

What If You Don't Speak

"CPUE-ese" ?

An Alternative Index that Relates
Protected Species Interactions to Fish
Catch in Hawaii Longline Fisheries

Pelagic Fisheries Research Program
Principal Investigators' Meeting
November 13, 2007

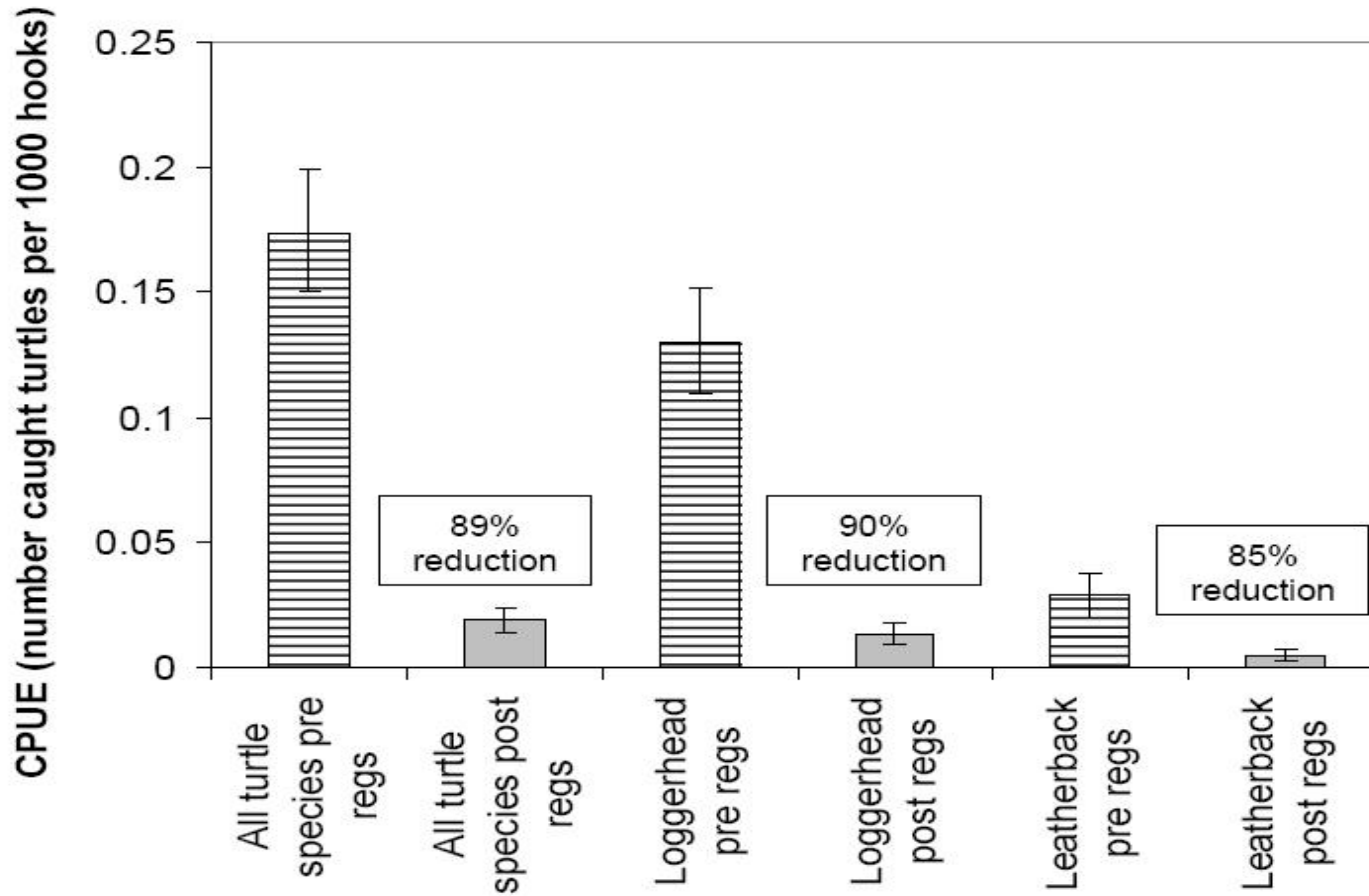
Presented by PacMar Inc.

Paul Bartram

John Kaneko

How Are HI Longline Fisheries Doing?

Sharp Reduction in Sea Turtle Interactions (CPUE)
Pre (1994-1999) and Post Turtle Regs (2004-2007)



Loggerheads
pre = 0.13
post = 0.0134

Leatherbacks
pre = 0.029
post = 0.0044

Source:
Gilman and
Kobayashi,
2007

Good News If You Speak "CPUE-ese"

- **Who Does**
 - Scientists
 - Managers
 - Fishermen
- **Who Doesn't**
 - Marketers (Buy and Sell Quantities of Fish)
 - Seafood Consumers (Buy and Eat Pounds or Meals of Fish)

Consumers Don't Hear the Good News

BEST CHOICES

Aku/Skipjack tuna (HI troll/pole, handline)
Akule/Bigeye scad
Barramundi (US farmed)
Clams (farmed)
Crab: Dungeness, Kona (Australia)
Halibut: Pacific*
Mussels (farmed)
'Ōpelu/Mackerel scad
Oysters (farmed)
Pollock (Alaska wild)*
Salmon (Alaska wild)*
Sardines
Scallops: Bay (farmed)
Shutome/Swordfish
(HI harpoon, handline)*
Striped Bass (farmed)
Tilapia (US farmed)
Tombo/Albacore tuna
(HI troll/pole, handline)

GOOD ALTERNATIVES

'Ahi/Bigeye, Yellowfin tuna (HI troll/pole, handline)
Aku/Skipjack tuna (HI)*
A'u/Blue marlin (HI)**
Crab: Kona (HI)
Ehu/Red snapper (NWHI)
Hāpu'u/Grouper (NWHI)
Hebi/Spearfish (HI)*
He'e/Tako/Octopus
Lobster: American/Maine
Mahi mahi/Dolphinfish (HI)
Monchong/Bigscale pomfret (HI)*
Nairagi/Striped marlin (HI)**
Onaga/Ruby snapper (NWHI)
Ono/Wahoo (HI)*
Opah/Moonfish (HI)**
'Opakapaka/Pink snapper (NWHI)
Scallops: Sea
Shrimp (US farmed or wild)
Shutome/Swordfish (HI)**
Tombo/Albacore tuna (HI)**
Uku/Gray snapper
Ulua/Trevally/Jack

AVOID

'Ahi/Bigeye tuna**
'Ahi/Bluefin tuna*
'Ahi/Yellowfin tuna**
Aku/Skipjack tuna (imported)*
Chilean Seabass/Toothfish*
Cod: Atlantic
Ehu/Red snapper (MHI)
Hāpu'u/Grouper (MHI)
Mahi mahi/Dolphinfish (imported)
Manō/Sharks*
Onaga/Ruby snapper (MHI)
'Opakapaka/Pink snapper (MHI)
Orange Roughy*
Salmon (farmed, including Atlantic)*
Shrimp (imported farmed or wild)
Shutome/Swordfish (imported)**
Sturgeon*, Caviar (imported wild)
Tombo/Albacore tuna (imported)**

black* = Hawaii Longline Fishery products; **red *** = mercury; **blue *** = MSC

Source: Monterey Bay Aquarium Seafood Watch Consumer Guide

C/B Ratio

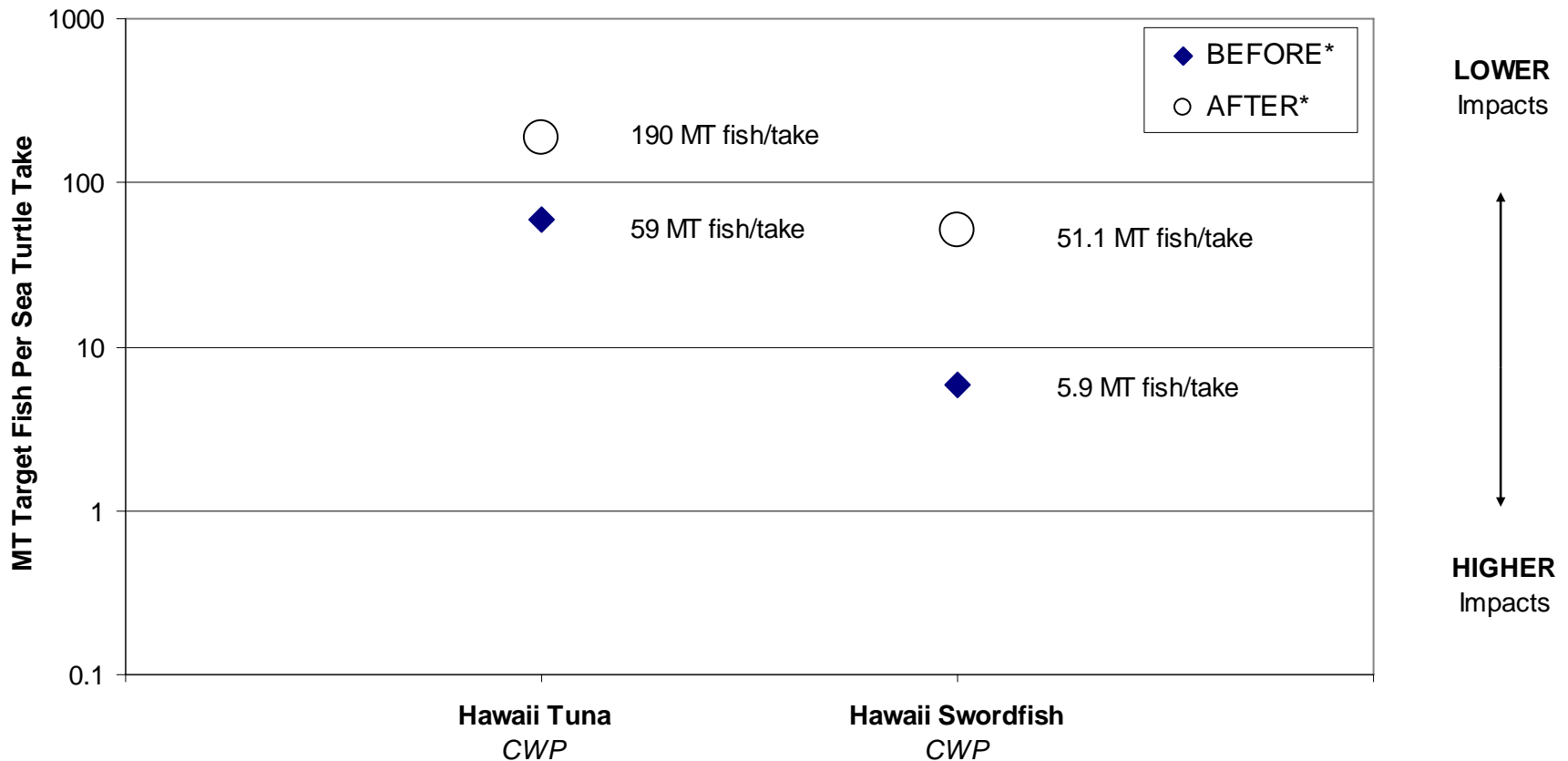
- Tons of target fish harvested per sea turtle (or seabird) "take"
- Bycatch (sea turtles, seabirds) in the denominator rather than in the numerator
- Relates CPUE (fish catch per unit effort) and BPUE (bycatch per unit effort)

$$C/B = (CPUE/BPUE)$$

- C/B conceived by Dr. Martin Hall (IATTC) to evaluate performance of dolphin-safe purse seine methods

Hawaii Longline Fisheries C/B Ratios before and after new sea turtle take reduction measures

(MT target fish catch per one sea turtle take)

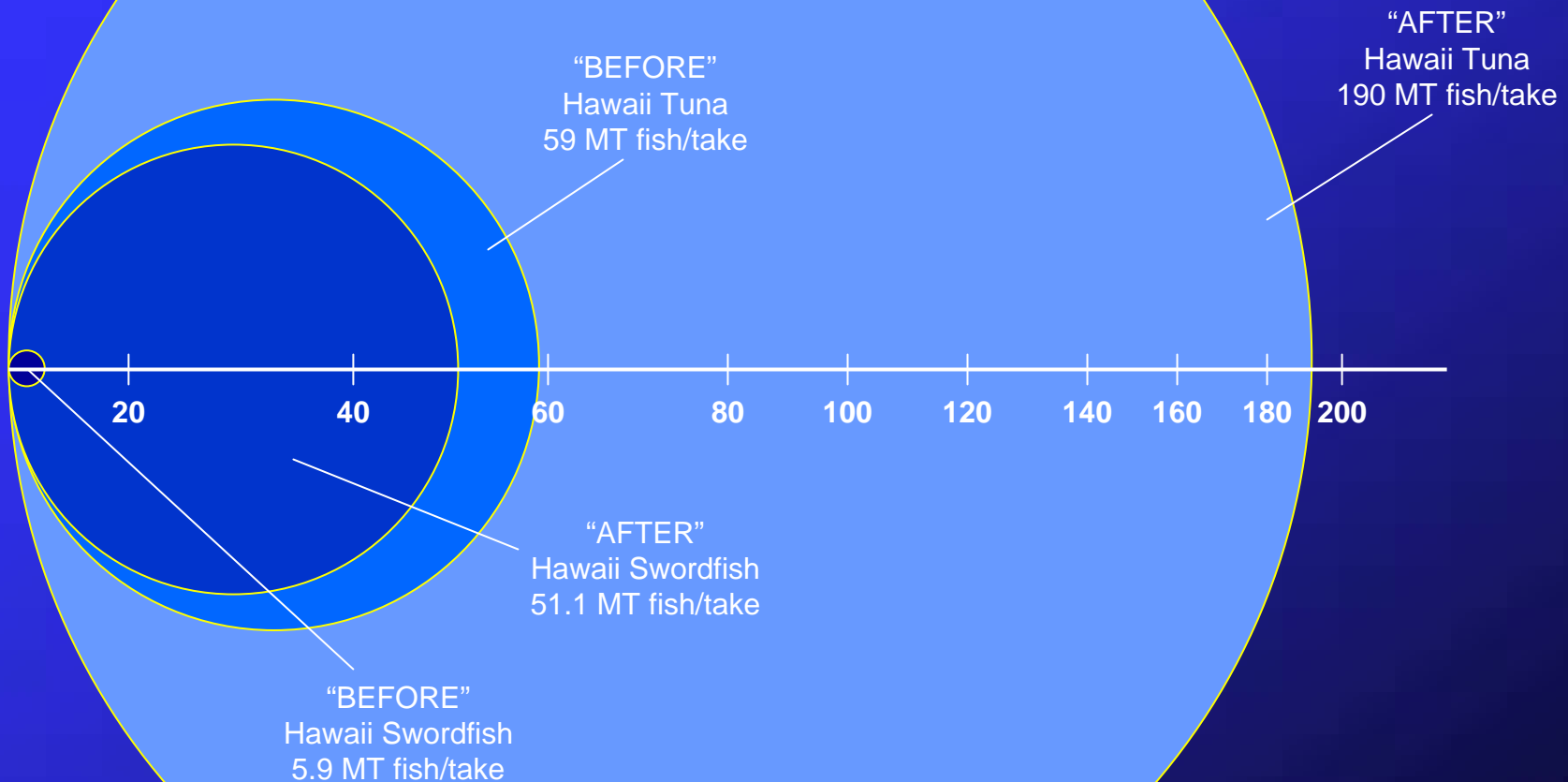


*"BEFORE" and "AFTER" new sea turtle take reduction measures
CWP = Central and Western Pacific

Comparison of 2004 and 2007 estimates of Catch to Bycatch Ratios (C/B): Mean harvest of target fish (mt) associated with one sea turtle take in selected pelagic longline fisheries

Hawaii Longline Fisheries C/B Ratios before and after new sea turtle take reduction measures

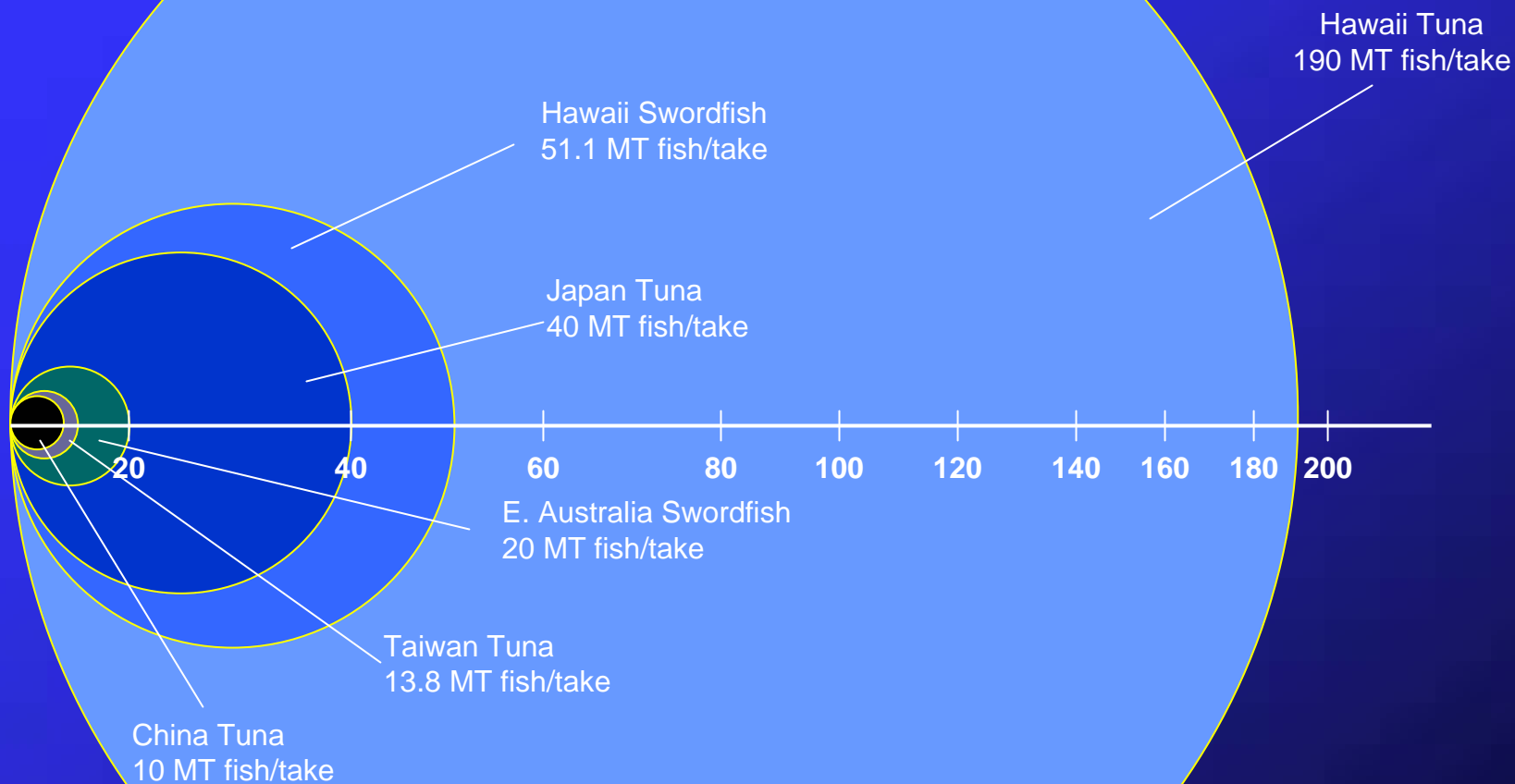
(MT target fish catch per one sea turtle take)



Comparison of 2004 and 2007 estimates of Catch to Bycatch Ratios (C/B): Mean harvest of target fish (mt) associated with one sea turtle take in selected pelagic longline fisheries

Current Estimates of Longline Fisheries C/B Ratios

(MT target fish catch per one sea turtle take)

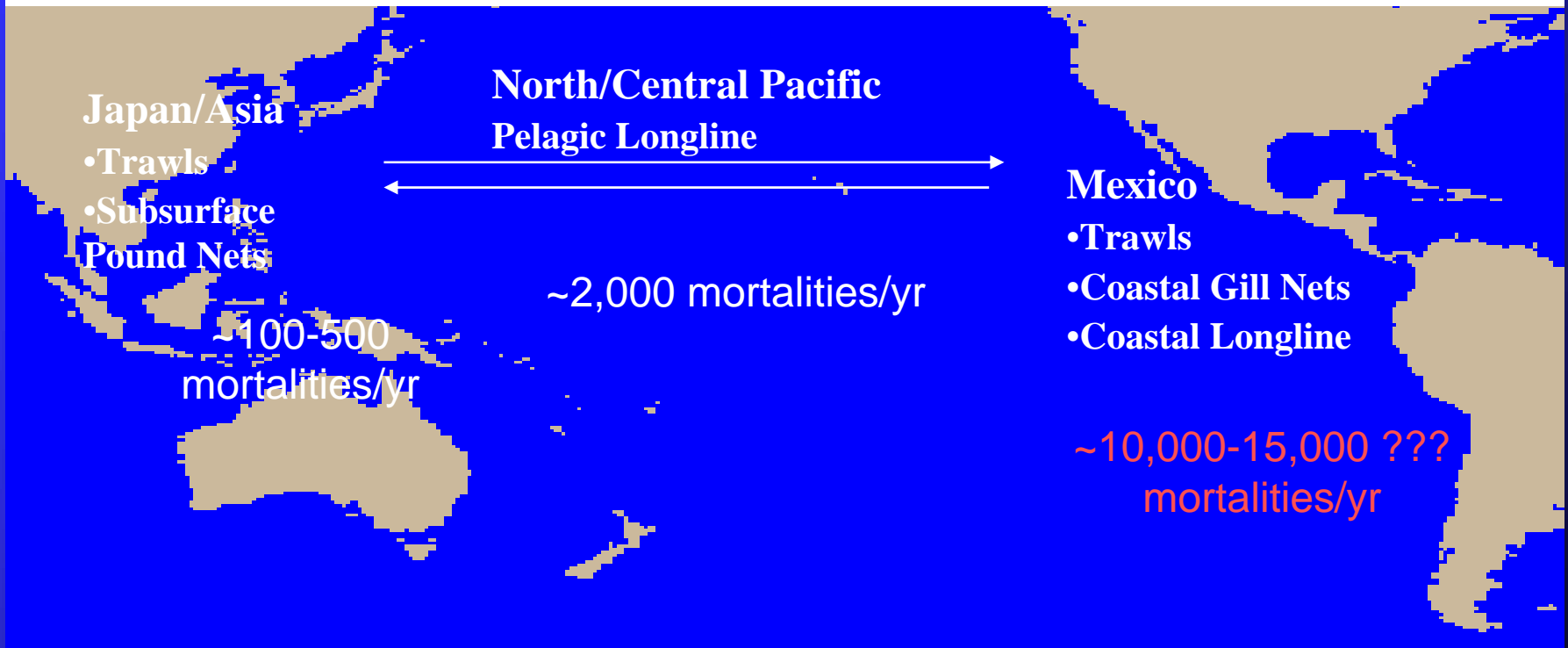


2007 estimates of Catch to Bycatch Ratios (C/B): Mean harvest of target fish (mt) associated with one sea turtle take in selected pelagic longline fisheries

Mortalities of North Central Pacific Loggerhead Turtles

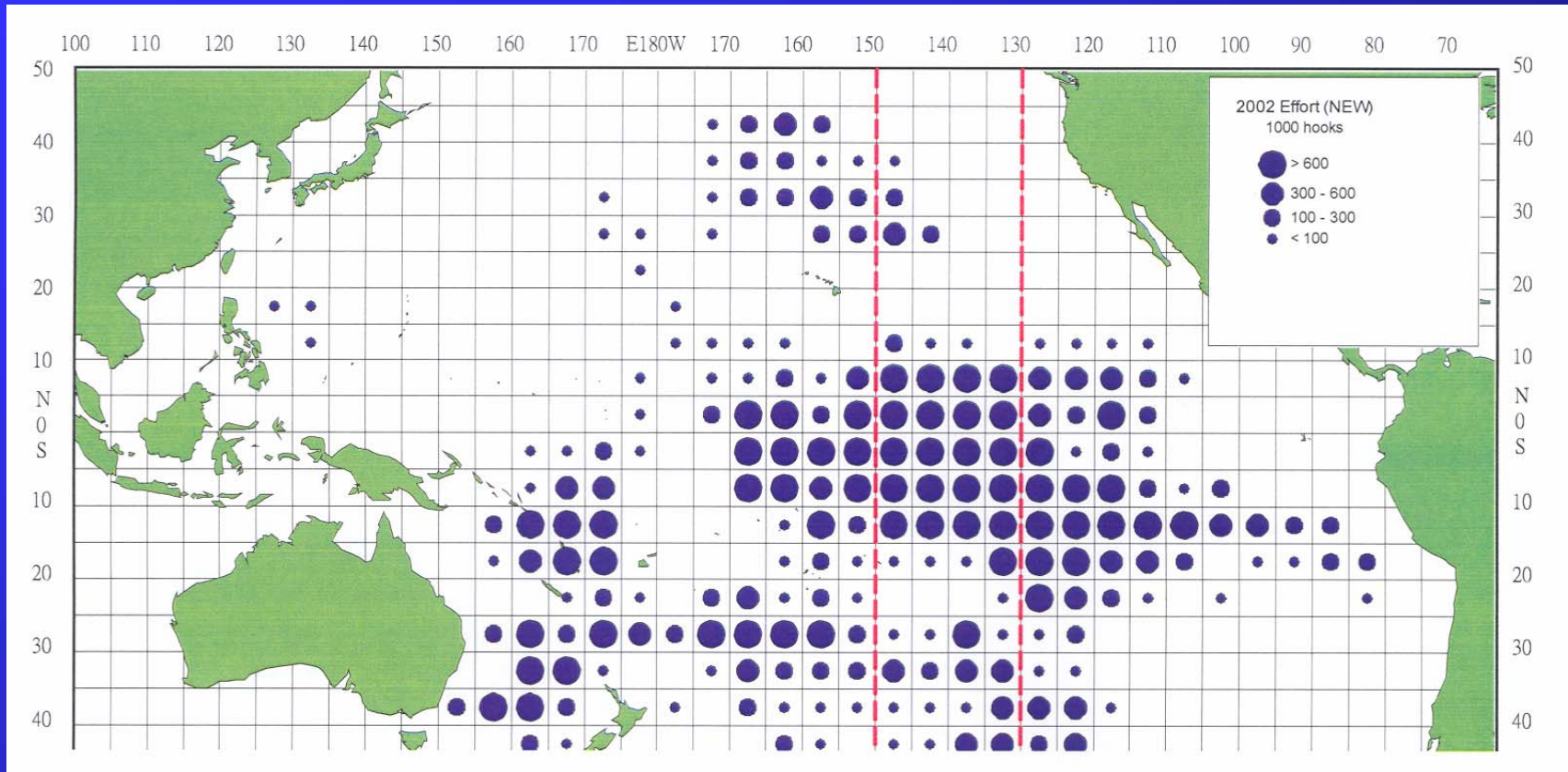
Hatchlings enter the water in Japan and then undergo a massive trans Pacific migration to foraging grounds off the West Coast of N. America, Baja California, and Mexico.

Juveniles (approx. 78cm) undergo the roundtrip migration back to Japan where as adults they mate and remain for the rest of their lives.

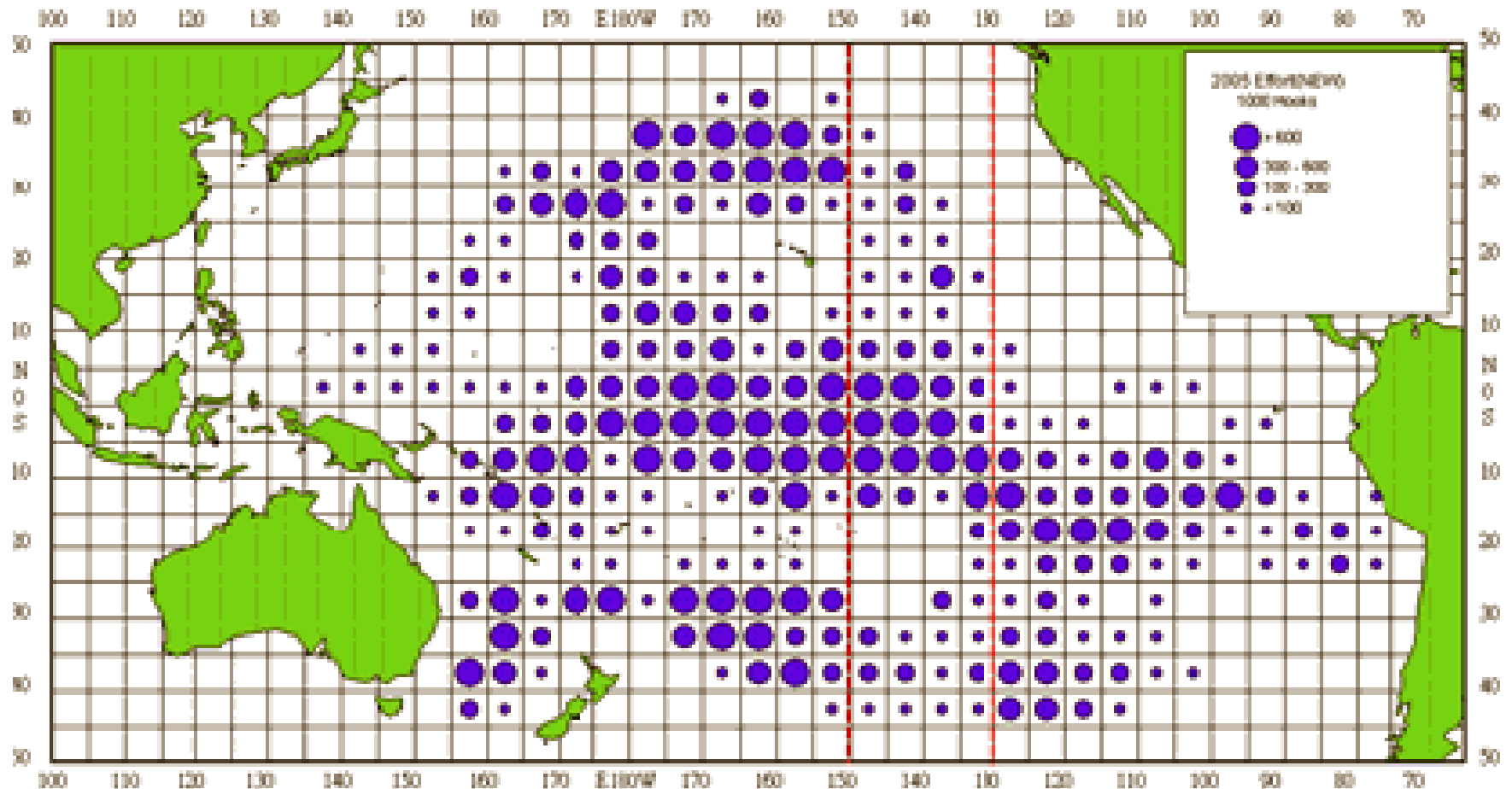


Source: derived by WPRFMC from various sources.

The effort distribution of Taiwanese LTLL fleet operating in Pacific Ocean 2002

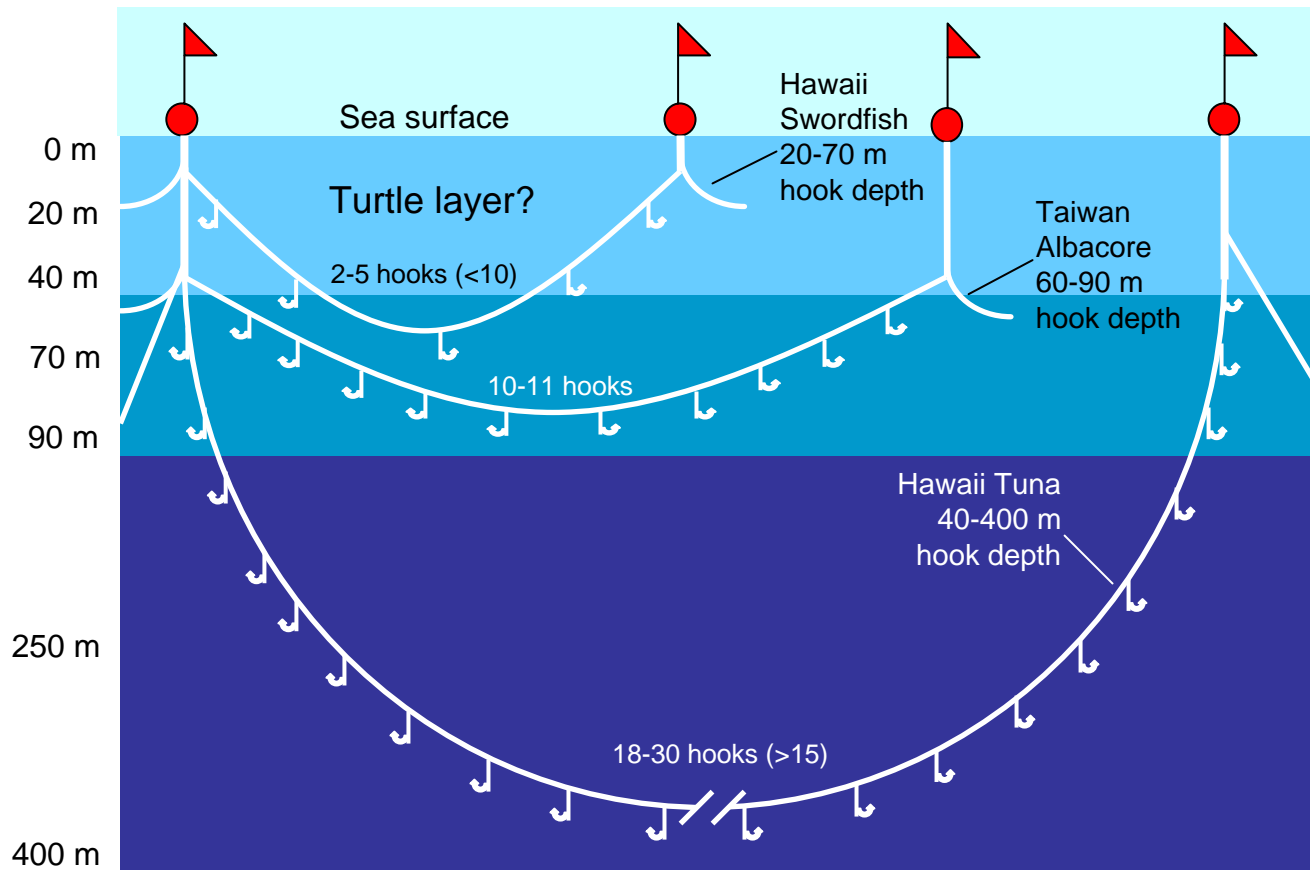


The effort distribution of Taiwanese LTLL fleet operating in Pacific Ocean 2005



Profile of Taiwan LTLL Fishing Operations

- Based on interviews with 19 captains
 - Seasonal operation in N. Pacific albacore grounds with sea surface temperatures between 16.5 and 20 °C.
 - Mean depth of hooks 60 m - 87 m
 - 10 to 11 hooks between floats
 - Exclusively J hooks; no circle hooks
 - Exclusively fish bait; no squid



*Not drawn to scale

Y. Yamamoto

% Observer Coverage

- 100% of Hawaii shallow-set longline fishing operations in North Central Pacific
 - 1.38 million hooks in 2005 in central North Pacific
- 6 observers to cover 117 Taiwan large tuna longline vessels and 34 distant-water purse seine vessels operating in the Pacific
 - 4.5 million hooks in 2005 in central North Pacific

Precautionary Approach

- Are the environmental impacts associated with a given seafood product well established?
- Are we too quick to lump all seafood and fisheries together in the name of the precautionary approach?
- Can C/B ratios differentiate seafood products taking into account the reliability of the data set used to calculate them?

Shouldn't US consumers err
on the side of caution and
consume seafood from
NOAA-managed fisheries?

MAHALO!

Sustainable Seafood comes from Responsible Fisheries

- Do we have what is needed in place to manage the fishery?
- How "responsible" are Hawaii fisheries?
- Who are you going to trust to tell you?

Responsible Fisheries Assessment of HLF

- The Hawaii pelagic longline fishery (HLF) and its management system was evaluated.
- A scorecard based on the United Nations Food and Agriculture Organization (FAO) Code of Conduct for Responsible Fisheries was used.
- The "Code" describes what should be in place to be able to manage a fishery sustainably.

RESULTS: Summary Score for Hawaii Longline Fisheries

93%

- 262 out of 282 possible points
- Based on 5 of the 6 Prescriptive Articles of the Code evaluated.

Feedback from FAO Dr. John Caddy

"your approach is the most complete as far as referring the management measures in place to the questions in the Code, and this makes the Hawaii study very helpful to other potential users."

Responsible Fishery Assessment

- A scorecard helps to explain the fishery and management system to consumers.
- HLF is a responsible fishery based on the FAO Code.
- HLF the most complete application of the Code to date.

MAHALO HANA HOU!