

GLOBAL MARINE MAMMAL BYCATCH IN HOOK AND LINE FISHERIES



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BYCATCH

Non-intentional, inadvertent, accidental

Unintentional catch that is discarded (bycatch) and unintentional catch that is retained for consumption or sale (non-target catch)

Literature often does not distinguish

GEAR

Hooks and Lines

(FAO fishing descriptions and codes)

Handlines and pole-lines (hand operated)

Handlines and pole-lines (mechanized)

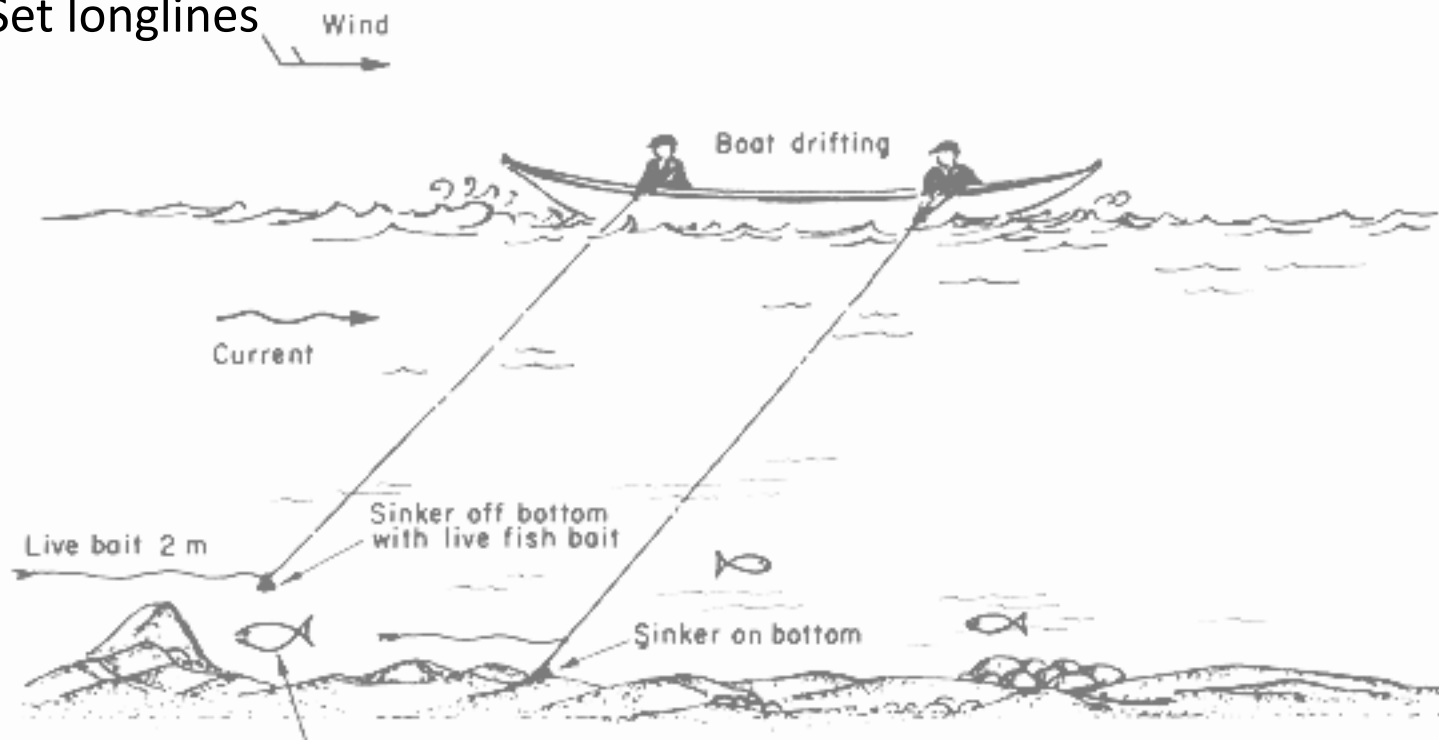
Set longlines

Drifting longlines

Longlines (unspecified)

Trolling lines

Hooks and lines (not specified)



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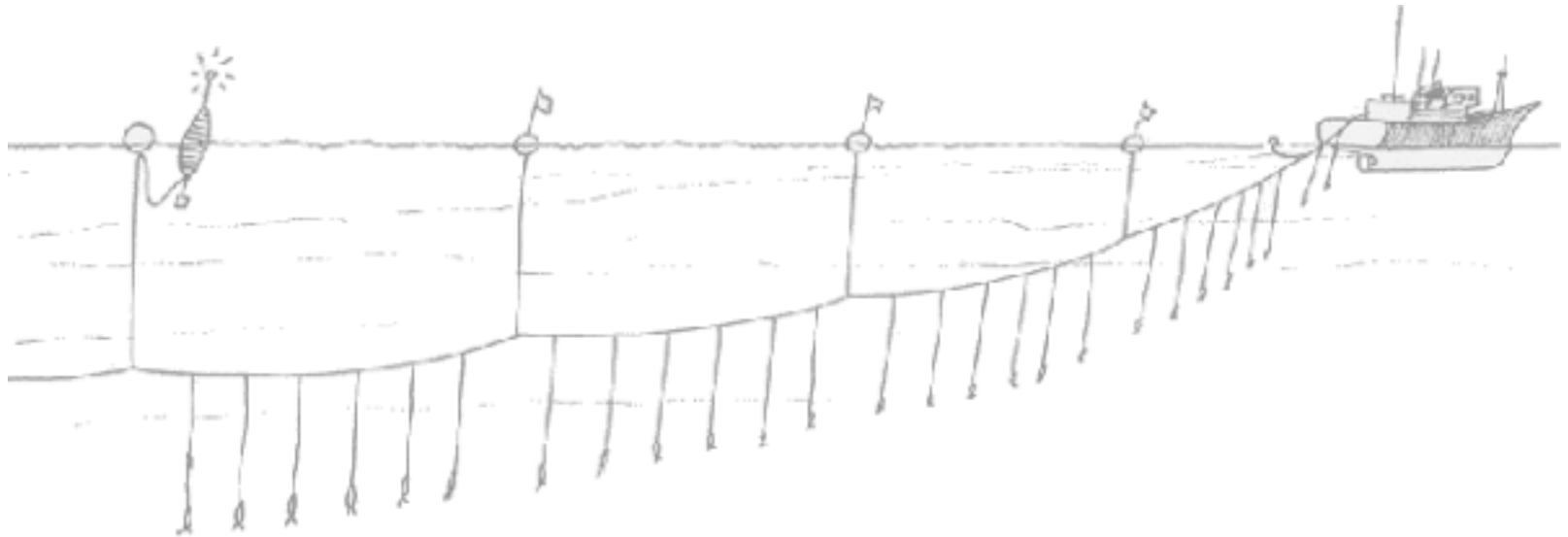
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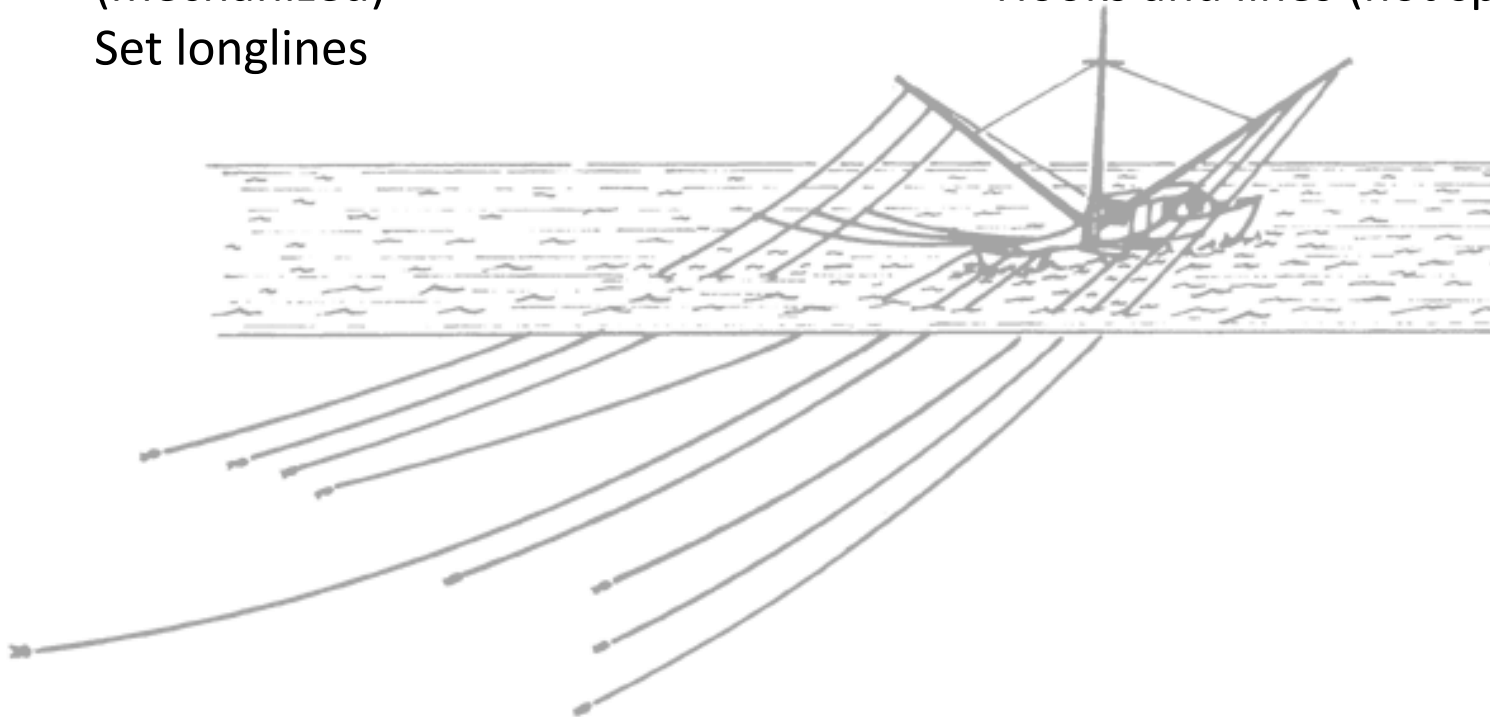
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OBJECTIVES

Assess the threat of hook and line fisheries to marine mammal species

- By species
- By target species
- By geographic location

Assess injuries from gear



Photo: AP October 2013

METHODS

Scientific and gray literature review: combinations of “bycatch”; “longlines”; “entanglement”; species names (common and scientific)

International Whaling Commission (1990-2011)

US Marine Mammal Stock Assessments (1995-2012)

Reference	Bell et al 2006
Region	Australia (EEZ)
Year	1995
Target	Yellowfin tuna
Type of LL	Japanese LL
Reporting method	UNK
Species caught	Killer whale (1)
Notes: dead, SI, released, hooked, entangled, etc.	drowned

METHODS

Scientific and gray literature review: combinations of “bycatch”; “longlines”; “entanglement”; species names (common and scientific)

International Whaling Commission (1990-2011)

US Marine Mammal Stock Assessments (1995-2012)

Reference	Sohn and Kim 2002
Region	S. Korea (East China Sea)
Year	2001
Target	UNK
Type of LL	UNK
Reporting method	UNK
Species caught	Delphinus sp. (1), Risso’s (1), Harbor porpoise (1)
Notes: dead, SI, released, hooked, entangled, etc.	UNK

OBJECTIVES

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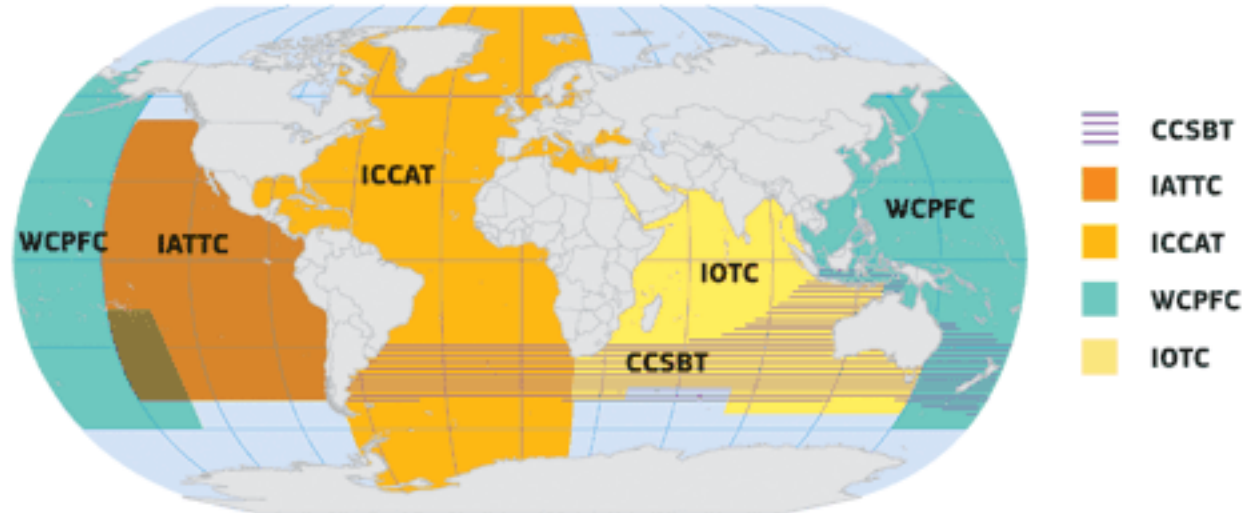
Assess injuries from gear

What policy measure exist to mitigate bycatch to marine mammals?

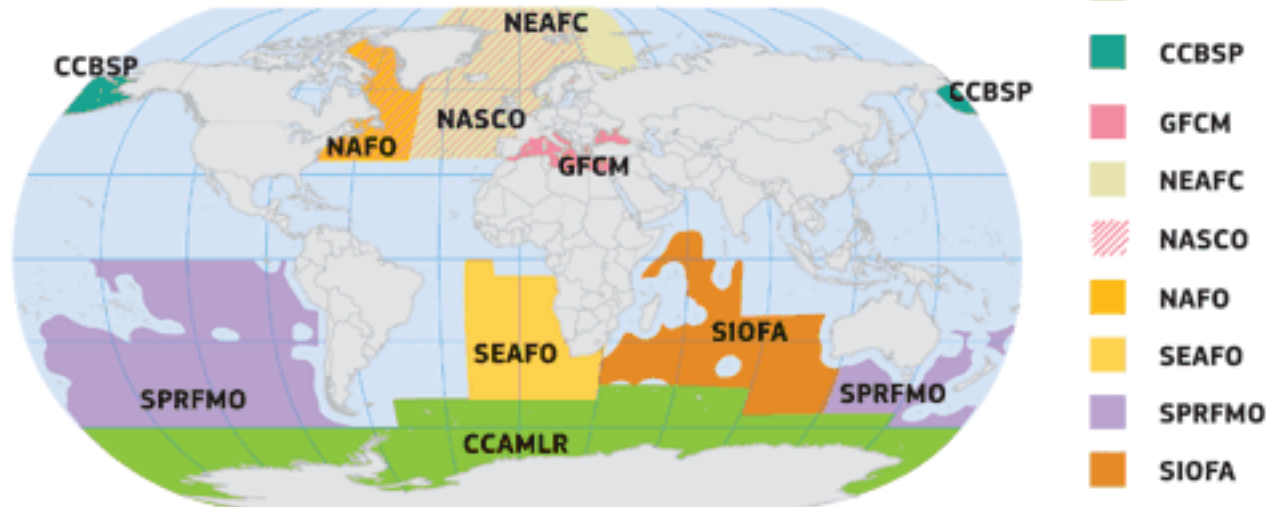
METHODS

Examined documents from fisheries management organizations and governments

RFMOs for highly migratory fish stocks (tuna and associated species)



RFMOs for non-tuna species



SPECIES

Short-beaked common dolphin
Long-beaked common dolphin
Undiff. spotted dolphin
Pantropical spotted dolphin
Atlantic spotted dolphin
Spinner dolphin
Striped dolphin

Common bottlenose dolphin (MMPA D)

Indo-Pacific bottlenose dolphin

Dusky dolphin

South American dusky dolphin

Atlantic white-sided dolphin

Pacific white-sided dolphin

Long-finned pilot whale (DD)

Short-finned pilot whale (DD)

Risso's dolphin (LC)

Irrawaddy dolphin

Ganges River dolphin

Pygmy killer whale

False killer whale (DD, ESA E, MMPA D)

Melon-headed whale

Rough-toothed dolphin

Harbor porpoise

Dall's porpoise

Finless porpoise

Indo-Pacific finless porpoise

Beluga whale

Undiff Kogia sp.

Sperm whale

Undiff. beaked whale

Northern bottlenose whale

Blainville's beaked whale

Ginko-toothed beaked whale

Cuvier's beaked whale

Unknown odontocete

Blackfish

Southern right whale

North Atlantic right whale

Bryde's whale

Humpback whale (LC< ESA E, MMPA D)

Minke whale

Gray whale

Unknown mysticete

Gray seal

New Zealand fur seal (LC)

Australian fur seal

South American fur seal

Atlantic harbor seal

Pacific harbor seal

Spotted seal

Steller sea lion (NT, ESA E/T

MMPA D)

Northern fur seal

Subantarctic fur seal

New Zealand sea lion

California sea lion

Leopard seal

Hawaiian monk seal

Northern elephant seal

Ribbon seal

Unknown pinniped

Seabear

Dugong

Manatee

38 (44%) CETACEANS
16 (52%) PINNIPEDS
2 SIRENIANS

INJURY & MORTALITY



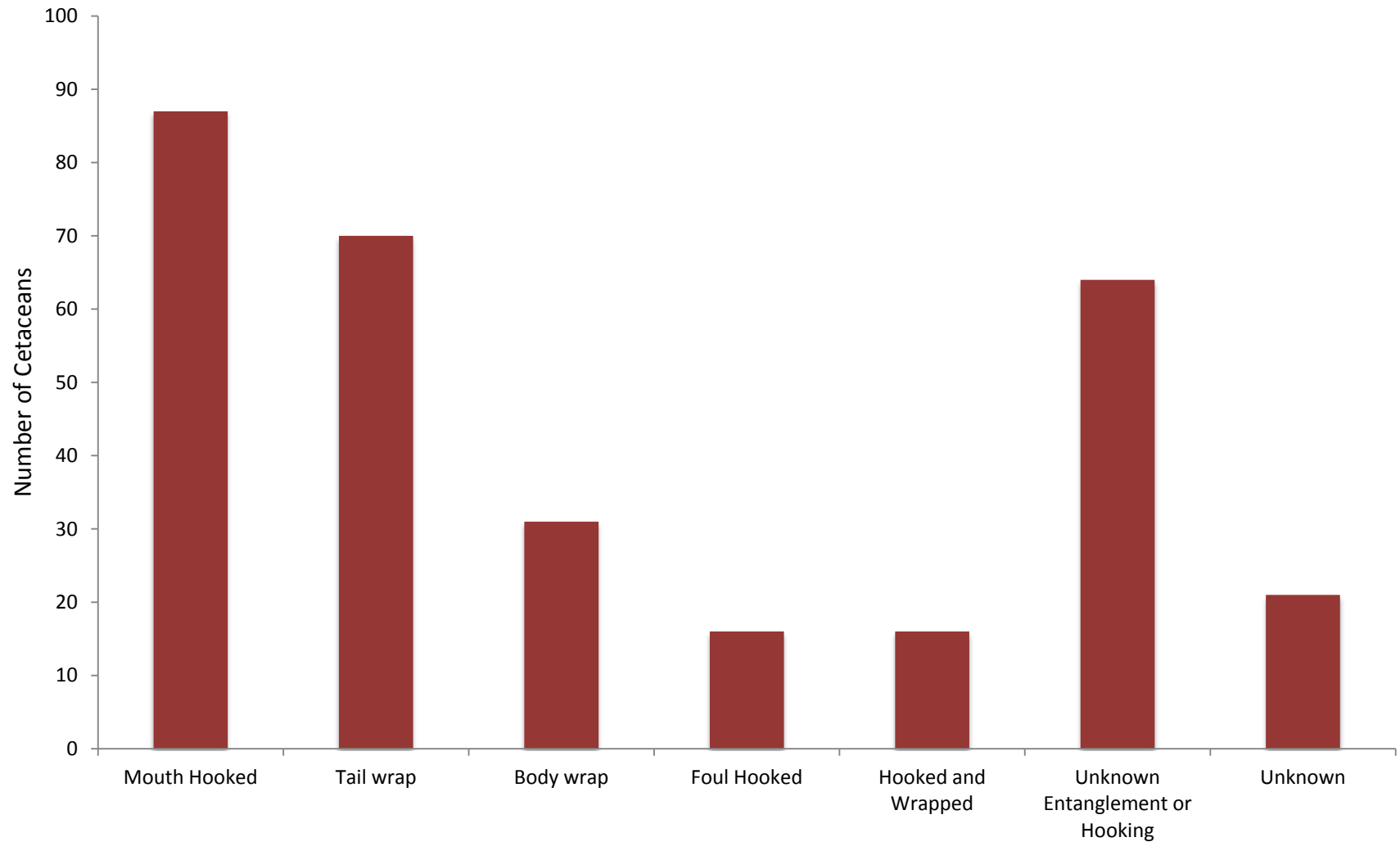
Photo: NMFS



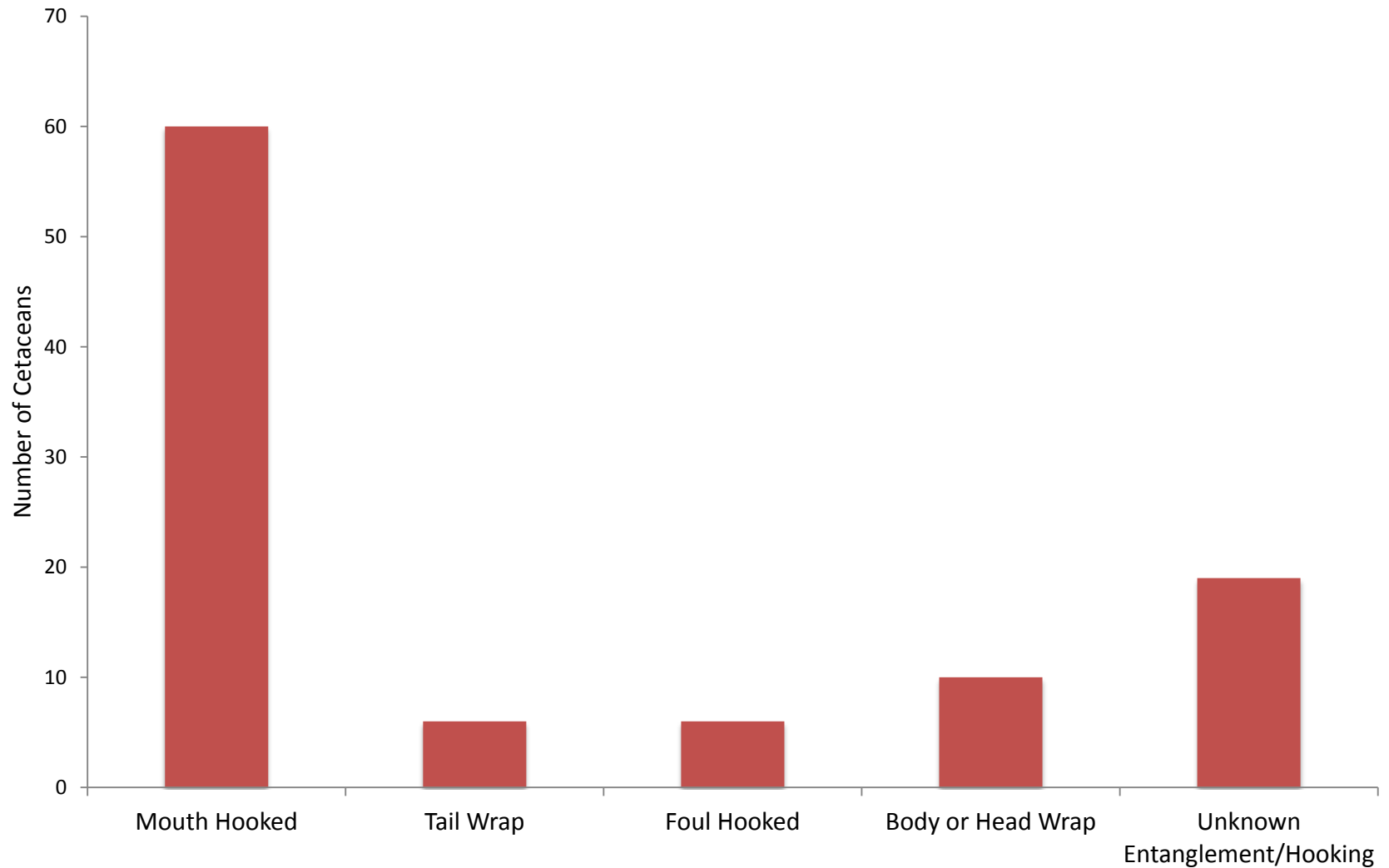
Photo: James Livaccari

Ingestion & entanglement

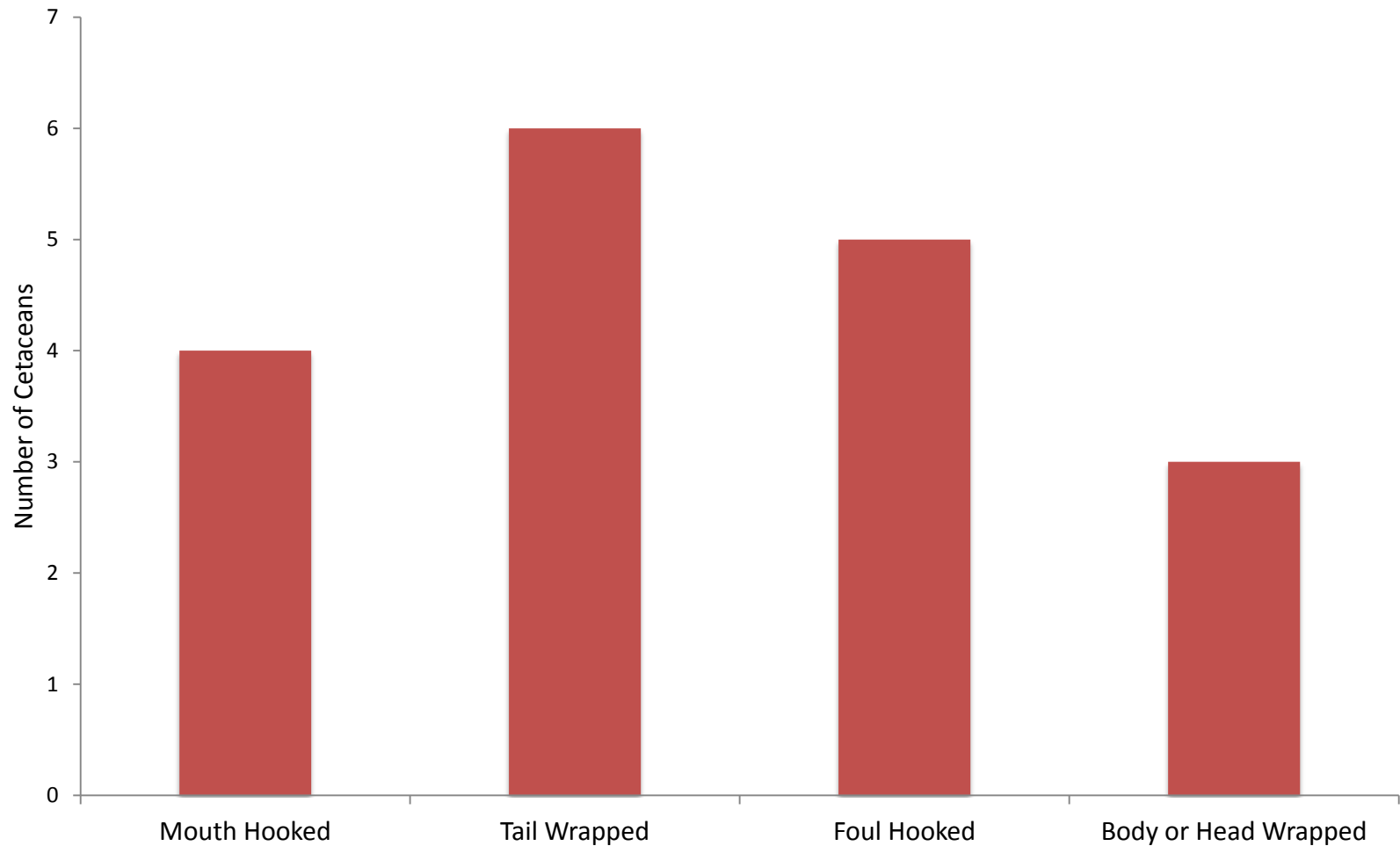
Description of cetaceans caught by the US Atlantic pelagic longline fishery from 1992-2011 (n = 305)



Description of cetaceans caught by the Hawaiian longline fishery from 2007-2011 (n=96)



Description of cetaceans caught by the American Samoan longline fishery from 2007-2011 (n=14)

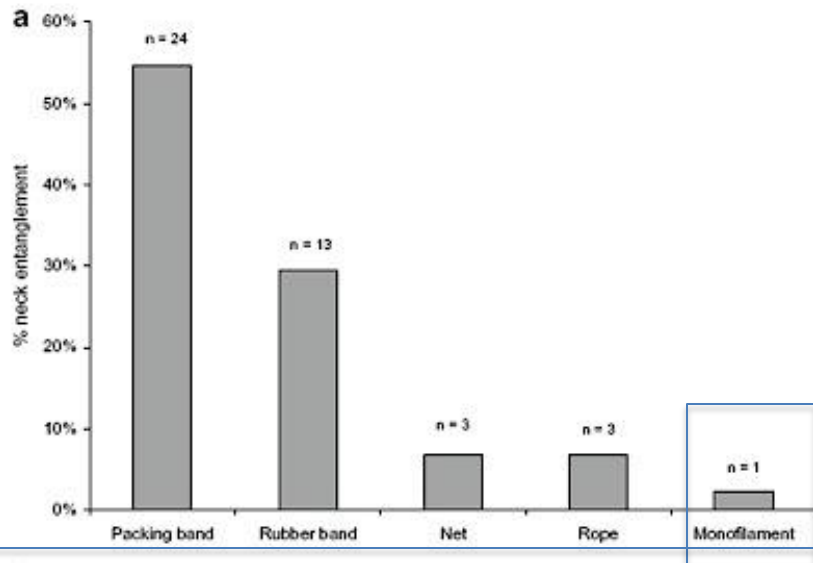


INJURY & MORTALITY



Photos: NOAA

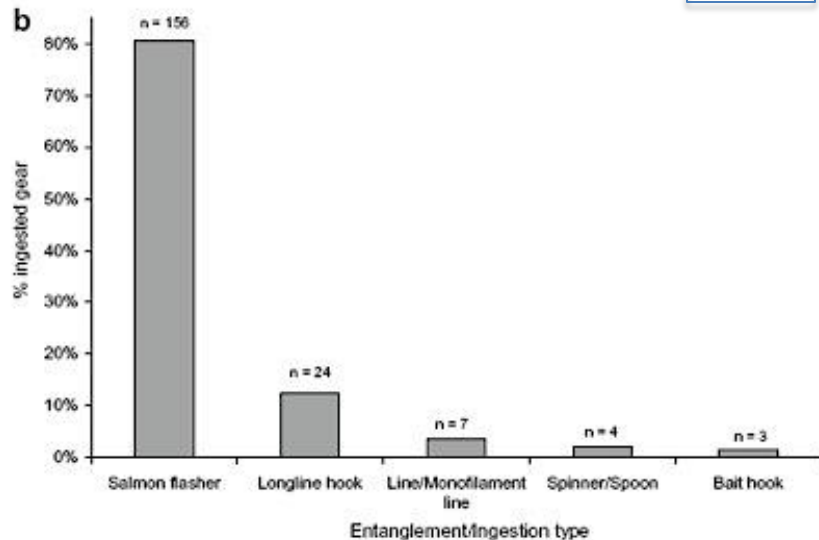
EX: STELLER SEA LIONS



2000-07 SSL haul outs in
Alaska and British Columbia

50+% of SSLs had interacted
with fishing gear

1 monofilament
entanglement
and 194 cases of ingested
fishing gear out of 384 indiv.



LOCATIONS

ATLANTIC

United States
Canada
Mexico
Spain
Portugal
Faroe Islands
Italy
Brazil
Uruguay
Argentina
Nigeria
Cameroon
Sierra Leone
South Georgia

PACIFIC

United States
Costa Rica
Colombia
Peru
Chile
American Samoa
Samoa
Malaysia
Micronesia
Central and Western
Pacific Islands
Australia
New Zealand
South Korea
Japan
Taiwan

INDIAN OCEAN

Bangladesh
Myanmar
Madagascar
Mayotte
Union of the Comoros
Reunion Island
South Africa
Australia

SOUTHERN OCEAN

Total 39

TARGET SPECIES

*Tuna

- bluefin
- Yellowfin
- bigeye

Swordfish

Shark

Billfish

Mahi mahi

Mackerel

Salmon

*Toothfish

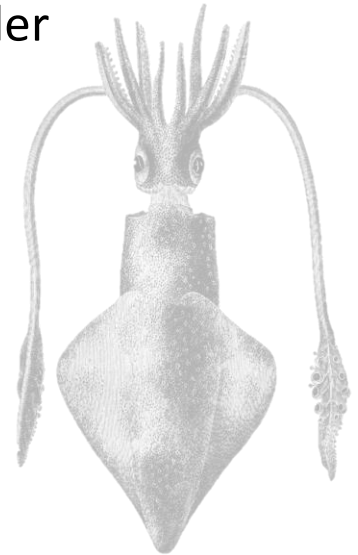
*Groundfish

- sablefish
- cod
- halibut
- hake
- Greenland turbot
- rockfish
- greenling
- flounder

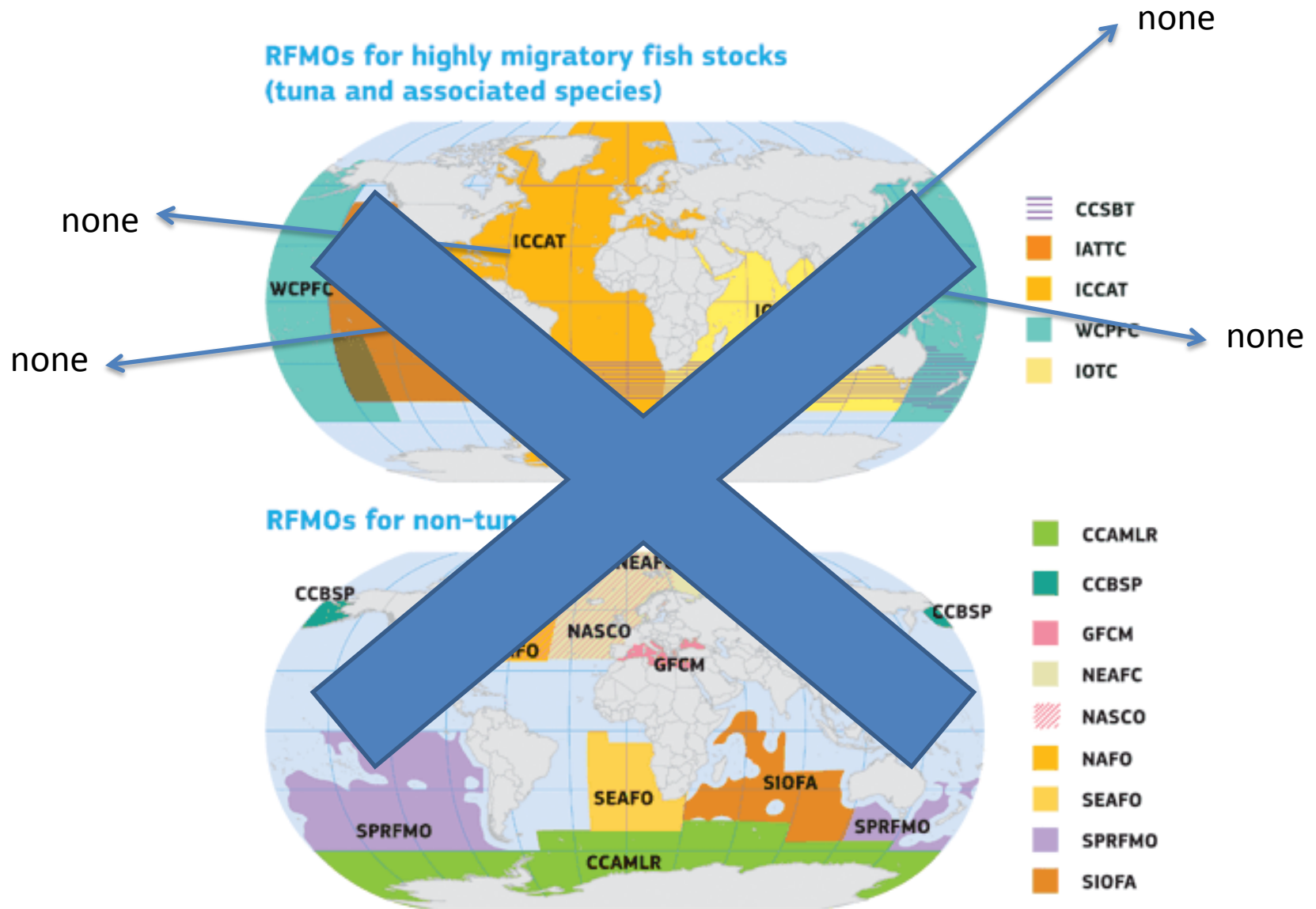
Squid

Catfish

Mudcrabs



REGULATIONS



RECREATIONAL FISHERIES



Don't Feed Wild Dolphins



DOLPHIN FRIENDLY FISHING TIPS

Help Protect Wild Dolphins While Fishing

Serious and even fatal dolphin injuries from interactions with recreational fishing gear and boats are on the rise. You can help prevent these injuries, and potential damage to your gear, by following these tips designed to protect marine mammals.

CONCLUSIONS

Very few reports of mortality/injuries from hook and line fisheries

Species/populations identified threatened by hook and line fisheries?

Information is a reflection of which countries/fisheries report interactions

CONCLUSIONS

High number of animals released with gear still attached

Atlantic – 68%

Hawaiian – 82%

Concerned with
unknown levels of post-
release mortality

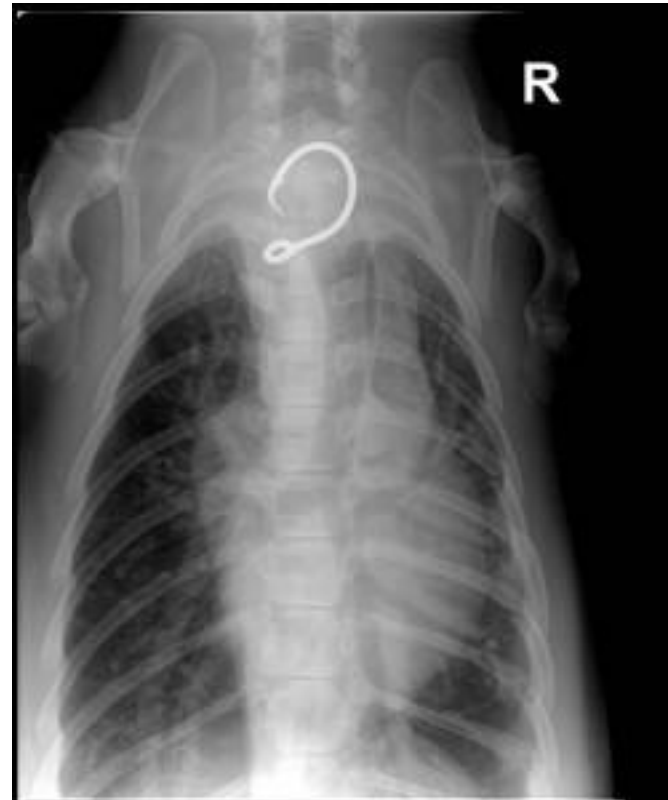


Photo: NOAA Feb 2013

CONCLUSIONS

Lack of fisheries observation and rigorous reporting

Need for multiple mitigation options

- Species behavior
- Hooks v lines

Is it possible to build on conservation and management or bycatch reduction measures already required in the fishery?

- Circle hooks
- Safe handling and release standards

IDEAL REPORTING

Species

- Aid needed to get accurate identifications

Location

- Lat/long
- General geographic area

Date

Gear

- Depth
- Length
- # hooks
- Hook type, size
- Bait
- Materials
- Mitigation gear

Target catch

Evidence of depredation

- Target or bait
- During what phase (set, soak, etc)

Animal brought up alive or dead?

Was the animal hooked?

- Where on body

Was the animal entangled in line?

- Where on body

If released:

- Was any gear still attached?
- Condition

www.bycatch.org

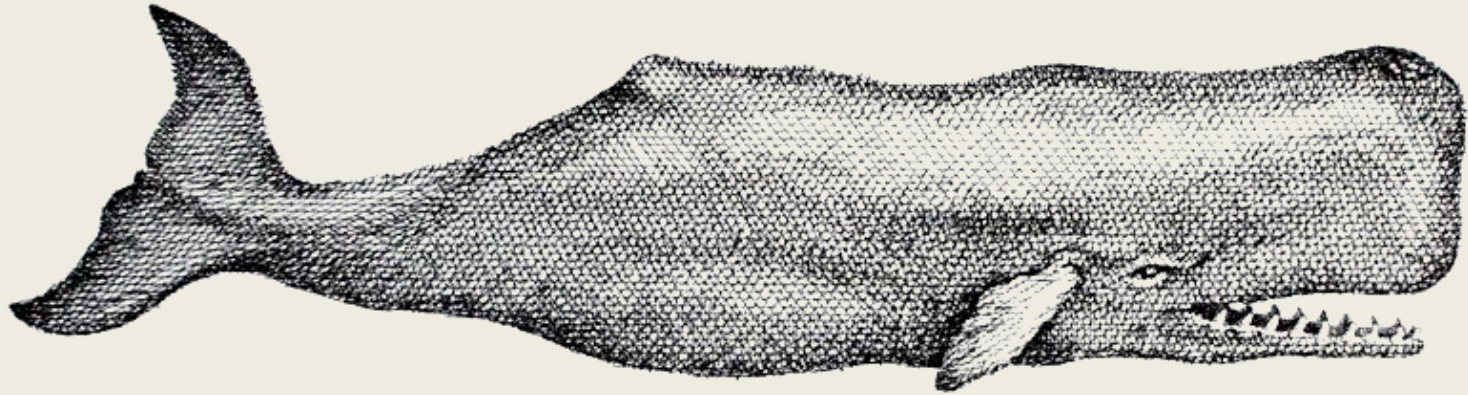


Image: misterjogja.com

