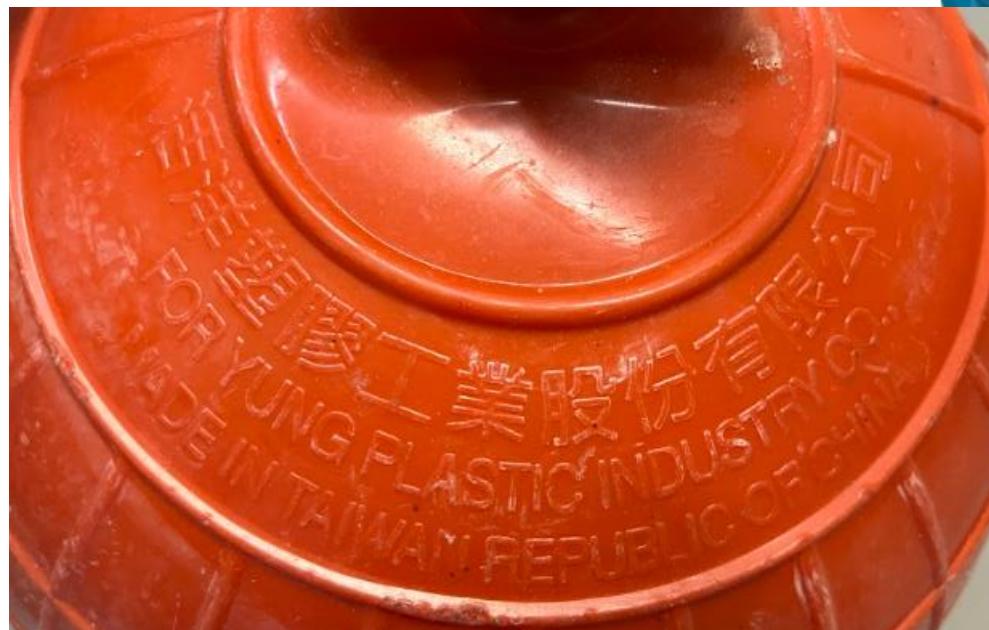
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# LANGUAGES ON DEBRIS



67% debris  
with Asian  
languages

# Float brands point to East Asian gear manufacturers

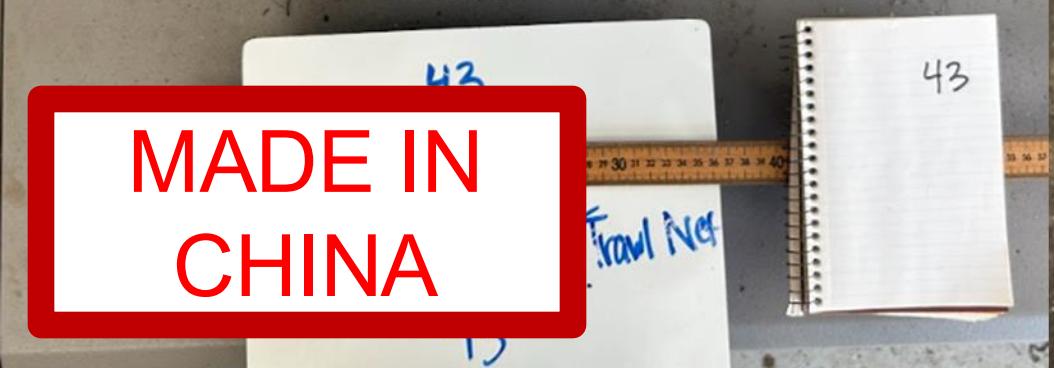


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# Float brands point to East Asian gear manufacturers



# Float brands point to East Asian gear manufacturers



MADE IN  
KOREA



"...Daily Chemistry" in Korean

# Float brands point to East Asian gear manufacturers

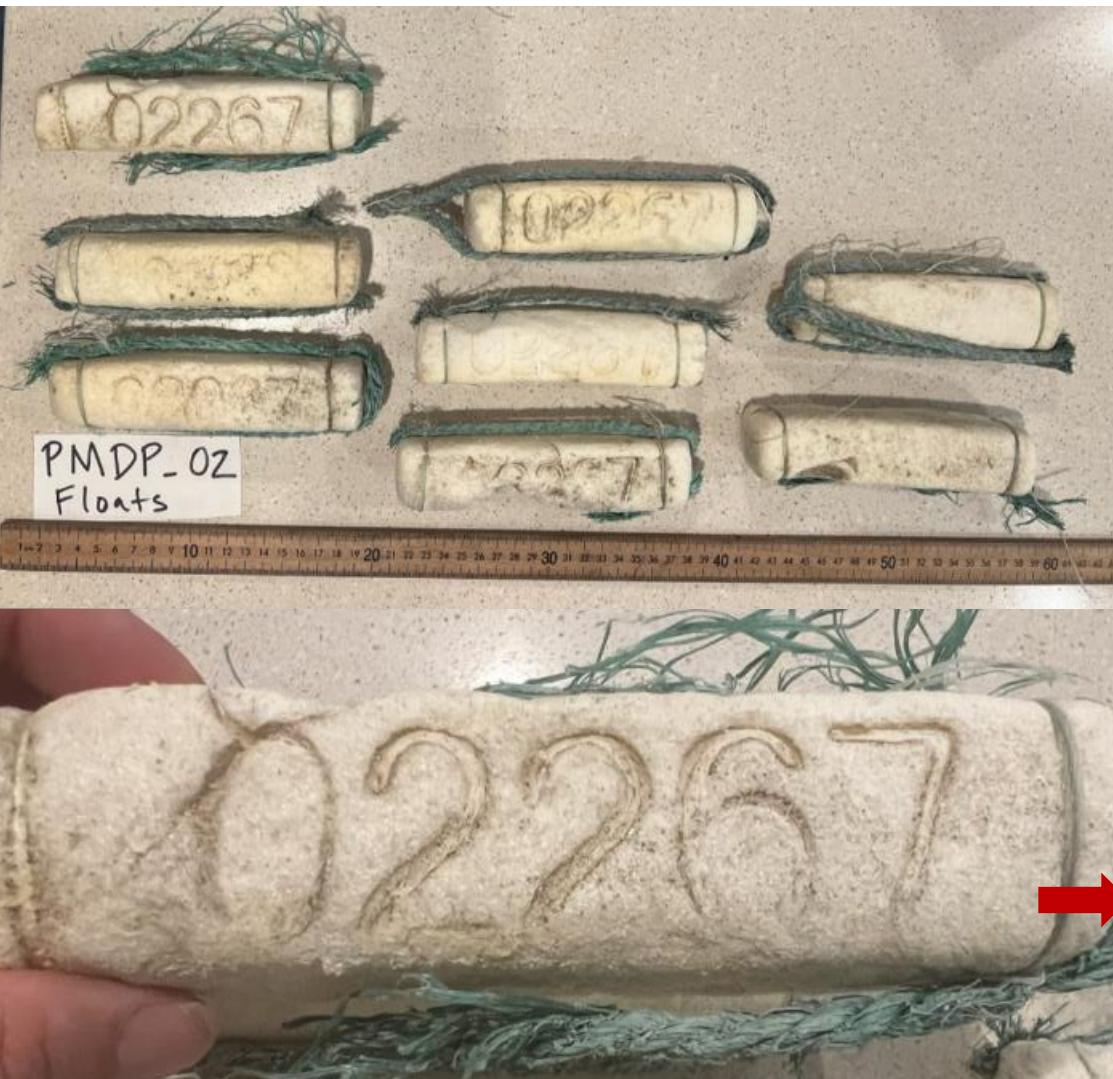


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# GEAR MARKINGS ON FLOATS



西 海岸漁業廢棄物圖鑑  
Fishery debris handbook of West Taiwan  
2021

No.2 | Sushi Rice Float | Gillnet



"Sushi rice" is a foam float used by Chinese gillnets. Some are printed with a five-digit code; some are not. This five digit number is the code of a Chinese fishing boat. For example, "07188" in the picture on the upper right corresponds to the fishing boat "Minshi Fishing 07188" in Shinshi City, Fujian. If you enter a five-digit number into a ship tracking platform such as "FleetMon" or "Marine Traffic", you can track the ship's location.

Most sushi rice is rectangular in white, with a few in special colors such as pink. "Code sushi rice" often appears tangled with transparent nylon rope and monofilament nylon gillnet.

Indigo Waters, Ning Yen

Global Fishing Watch

Global Fishing Watch

Suganyu02267

REGISTRY

DATES

Aug 2, 2014 - Nov 5, 2015

NAME: Suganyu02267 FLAG: China

MMSI: 412302267 IMO: ---

GFW VESSEL TYPE i

Fishing (2015)

Fishing (2014)

GFW GEAR TYPE

Set gillnet (2015)

Set gillnet (2014)

Common Colors

Size Specifications

35cm以下 35-50cm  
50-100cm 1米以上

Negative Impacts

Entanglement  
Ingestion  
Navigation

Possible Source

China

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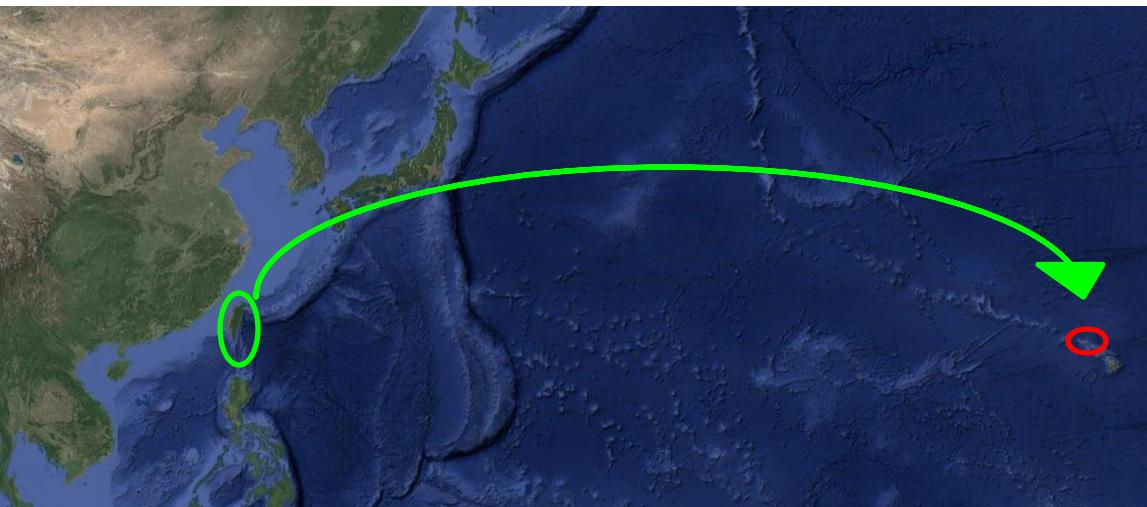
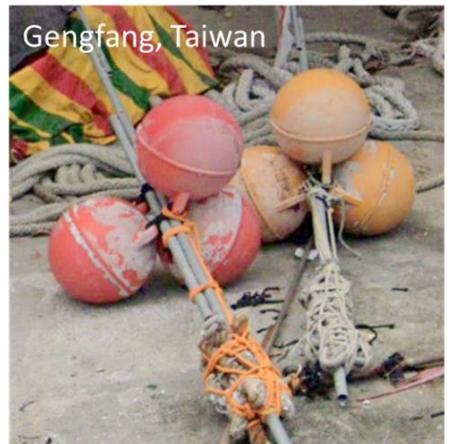
# GOOGLE STREETVIEW CONNECTS TAIWAN



Chenggong Fishing Pier/Zingang  
Fishing Pier, Taiwan



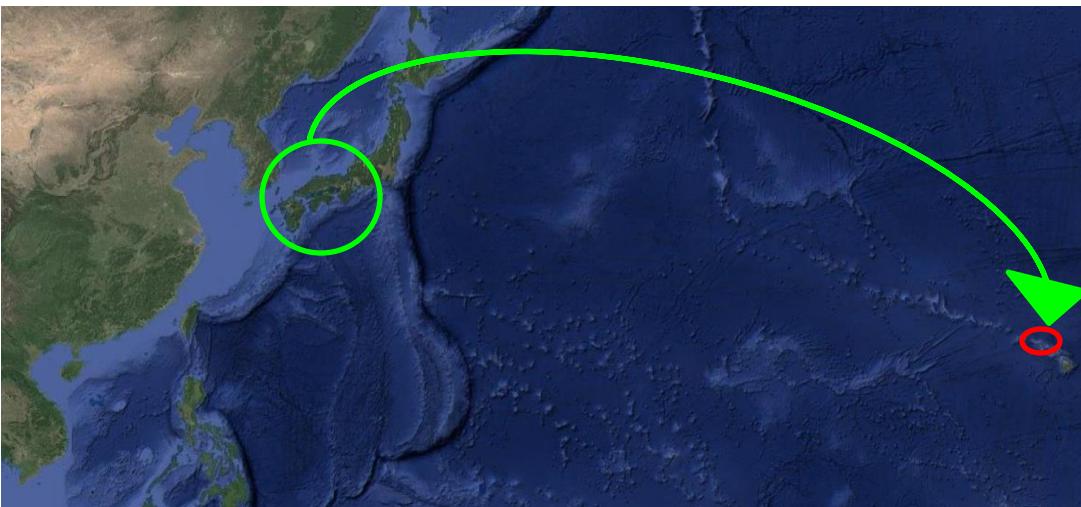
Gengfang, Taiwan



Matched to Asian Google StreetView

# GOOGLE STREETVIEW CONNECTS JAPAN

Unfamiliar DFG removed in Hawai'i



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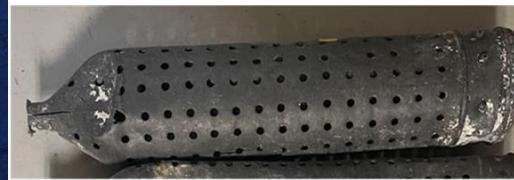
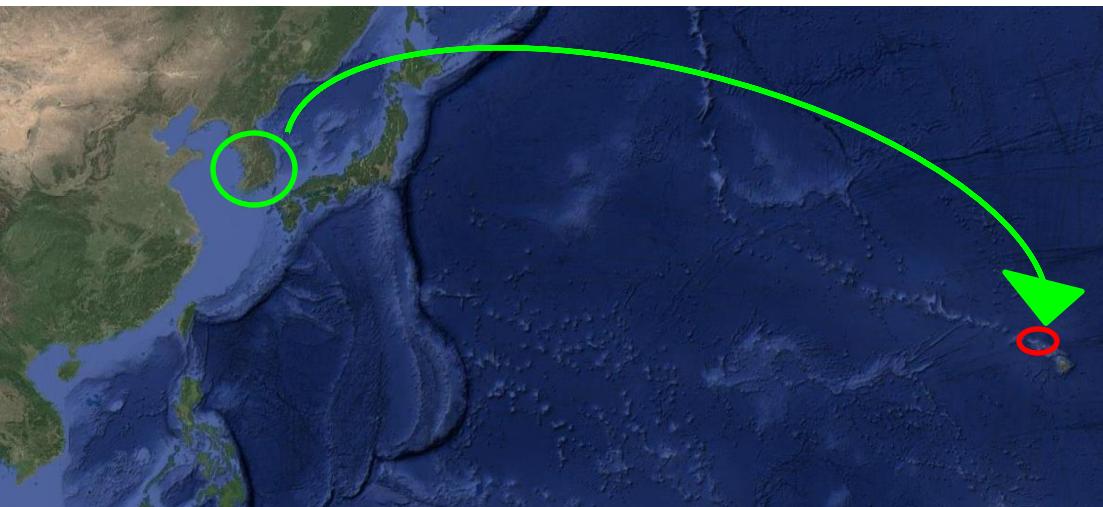
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Matched to Asian Google StreetView



# GOOGLE STREETVIEW CONNECTS KOREA

Unfamiliar DFG removed in Hawai'i



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# KEY TAKE-AWAYS



Hawaii is severely impacted by plastic pollution



Hawaii needs international cooperation to prevent gear loss and support removal efforts



Hawaii needs international discussions to prevent future marine debris inputs.



**SPIDER TIE**  
CONCRETE FORMING SYSTEM

**NIST**

**National Institute of  
Standards and Technology**  
U.S. Department of Commerce



**UNIVERSITY of HAWAII  
HILO**

Ke Kulanui o Hawaii ma Hilo



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Mahalo for your  
attention!



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Center for Marine  
Debris Research



**SURFRIDER  
FOUNDATION.**

**MOORE  
INSTITUTE**  
for Plastic Pollution Research

**iprc** INTERNATIONAL PACIFIC RESEARCH CENTER  
IN THE SCHOOL OF OCEAN AND EARTH SCIENCE AND TECHNOLOGY AT THE UNIVERSITY OF HAWAII AT MANOA

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# THANK YOU

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