

What makes Hawaii Swordfish Sustainable?

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Photo: John Kaneko

Hawaii longline-caught Swordfish is Sustainable...

- Based on how the Fishery is Managed
- Based on the Fish Stock Status
- Based on Control of Ecosystem Impacts

Hawaii Longline Fishery

- The main commercial fishery in Hawaii
- 85% of all Hawaii commercial fish landings
- Two segments, bigeye tuna and swordfish
- 164 Limited Access Permits (active ~96 tuna, ~28 swordfish-tuna, ~40 inactive permits)



Hawaii Swordfish Fishery

- Hawaii produced 53% (1956 MT) of total US commercial swordfish landings in 2008.
- Managed by NOAA Pacific Islands Region and Western Pacific Fishery Management Council
- Pacific Pelagic Fishery Ecosystem Plan (FEP) of the Western Pacific Region in place

Source: 2008 WPFMRC Annual Report; NOAA 2010. Fisheries of the United States 2009.

We can judge fish quality...



How do we judge sustainability?



What do
you need
to know?

Who do you
believe?

We need to know that...

Sustainable Seafood
comes from
Responsible Fisheries

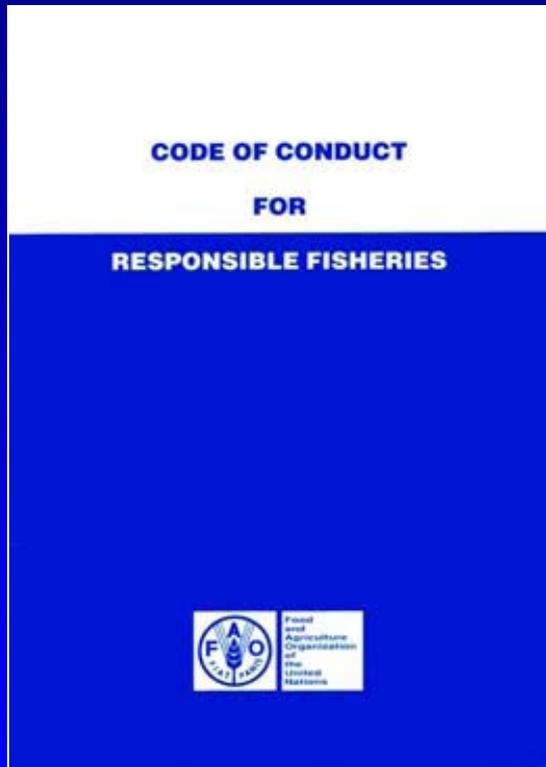
What is a Responsible Fishery?

1. Well-managed for sustainability.

2. Controls overfishing.

3. Controls ecosystem impacts (ex. bycatch and protected species)

Is there a Global Standard for Responsible Fisheries?



- YES. The 1995 United Nations FAO Code of Conduct for Responsible Fisheries
- Prescribes what countries should have in place to develop responsible fisheries and manage them for sustainability.

FAO 1995. Code of Conduct for Responsible Fisheries
<http://www.fao.org/docrep/005/v9878e/v9878e00.HTM>



FAO Code of Conduct for Responsible Fisheries*

- In 2006, Hawaii's Longline Fishery was the first fishery to be assessed using a comprehensive application of the Code (according to FAO).
- Hawaii Longline Fishery assessment is used by the FAO as a case study for the application of the Code**.

*FAO, 1995. Code of Conduct for Responsible Fisheries
<http://www.fao.org/docrep/005/v9878e/v9878e00>

**Caddy, et al., 2007. Using questionnaires based on the FAO Code of Conduct for Responsible Fisheries as diagnostic tools in support of fisheries management.
<http://www.fao.org/docrep/010/a1449e/a1449e00.htm>

Responsible Fisheries
Assessment (RFA)
Summary Score
for Hawaii Longline Fisheries

94% (in 2008)
(93% in 2006)

Bartram, P, K Nakamura , J Kaneko and G Krasnick. 2008. Responsible Fisheries Assessment of the Hawaii's Pelagic Longline Fisheries. NOAA NA06NMF4520222. p271.

Bartram, P, J Kaneko and G Krasnick. 2006. Responsible Fisheries Assessment of the Hawaii's Pelagic Longline Fisheries. NOAA NA05NMF451112. p232.

2008 RFA Results: Hawaii Longline Fisheries Scores for each Article

Fishery Management (Art. 7) = 96% (109.5/114)

Fishing Operations (Art. 8) = 93% (70/75)

Integration w/ CZM (Art. 10) = 71% (17.5/21)

Post-harvest & Trade (Art. 11) = 95% (38/40)

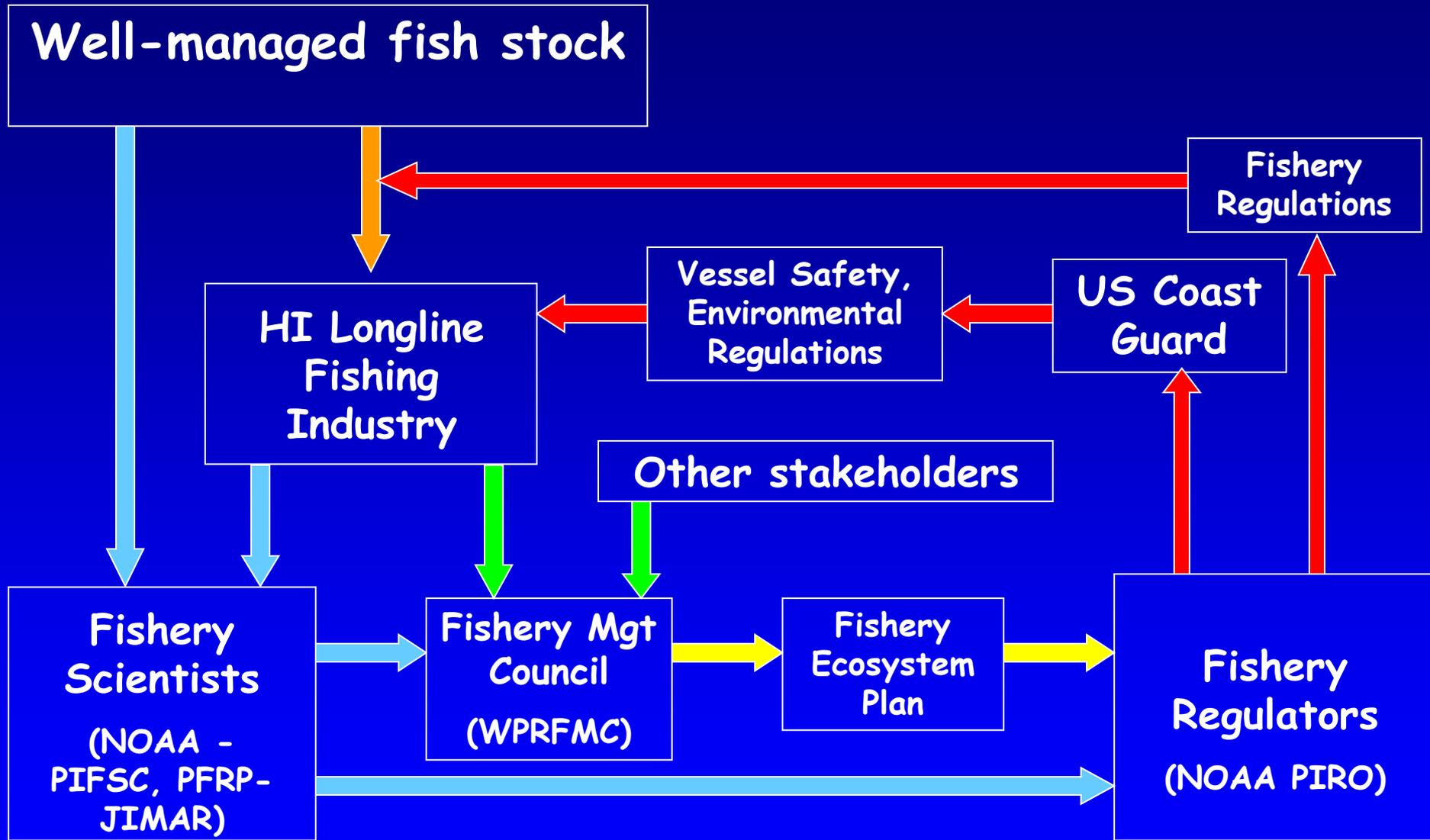
Fisheries Research (Art. 12) = 91% (30.5/33)

Bartram, P, K Nakamura , J Kaneko and G Krasnick. 2008. Responsible Fisheries Assessment of the Hawaii's Pelagic Longline Fisheries. NOAA NA06NMF4520222. p271.

The Responsible Fisheries Assessment confirms that the NOAA management system...

- Complies with the FAO Code of Conduct
- Meets the 10 National Standards for Sustainable Fisheries Management

Federal Management System for Hawaii Longline Fishery



■ = Fish harvest ■ = Scientific data ■ = FEP ■ = Stakeholder input ■ = Regulations/ Enforcement

Figure: John Kaneko and Yvette Yamamoto, Hawaii Seafood Project (NOAA)

NOAA's assurance of Sustainability of Seafood produced by American Fisheries

"If you buy fish managed under a U.S. fishery management plan, you can be assured it meets 10 National Standards that ensure fish stocks are maintained, overfishing is eliminated, and the long-term socioeconomic benefits to the nation are achieved."

Source: NOAA Fish Watch Website <http://www.nmfs.noaa.gov/fishwatch/>

National Standards of the Magnuson-Stevens Act

Conservation and management measures shall:

- (1) Prevent overfishing while achieving optimum yield.
- (2) Be based upon the best scientific information available.
- (3) Manage individual stocks as a unit throughout their range, to the extent practicable; interrelated stocks shall be managed as a unit or in close coordination.
- (4) Not discriminate between residents of different states; any allocation of privileges must be fair and equitable.
- (5) Where practicable, promote efficiency, except that no such measure shall have economic allocation as its sole purpose.

Source: Magnuson Stevens Fishery Conservation and Management Act- Reauthorized 2006.

National Standards of the Magnuson-Stevens Act

Conservation and management measures shall (continued):

- (6) Take into account and allow for variations among and contingencies in fisheries, fishery resources, and catches.
- (7) Minimize costs and avoid duplications, where practicable.
- (8) Take into account the importance of fishery resources to fishing communities to provide for the sustained participation of, and minimize adverse impacts to, such communities (consistent with conservation requirements).
- (9) Minimize bycatch or mortality from bycatch.
- (10) Promote safety of human life at sea.

Source: Magnuson Stevens Fishery Conservation and Management Act- Reauthorized 2006.

Conclusion:

Responsible Fisheries Assessment

- RFA answers the basic question, "Is the fishery well-managed for sustainability?"
- Fish Population Status? Rely on Fishery Stock Assessments (NOAA, WCPFC, IATTC)
- Ecosystem Impacts? Rely on research and monitoring of fishery reduction of Protected Species Interactions & Bycatch (NOAA, others)

Stock Status of fish caught by Hawaii Longline Fisheries: Swordfish

- Sustainably fished.
- Overfishing? No.
- Overfished? No.
- Population not heavily impacted by fishing.
- Sustainable catch increase possible.

Source: NOAA Fish Watch website. Accessed 4/25/2011.
<http://www.nmfs.noaa.gov/fishwatch>

Example of Ecosystem Impacts: Sea Turtle interactions

- Achieved 89% reduction in rate of sea turtle interactions (ex. released unharmed, released injured, mortalities)
- Intensive observer coverage (100% for swordfish trips, >20% for tuna trips)
- Mandatory Protected Species Training for vessel operators. (annual requirement)
- Mandatory set of equipment (ex. nets, de-hooking devices, etc.) on board to safely handle turtles, birds and marine mammals.

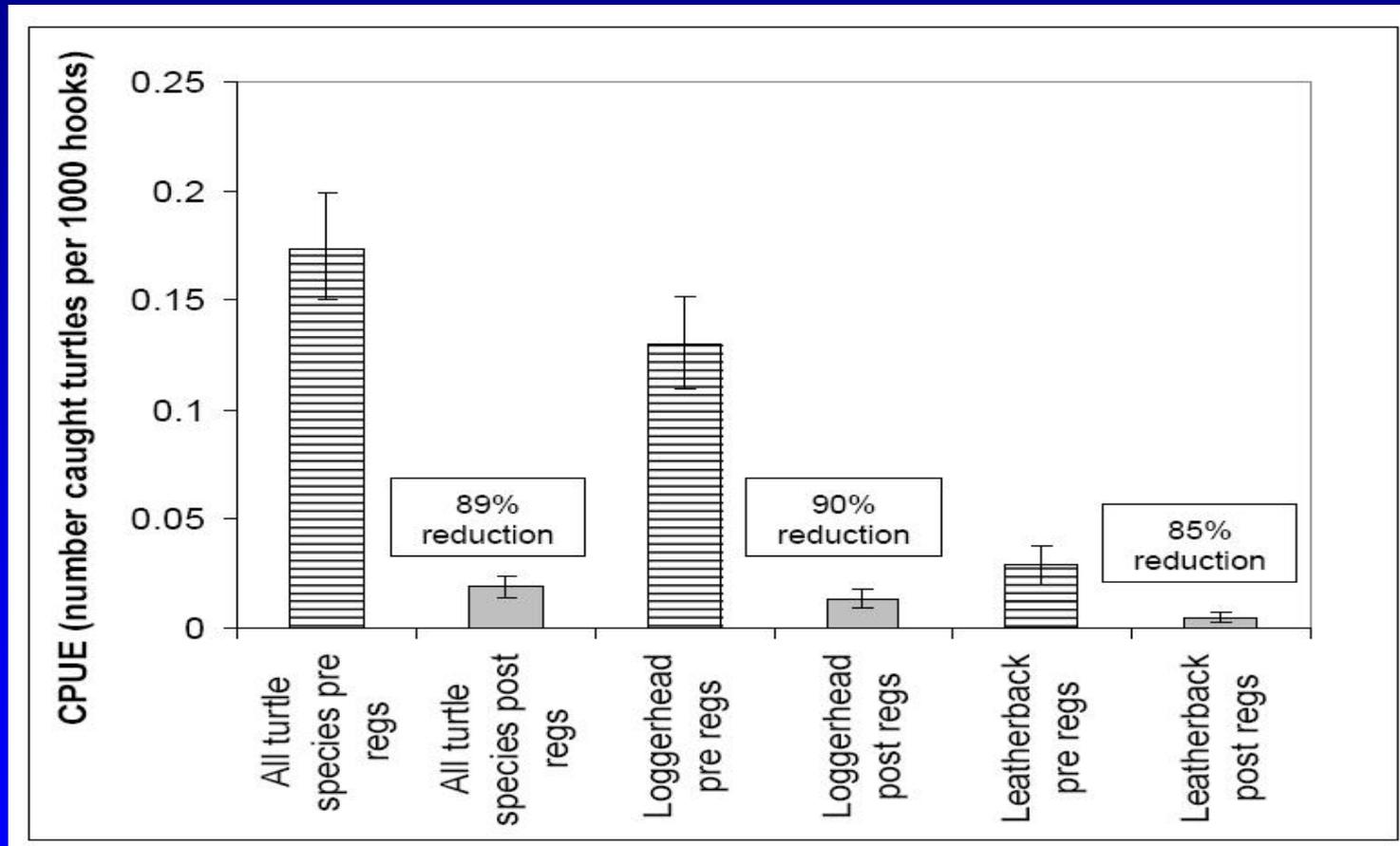
Sea Turtle Conservation Measures

- J-hooks and squid not allowed (turtles can't bite squid off hooks, more likely to swallow and get hooked)
- Only large circle hooks and mackerel-type bait allowed. (turtles can bite fish bait off hooks, less likely to swallow)
- Swordfish catch rate not impacted by new hooks and bait.
- Annual Hard Cap on sea turtle interactions (maximum of 17 loggerheads or 16 leatherbacks) for the swordfish fleet.
- IF either cap is reached, swordfish fishery closes in real time. Only reached once (2006)

How is the HI Swordfish Longline Fishery doing?

Sharp Reduction in Sea Turtle Interactions (BPUE)

Pre (1994-1999) and Post Turtle Regs (2004-2007)

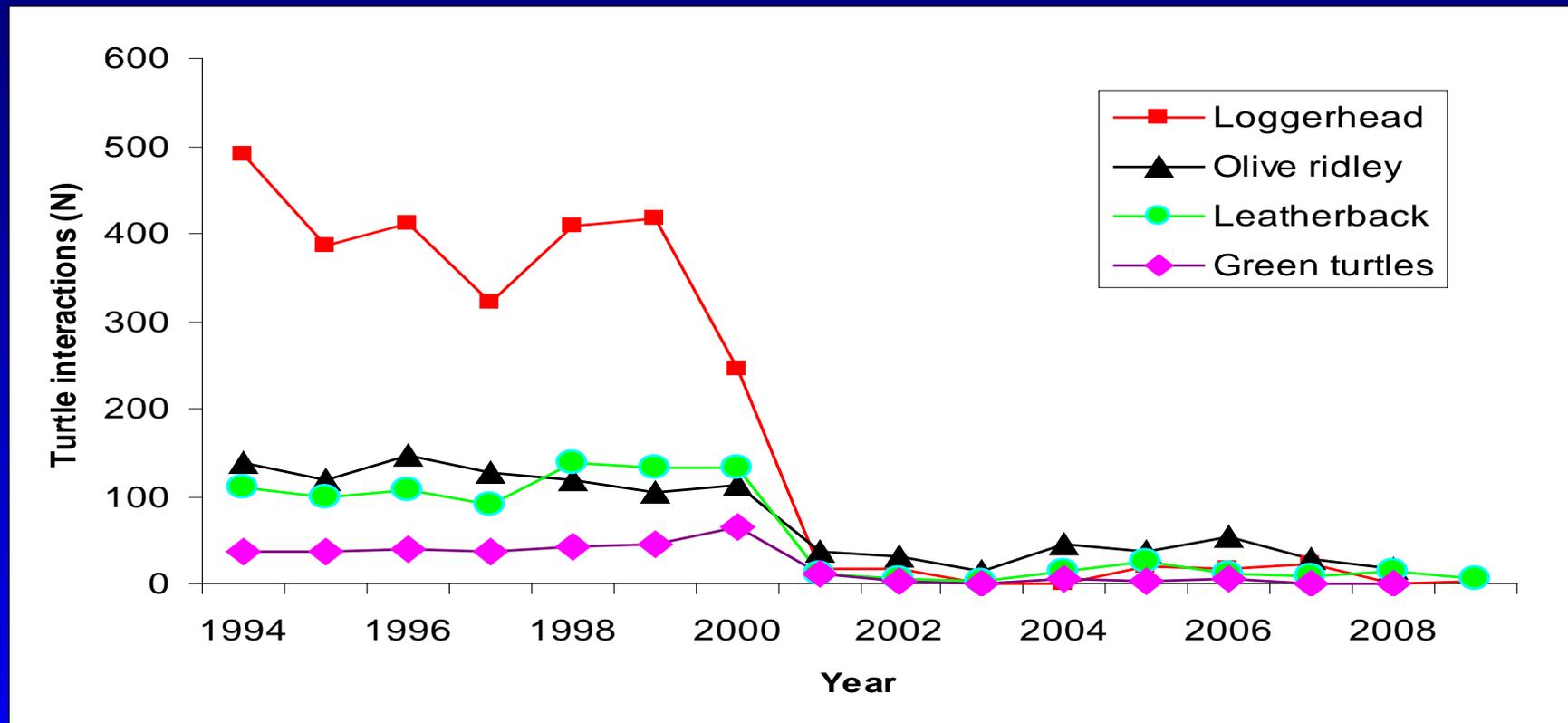


Loggerheads
pre = 0.13
post = 0.0134

Leatherbacks
pre = 0.029
post = 0.0044

Source: Gilman et al., 2007 Reducing sea turtle interactions in the Hawaii-based swordfish longline fishery. *Biol Conserv* 139 (2007) 19-28

Hawaii LL fishery: turtle interactions 1994-2009



'94-'99: expanded from 5% observer coverage, deep and shallow sets

'00: expanded from 20% observer coverage, deep and shallow sets

'01 - '04: expanded from 20% coverage deep sets, sword fishery closed

'04 on: 20% coverage deep sets, 100% shallow sets, sword fishery re-opened

Source: West Pac Reg Fishery Mgt Council, 2009. NOAA PIRO data

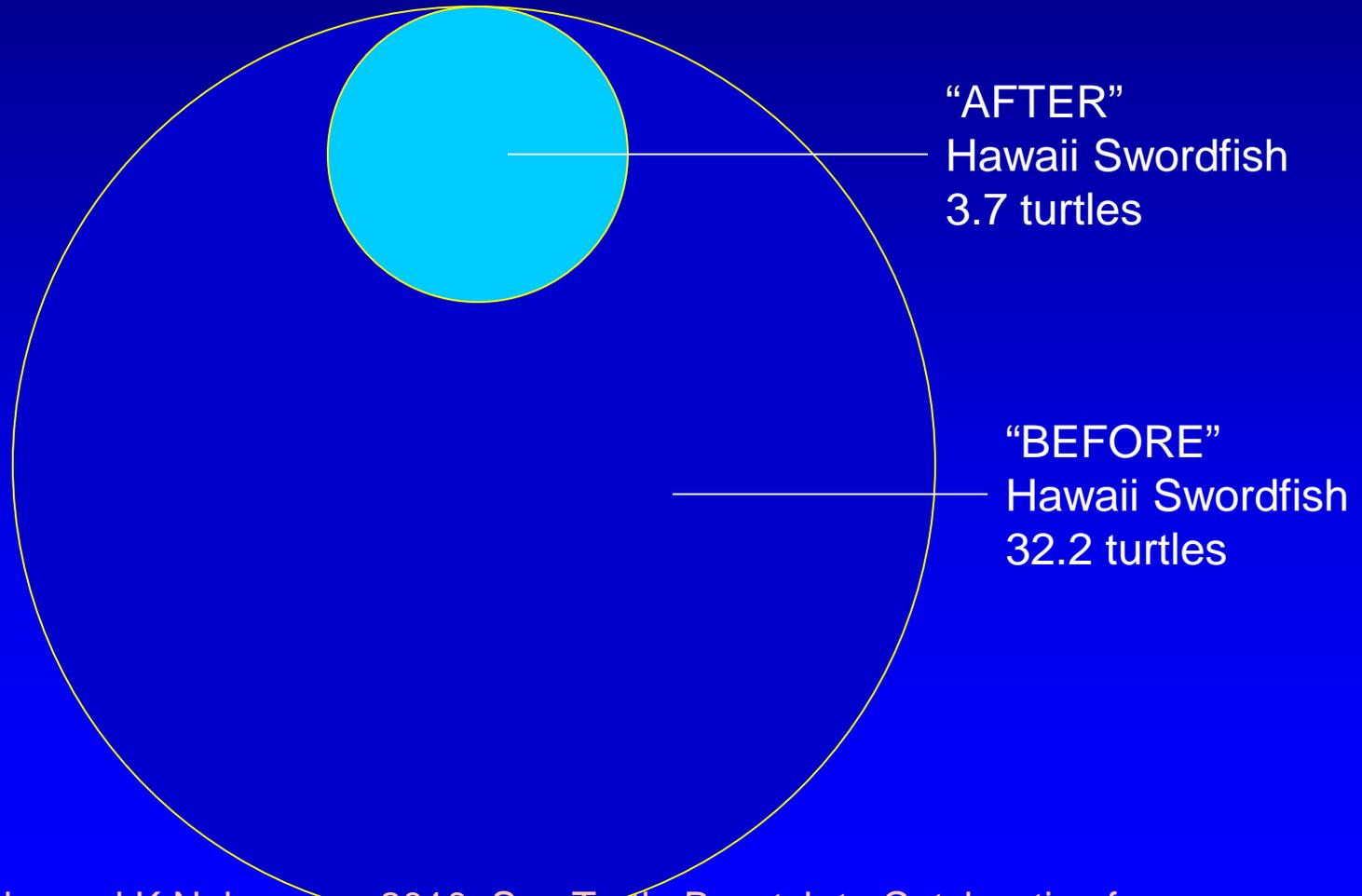
Bycatch to Catch (B/C) Ratios

- Number of sea turtle (or seabird) interactions per weight of fish harvested.
- Relates BPUE (bycatch per unit effort) with CPUE (fish catch per unit effort)

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

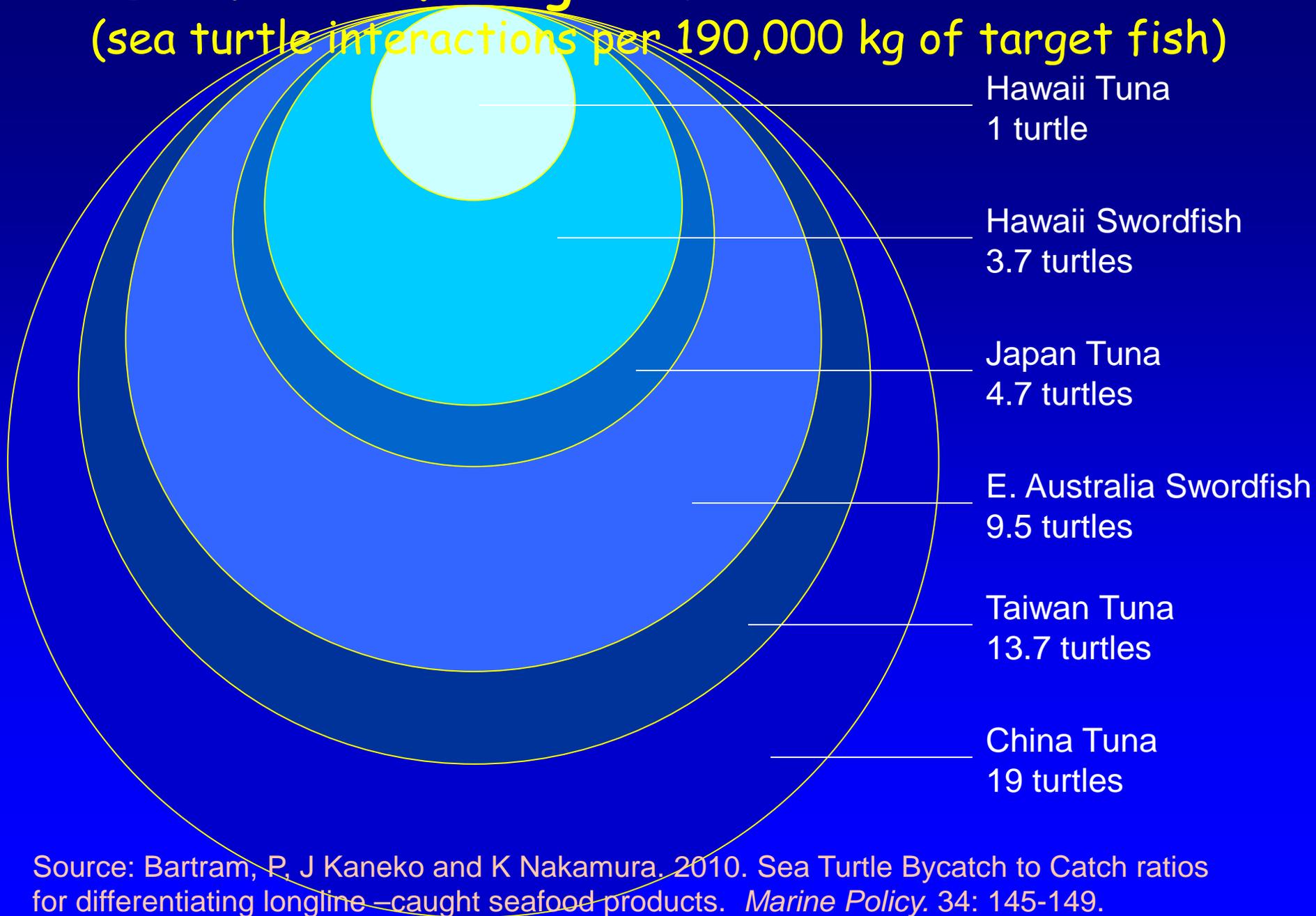
- B/C conceived by Dr. Martin Hall (IATTC) to evaluate performance of dolphin-safe purse seine methods
- Another way of comparing the sustainability of seafood produced by different fisheries and the net impact of product substitution (transfer effects) in the market.

Hawaii Swordfish Longline Fishery Bycatch to Catch Ratios before and after 2004 sea turtle interaction reduction measures (sea turtle interactions per 190,000 kg of swordfish)



Bartram, P, J Kaneko and K Nakamura. 2010. Sea Turtle Bycatch to Catch ratios for differentiating longline –caught seafood products. *Marine Policy*. 34: 145-149.

Estimates of Longline Fisheries B/C Ratios (sea turtle interactions per 190,000 kg of target fish)



Source: Bartram, P, J Kaneko and K Nakamura. 2010. Sea Turtle Bycatch to Catch ratios for differentiating longline-caught seafood products. *Marine Policy*. 34: 145-149.

Is Hawaii longline-caught Swordfish Sustainable?

- **YES.** Based on Science-based Fishery Management by NOAA and high level of compliance with FAO Code of Conduct for Responsible Fisheries
- **YES.** Based on Fish Stock Status determined by a group of highly-qualified stock assessment scientists
- **YES.** Based on control of Ecosystem Impacts

For more information... www.hawaii-seafood.org

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How We Fish

- Longline Fishing
- Pole & Line Fishing
- Trolling
- Handline Fishing
- Bottomfishing
- Where We Fish

KEEPING HAWAII'S SEAFOOD SUSTAINABLE



Photo credit: NOAA Observer Program

Locally produced Hawaii Seafood comes from a model American fishery, responsible and managed for sustainability. [Find out more](#)

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