

NOAA/NMFS
US LONGLINE BYCATCH REDUCTION
ASSESSMENT AND PLANNING WORKSHOP

SEABIRDS

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NOAA Fisheries
National Seabird Coordinator
Alaska Region, Juneau
Seattle, WA
September 18-20, 2007



Seabird Bycatch Reduction Efforts:

- US—Alaska & Hawaii
- International
- Gaps & Next Steps



NOAA Fisheries & Seabirds . . .



- *Endangered Species Act*
- *Magnuson-Stevens Act* ***new seabird language!***
- *United States' National Plan of Action for Reducing the Incidental Catch of Seabirds in Longline Fisheries (NPOA) (2001)*
- *NOAA Fisheries National Bycatch Strategy (2003) & National Bycatch Report*
- *Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds (2001)*

MSRA . . . Seabirds

Bycatch Reduction Engineering Program - Section 316

- ✓ Regionally based
- ✓ Cooperative research
- ✓ Outreach to fishers & encourage technologies
- ✓ Incentives, use of gear with verifiable and monitored low seabird interaction rates
- ✓ Science-based measures that will reduce seabird interactions
- ✓ Coordination on seabird interactions
 - ✓ Outreach to industry
 - ✓ Mitigation projects for seabird mortality
 - ✓ Actions at RFMOs to reduce seabird interactions

Mitigation Categories:

Avoid peak areas & periods of bird foraging

Night-setting

Area & seasonal closures

Limit & deter bird access to baited hooks

Streamer lines

Weighted lines (external or integrated)

Side-setting

Underwater setting chutes

Circle hooks?

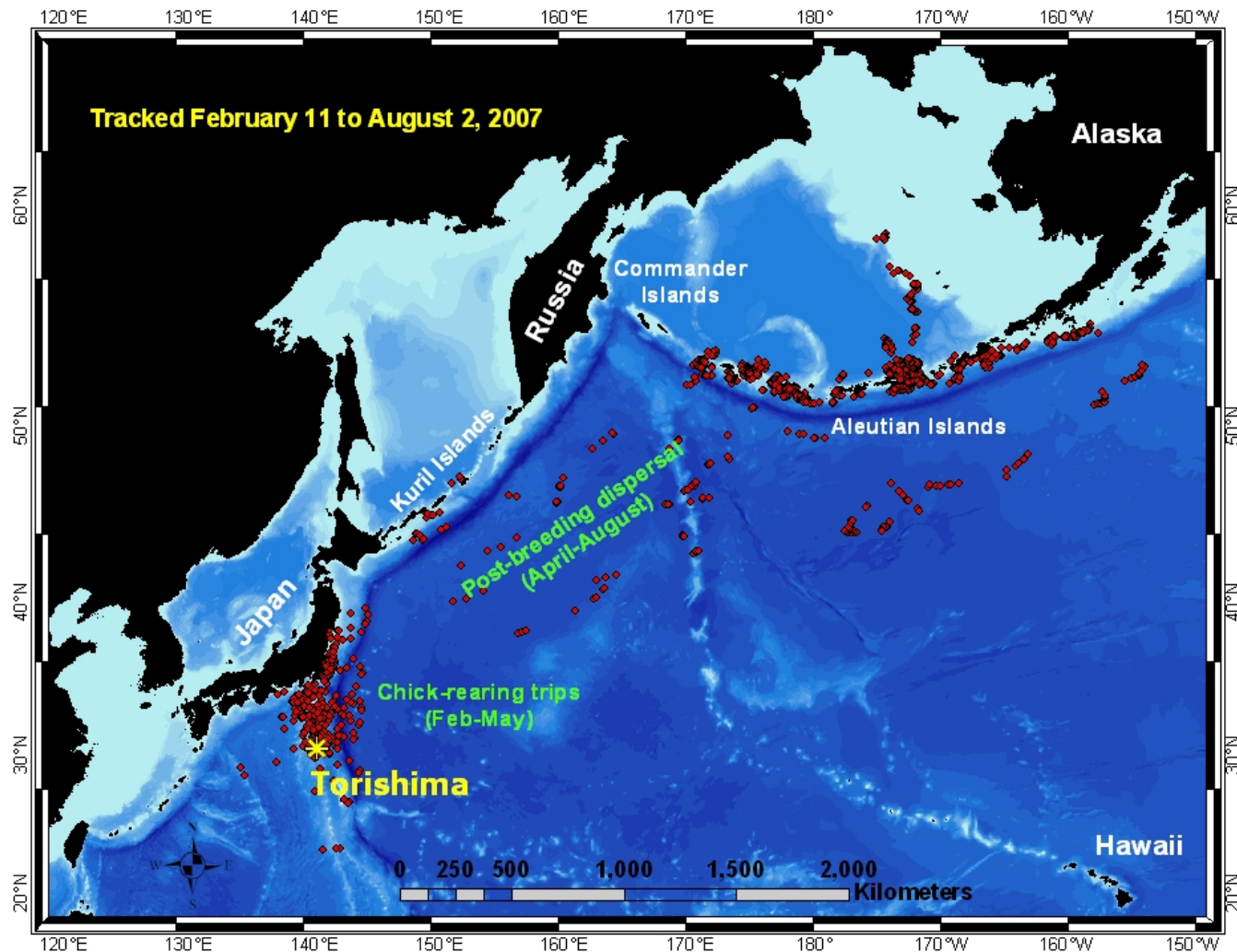
Reduce attractiveness or visibility of the baited hooks

Offal management/retention

Dyed bait

Short-tailed Albatrosses Satellite-Tracked February to August 2007

Chick-rearing trips and Post-breeding Season Migration (8 Birds)



STAL

Adults & Subadults vs. Juveniles

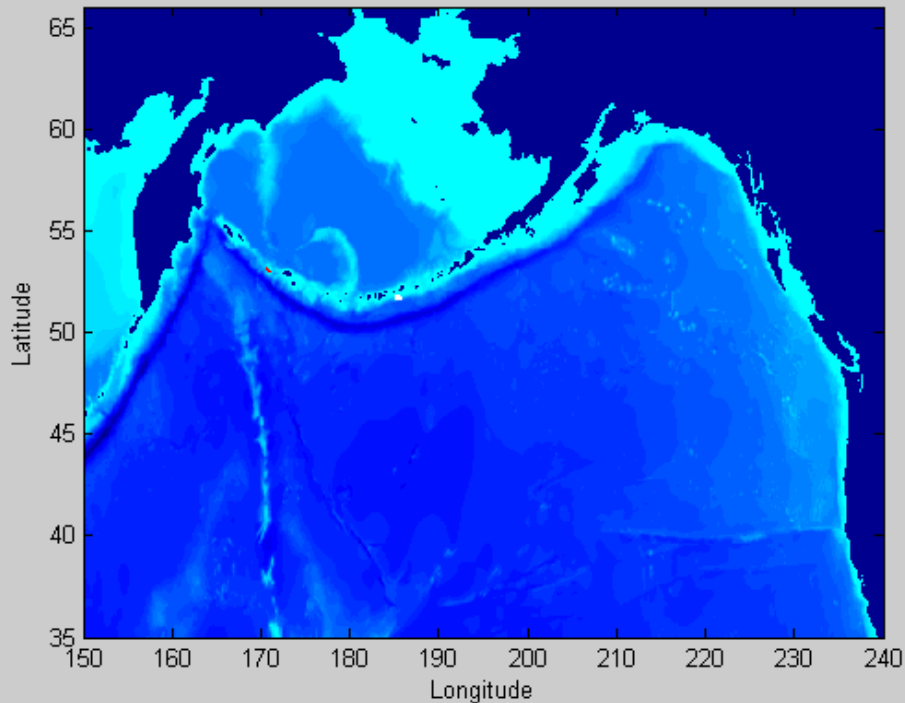


Adults & Subadults

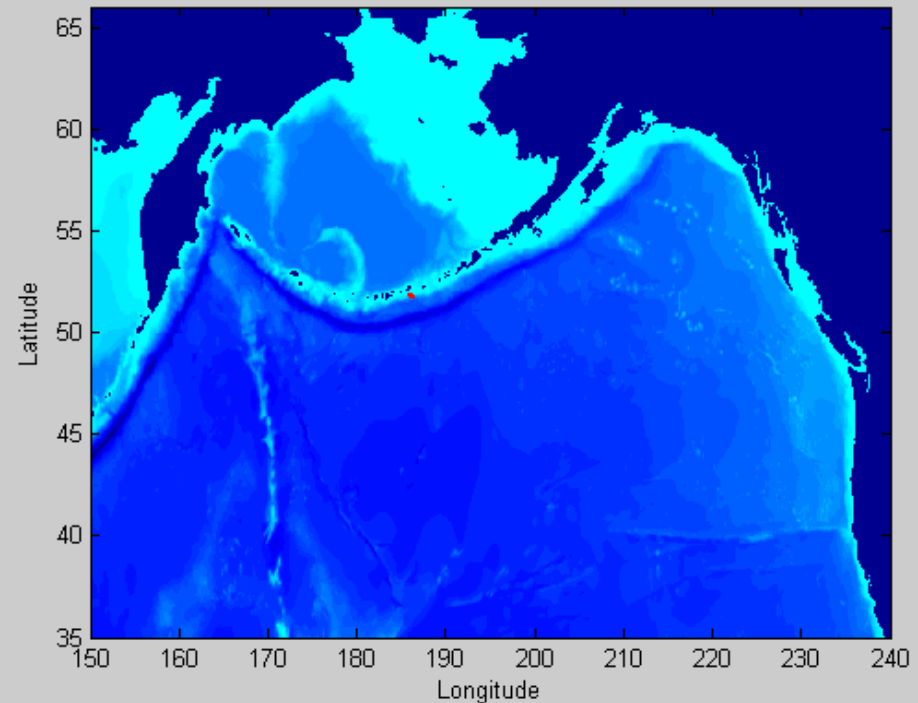


Juveniles (< 1yr)

Day 1

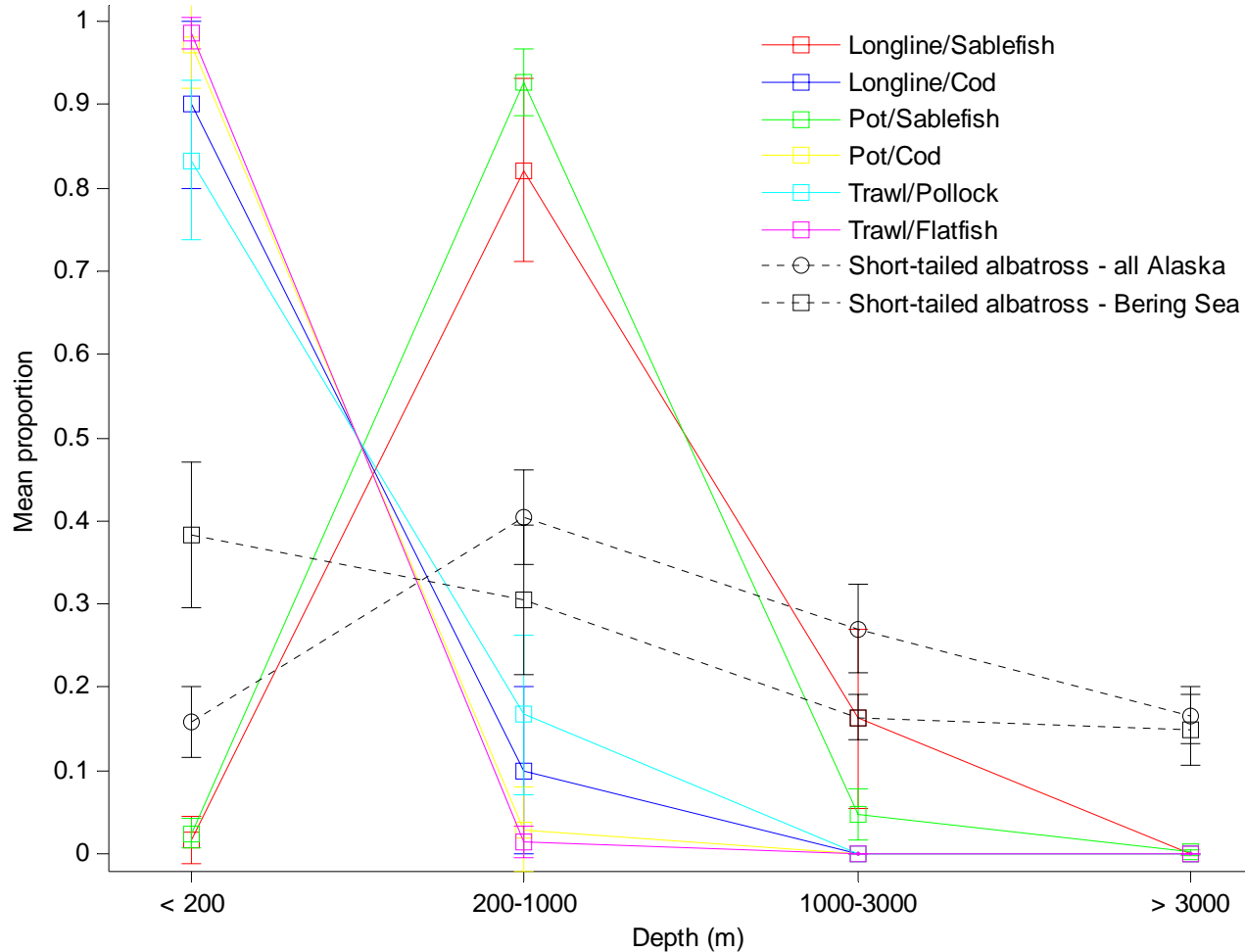


Day 1



Juveniles traveled over 2X the distance per day and more extensively over continental shelves

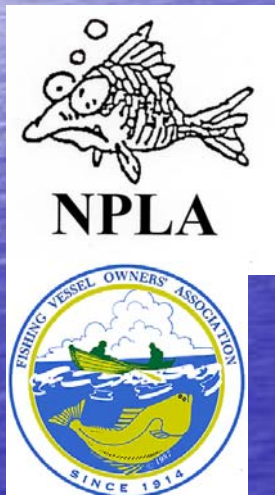
Spatial Overlap With Commercial Fishing Effort in Alaska



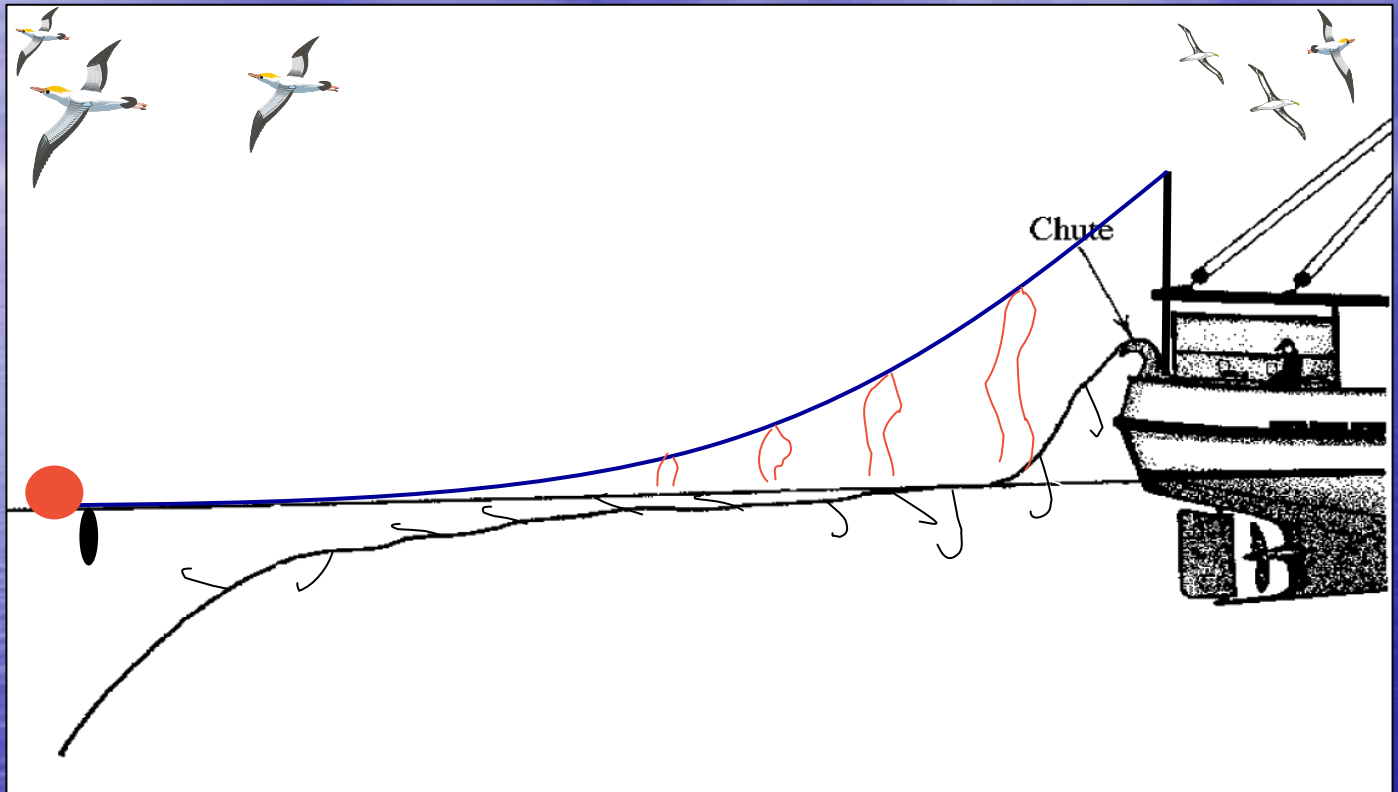
Proportion of effort (# of hooks or pots for longline or hours for trawl fisheries) and proportion of albatross hours in bathymetric domains of shelf, shelf-break, slope, and abyssal, respectively.

Albatross data are presented for all individuals tracked in Alaska ($n = 11$) and those individuals ($n = 4$) that spent ≥ 3 days in NMFS management areas on or adjacent to the Bering Sea Shelf (areas 508 – 524, 550)

Developing Solutions to Seabird Mortality in Alaskan Fisheries: Accomplishments and Continued Research



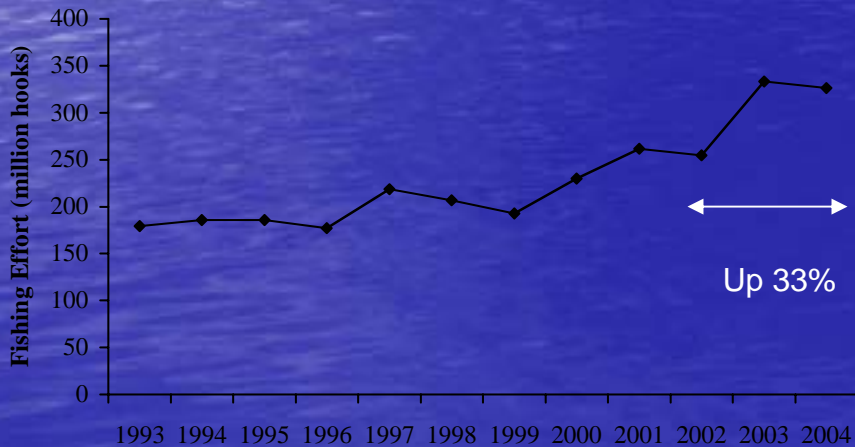
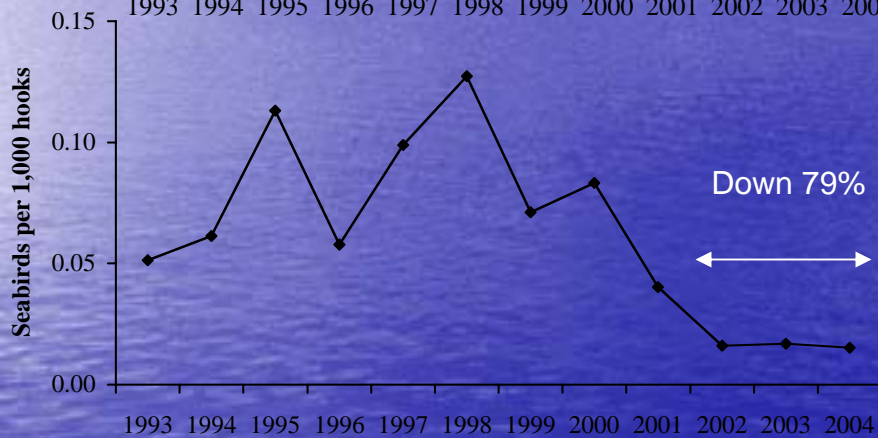
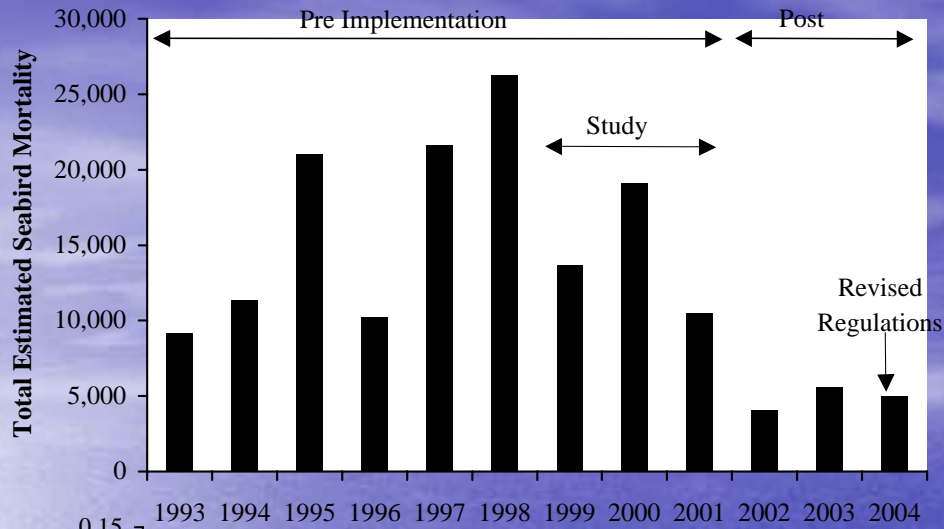
Ed Melvin
Washington Sea Grant Program
School of Aquatic and Fishery Sciences
University of Washington



Paired Streamers (Tori Lines)

A photograph showing a large flock of birds, likely terns, flying over the ocean. Several red streamers (tori lines) are hanging from a line above the water, used for bird control. The sky is overcast and the water is dark blue.

Reduced Bycatch by ~100%



Since paired streamer lines with performance standards were implemented by the Alaska fleet beginning In 2002, total seabird mortality and seabird bycatch rate are down by 69% and 79%, respectively, while fishing effort has increased



Integrated Weight Research



History

- AK Feasibility Tests 2000
- IW Line Technology Developed 2001 (A. S. Fiskevegn)
- Pilot Trials in 2002 in Alaska New Zealand
- Full Scale AK testing in 2005

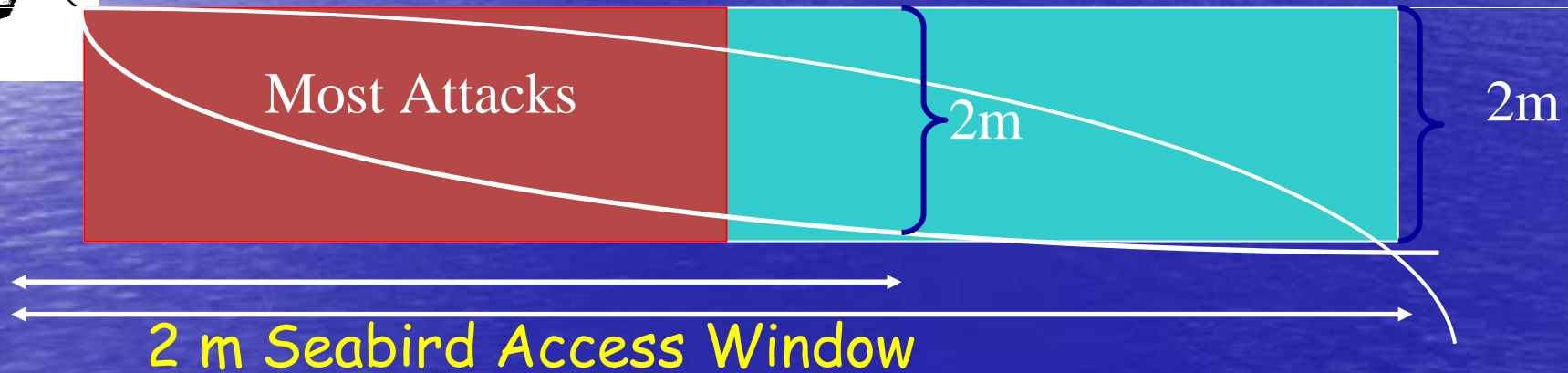
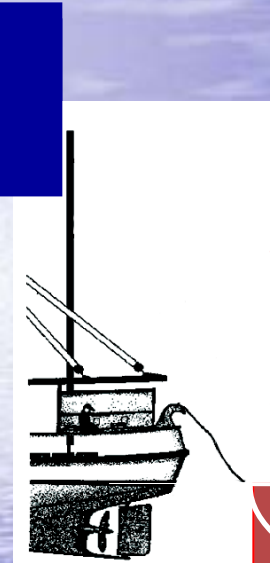


July to December 2005

- Two Vessels
- > 13 million Hooks
- 5 months

Integrated Weight Groundline

Sink the gear quickly out of the foraging range of seabirds



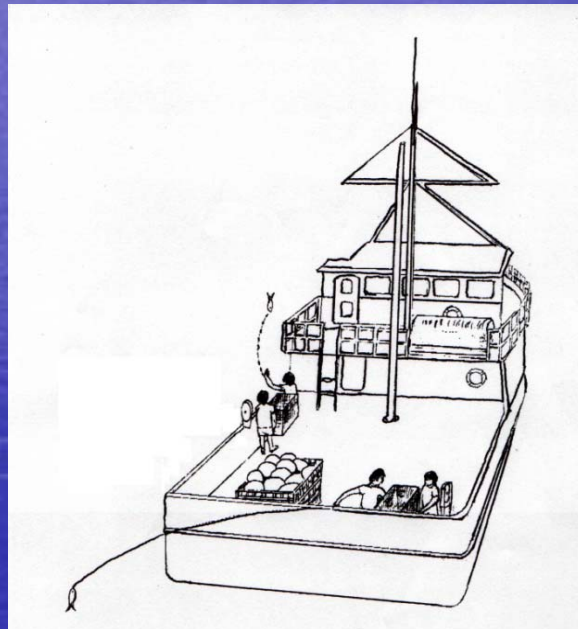
Results

- **IW** line alone reduced seabird bycatch (**90%**), paired streamer lines alone by 95%, and IW + PS by 100%
- No effect on fish catch rates
- Line sinks ~ twice as fast as UW
- IW superior handling compared to traditional UW line - preferred by crews---**incentive!**
- IW and UW same breaking strength after 5 months
- IW a viable alternative to streamer lines for seabird conservation

Seabird Bycatch in Hawaii Pelagic Longline Fisheries - Research and Commercial Demonstrations



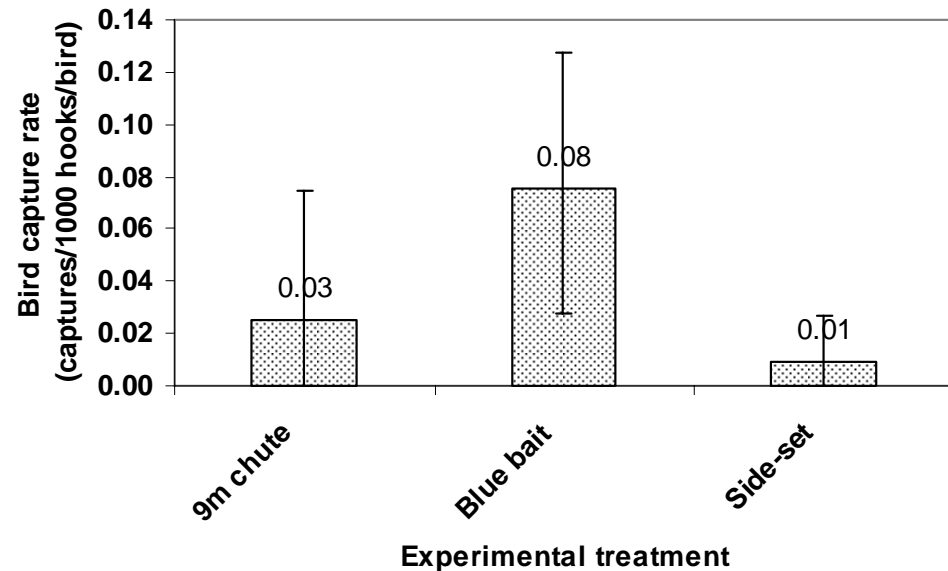
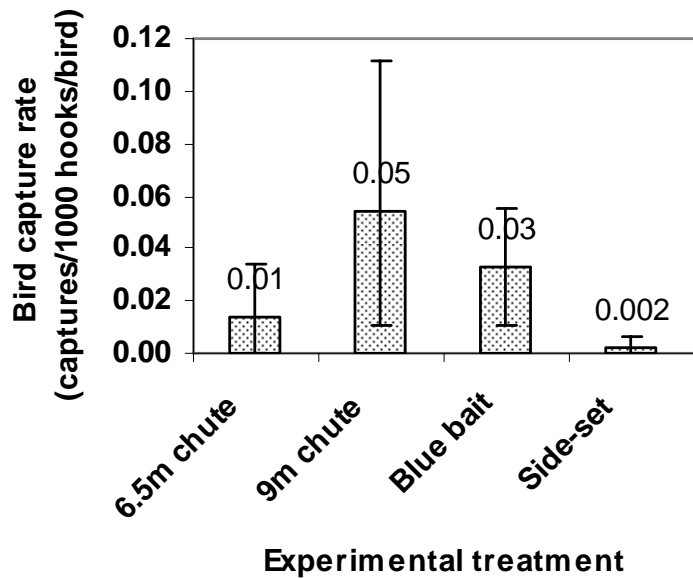
Underwater setting chute



Port side-setting and conventional stern setting



Blue-dyed fish bait

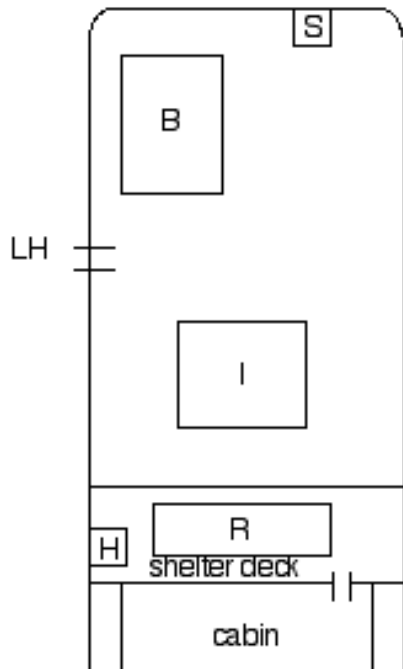


Capture rates for combined albatross species for treatments used with tuna gear

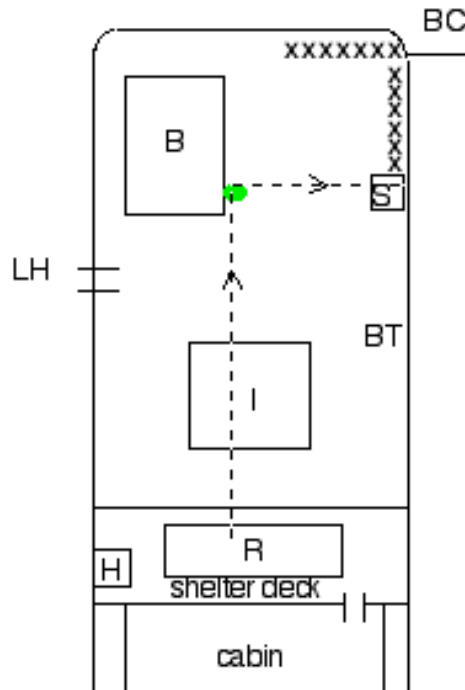
Capture rates for combined albatross species for treatments used with swordfish gear

Side setting produced the lowest seabird capture rates plus provides substantial operational benefits; other methods were impractical for industry.

Stem-setting



Side-setting

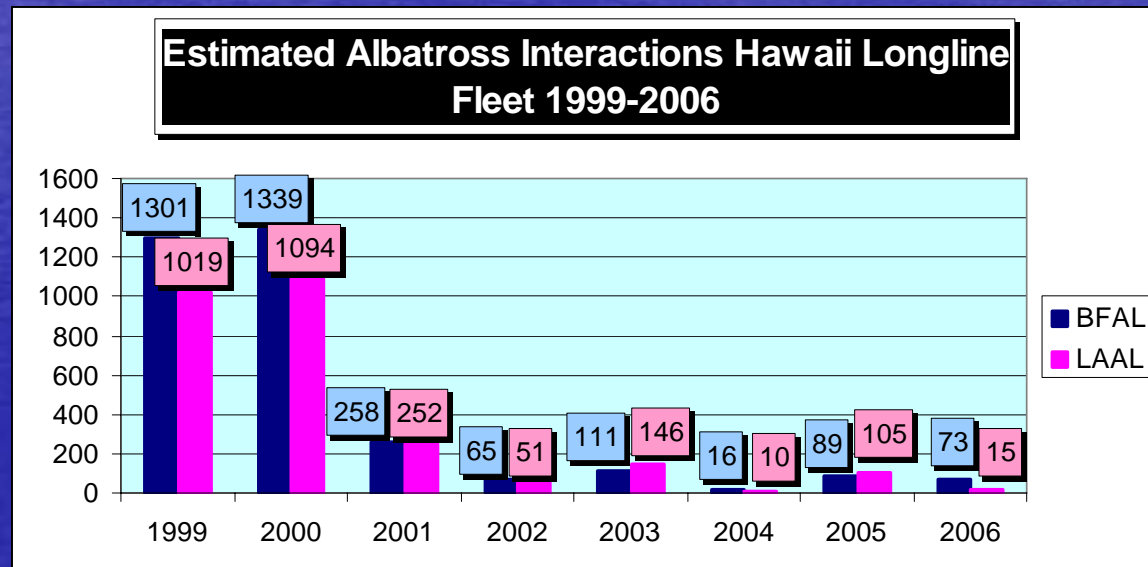
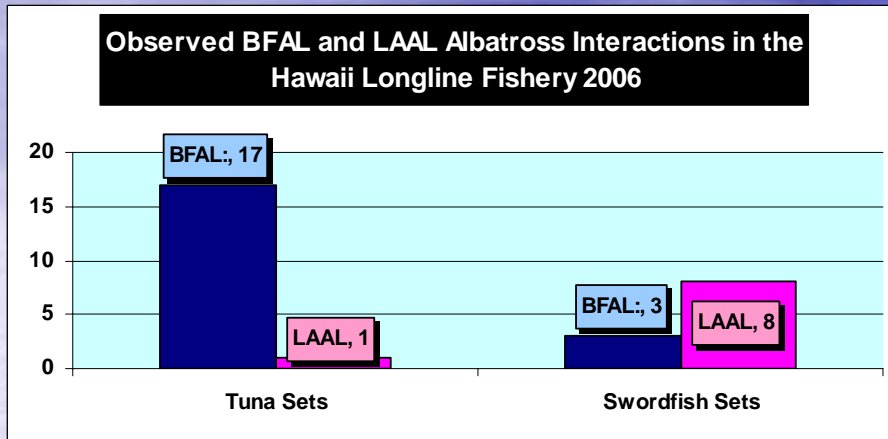


LH	Fish landing
S	Main line shooter
B	Buoy rack
R	Main line reel or spool
BC	Bird curtain
BT	Baited hook thrower
H	Hauling line
I	Ice hold
xxxxxx	Hydraulic lines
-----	Line set route
●	Main line pulley block
HB	Hook baiting position
X	Deck hatch



Side Setting Technical Assistance Program

Hawaii Bycatch Estimates & Rates



2006 Take rates

Mitigation required

Tuna, deep-set, 0.002 albatross/1,000 hooks

Swordfish, shallow-set, 0.015 albatross/1,000 hooks

Current Requirements for Hawaii Vessels

(effective January 18, 2006)

- ✓ When **deep-setting (tuna)** north of 23N:
 - ✓ Must side-set & use 45g weighted swivel w/in 1m of hook & a bird curtain, **or**
 - ✓ Strategic offal discharge,
 - ✓ Remove all hooks from fish,
 - ✓ Thawed and blue-dyed bait,
 - ✓ Use a line shooter or basket-style gear
 - ✓ Use at least 45g weights within 1 m of each hook
- ✓ Vessels **shallow-setting**, wherever they fish must:
 - ✓ Side-set & use 45g weighted swivel within 1m of hook & a bird curtain, **or**
 - ✓ Night set, SOD, remove all hooks from fish, use thawed & blue-dyed bait

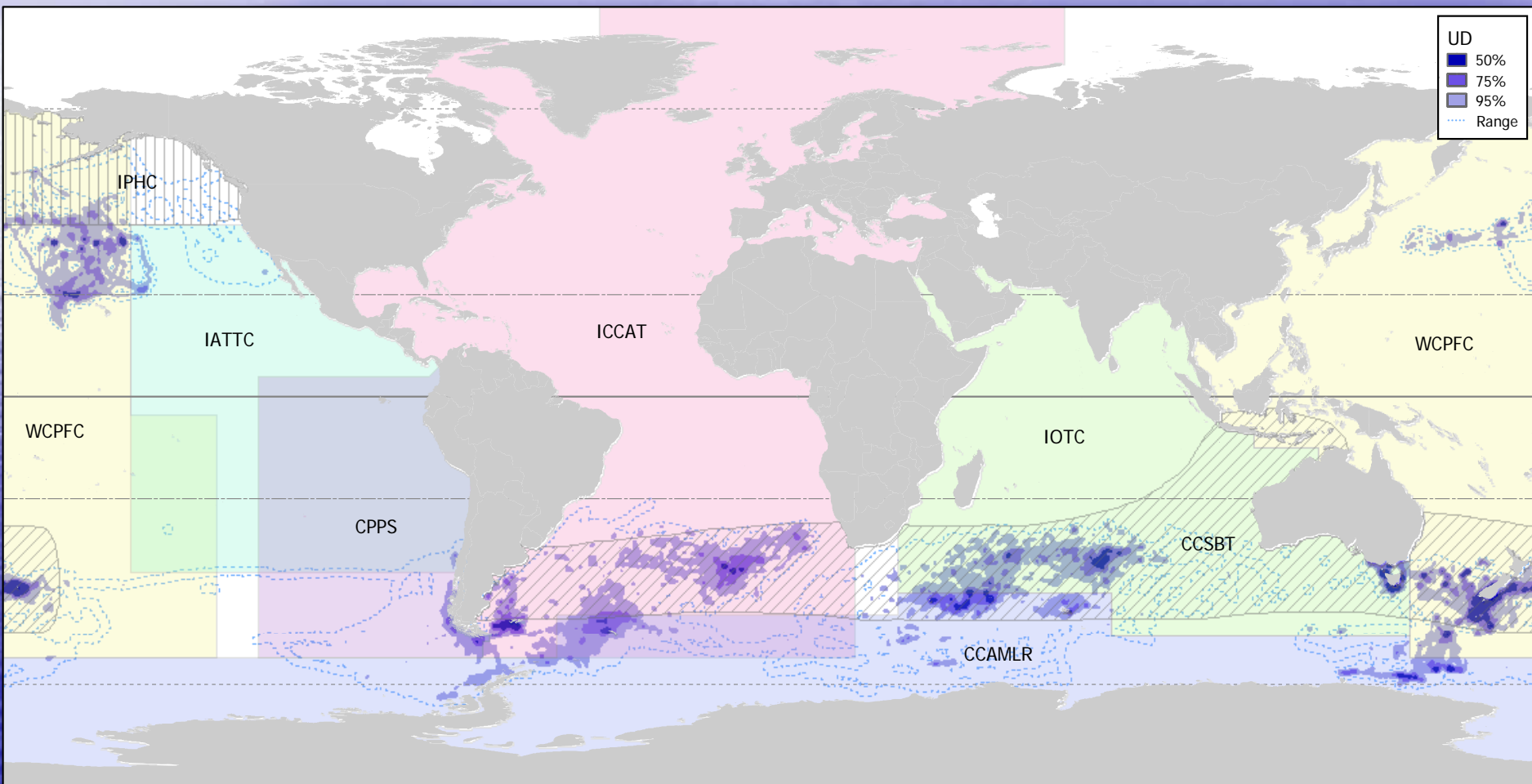
Hata, DN. 2006. Incidental captures of seabirds in the US Atlantic pelagic longline fishery. NOAA Fisheries, SEFSC, PRD-05/06-13. Funded by NOAA Fisheries National Seabird Program.

Circle Hooks vs. J Hooks - Preliminary Results

- ✓ Pelagic Observer Program
- ✓ 1992-2004, 6400 pelagic longline sets
- ✓ 51 sets, 113 seabird captures (NEC, MAB, SAB, GOM, NED)
- ✓ Greater Shearwaters majority of take, mostly July-Sept
- ✓ Circle hooks may take fewer birds than J hooks!

Sample size small...preliminary...needs further study...future hook studies need to measure impacts on birds!

Distribution of breeding albatrosses in RFMO areas



Developing Best Management Practices to Conserve Seabirds in Pelagic Longline Fisheries

- Develop streamer line system for pelagic longline fisheries.
- Trial in two southern oceans fisheries with a control of no deterrent and second technology.
- Locations of host fisheries being decided now - Chile likely host due to established working relationship of Carlos Moreno and industry/healthy seabird populations.
- Products will include outreach materials for Regional Fisheries Management Organizations (RFMOs) and longline nations.

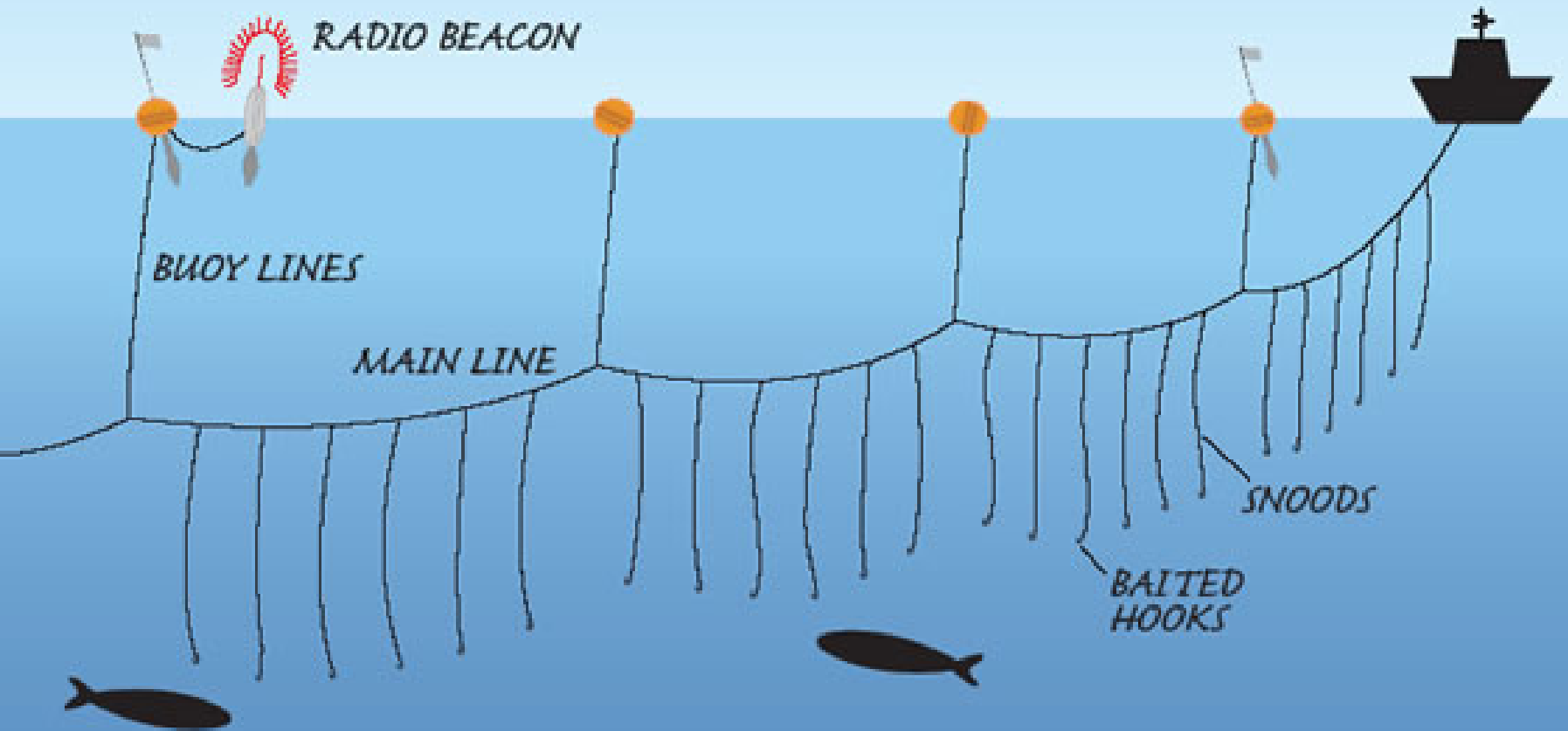


Streamer Lines





PELAGIC LONGLINE



Towed Device Prototype

Standard -ETB



Prototype





Without enough weight at 10 knots and a 1 m swell

Performance

Standard



Prototype





ACAP Bycatch WG



Pelagic fisheries managed by RFMOs and IUU fishing constitute the largest conservation threat to seabirds of the southern oceans.

Although several seabird avoidance measures have been trialed to varying degrees in pelagic fisheries, proven and accepted seabird avoidance measures are lacking (Lokkeborg, in press).

What Do We Want From Mitigation Research?

Unambiguous Answers to the Big Questions:
Establish the relative effects of technologies on:
Seabirds
Target Fish
Non-targets - all taxa



Suite of Best Practices
Effective and Acceptable to Industry
(safe, cost effective, reasonable)

What We Have...



- ~ 17 Years of limited progress
- Many inconclusive studies
 - ✓ few controlled studies
 - ✓ few of adequate scope
- Uncoordinated/Independent efforts to date
- Assorted protocols

The Way Forward?

A Strategic Plan for Mitigation Research

- Pooling Resources (Expertise, Researchers, \$\$)
- Addressing
 - Seabird Species/ Foraging Guilds
 - Target Fish Species
 - Regions
 - Gear (pelagic - surface, subsurface and deep)
- Common Minimum Protocols

Pelagic Longline Seabird Bycatch

ACAP Working Group

Valdivia 2007

- Develop the framework for a 5-year mitigation research plan
 - Specific Research Projects
 - ID PI's and Collaborations
 - ID Optimal Fisheries
 - Common or Minimum protocols



High Priority for Research

5 - Highest Priority

- Streamer Lines (primary)
- Bait Setting Capsule (primary)
- Side Setting (other)

4 - High Priority

- Weighted Branchlines (primary)
- Bait Pod/Smart Hook (primary)
- Circle Hooks (secondary)

3 - Moderate Priority

- Blue Dyed Squid (other)



PLAN DE ACCIÓN INTERNACIONAL
PARA REDUCIR LAS CAPTURAS
INCIDENTALES DE AVES MARINAS
EN LA PESCA CON PALANGRE

PLAN DE ACCIÓN INTERNACIONAL
PARA LA CONSERVACIÓN Y ORDENACIÓN
DE LOS TIBURONES

PLAN DE ACCIÓN INTERNACIONAL
PARA LA ORDENACIÓN DE LA CAPACIDAD
PESQUERA



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The IPOA-Seabirds

COFI-27 called for

FAO Expert Consultation

Develop Best Practice Guidelines to
assist in preparation of effective
NPOA-Seabirds and advice on
applying guidelines to RFMOs

When? 2008

INTERNATIONAL PLAN OF ACTION
FOR REDUCING INCIDENTAL CATCH
OF SEABIRDS IN LONGLINE FISHERIES

INTERNATIONAL PLAN OF ACTION
FOR THE CONSERVATION
AND MANAGEMENT OF SHARKS

INTERNATIONAL PLAN OF ACTION
FOR THE MANAGEMENT OF
FISHING CAPACITY



PLAN D'ACTION INTERNACIONAL VISANT
À RÉDUIRE LES CAPTURES ACCIDENTELLES
D'OISEAUX DE MER PAR LES PALANGRIERS

PLAN D'ACTION INTERNACIONAL
POUR LA CONSERVATION
ET LA GESTION DES REQUINS

PLAN D'ACTION INTERNACIONAL
POUR LA GESTION
DE LA CAPACITÉ DE PÊCHE





New Fishing System in Southern fisheries: Benefits To Seabird Conservation

Dr. Carlos A. Moreno
Universidad Austral de Chile
VALDIVIA

Fishermen are motivated to solve problems with whale interactions



Physeter macrocephalus



Orcinus orca

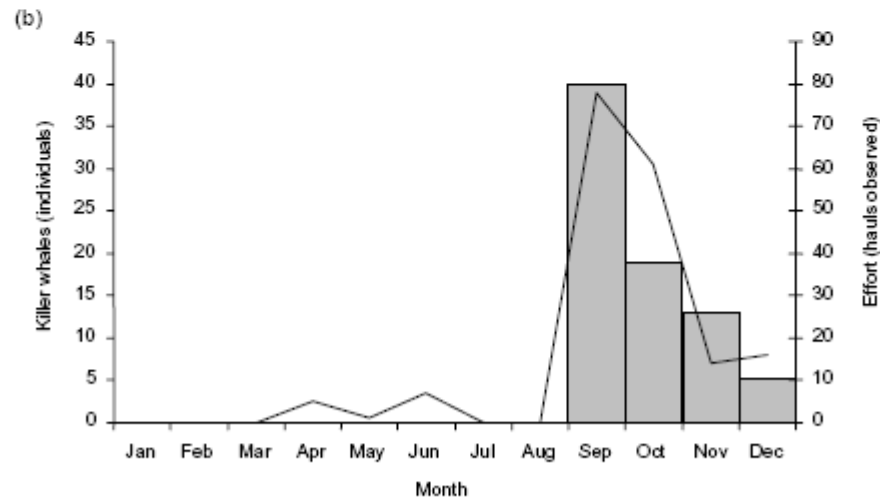
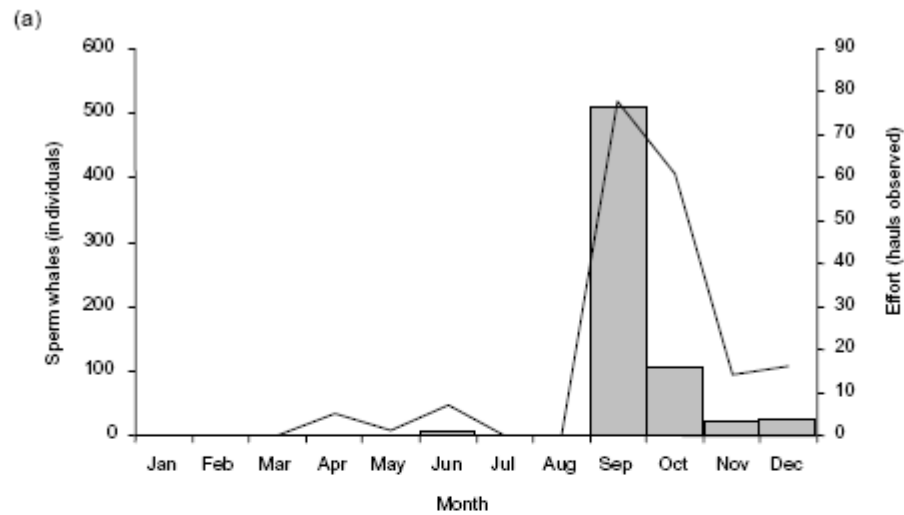
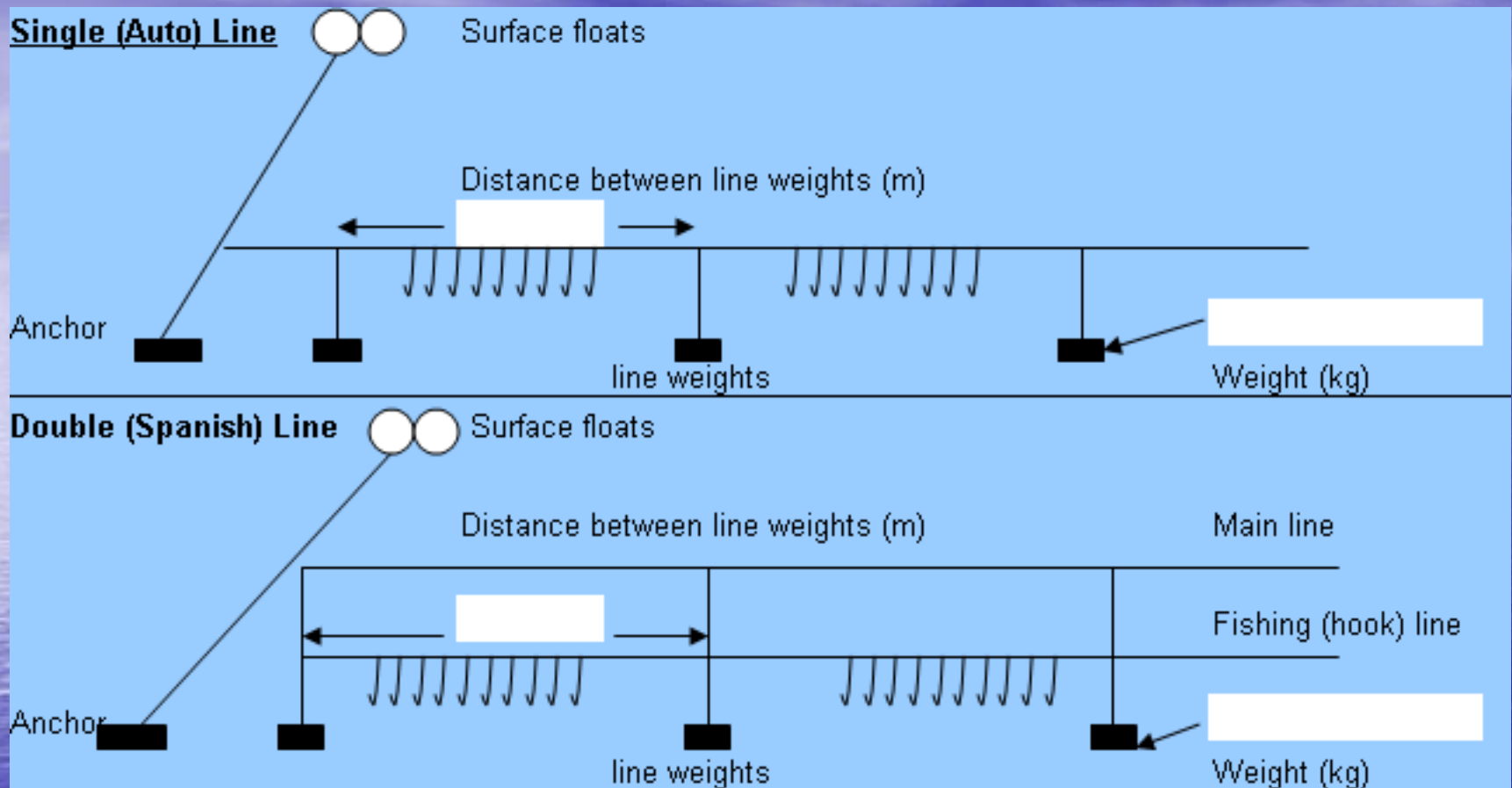


Figure 3: Number of individuals of most recurrent cetacean species – (a) sperm whales; (b) killer whales – associated with fishing operations for Patagonian toothfish, per month and number of hauls observed.



Sperm Whale
and Orca
attacks



Classic Long-line fishing is a commercial fishing technique that uses hundreds or even thousands of baited hooks hanging from a single line. Swordfish, tuna, halibut, sablefish and Patagonian toothfish are commonly caught by this method.

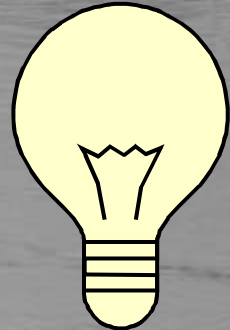
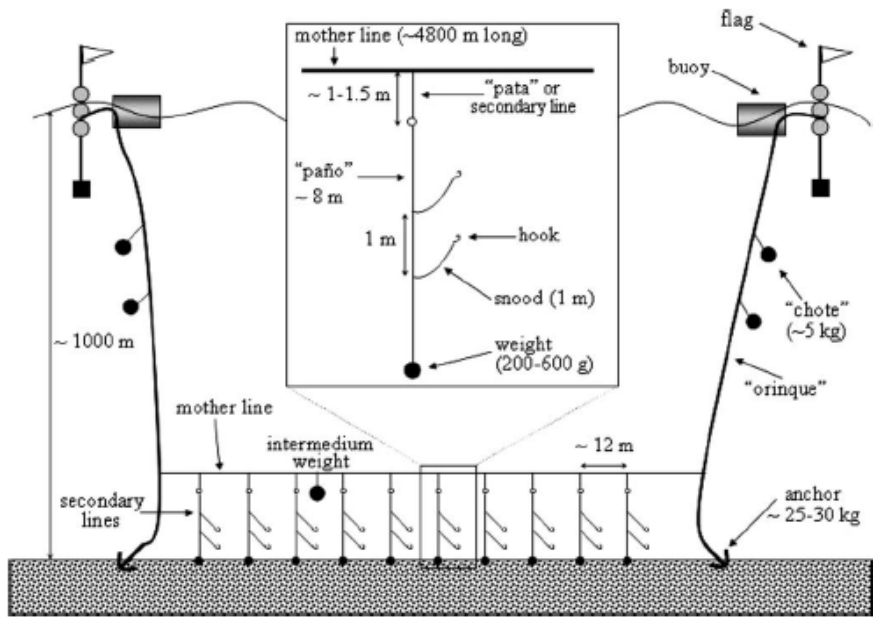
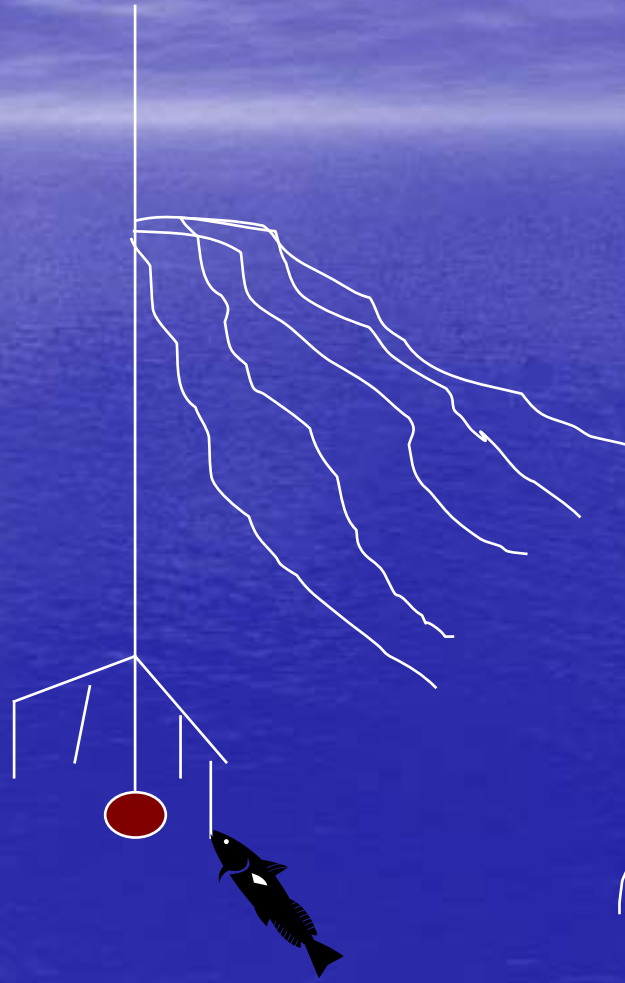
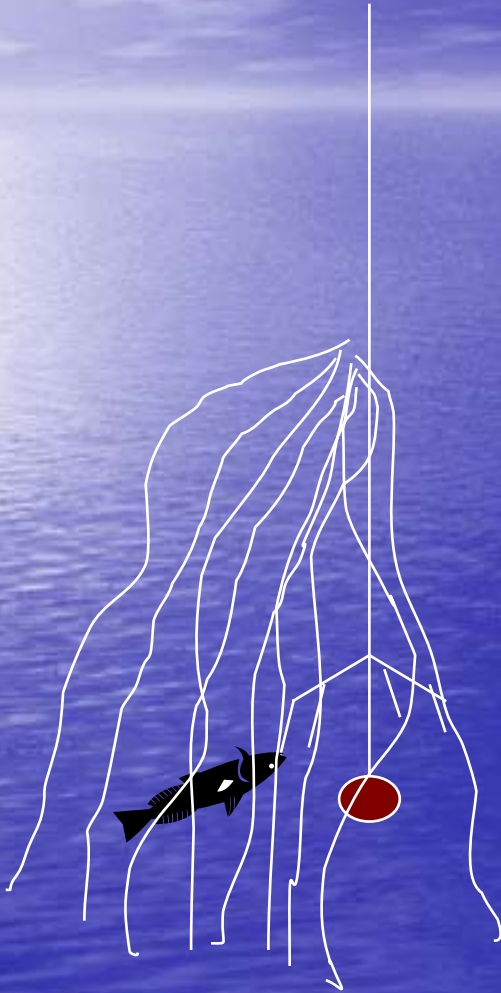


Fig. 3 – Longline system used by the Patagonian toothfish artisanal fleet in southern Chile. Each secondary line has a weight

1. The objective

The reality

Brain
storm

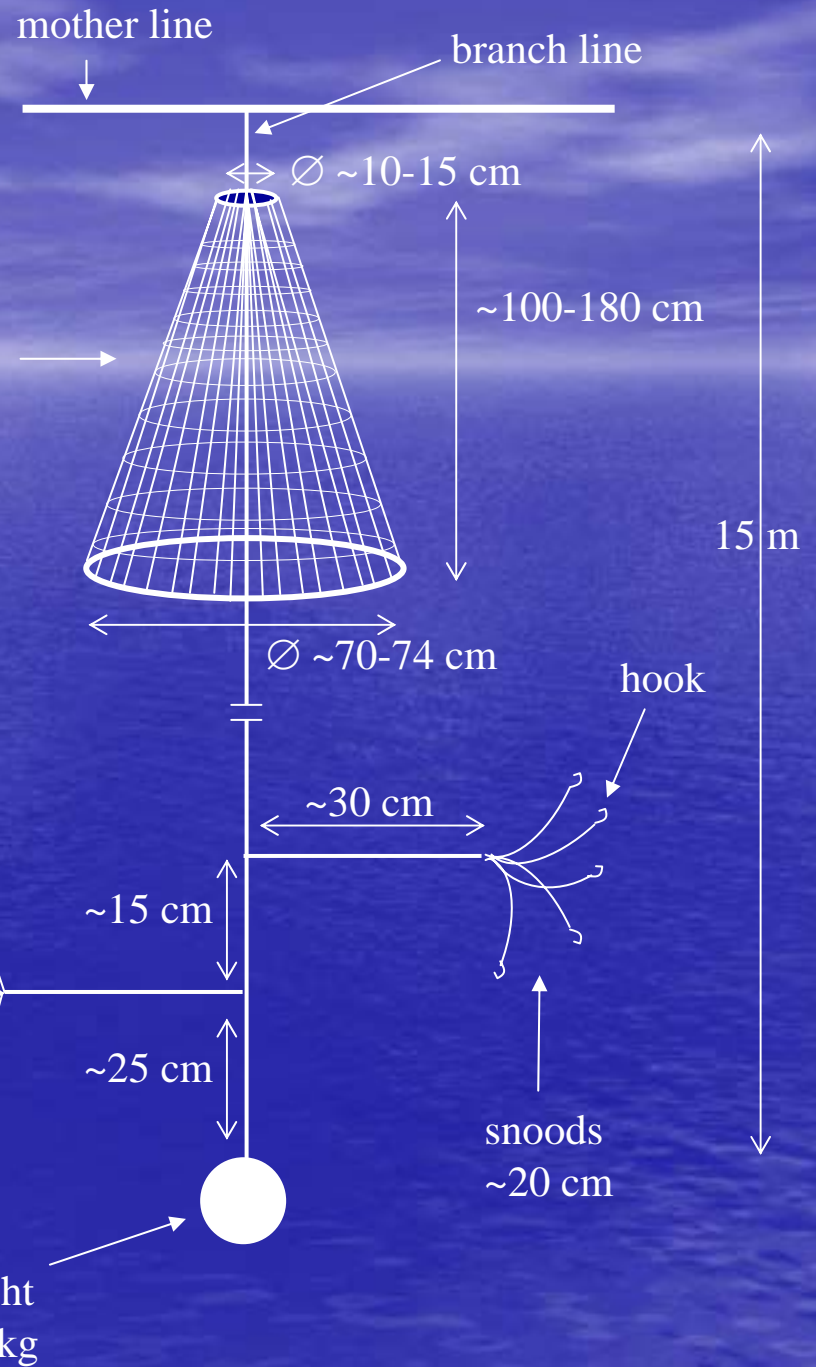


Toward a new Idea 

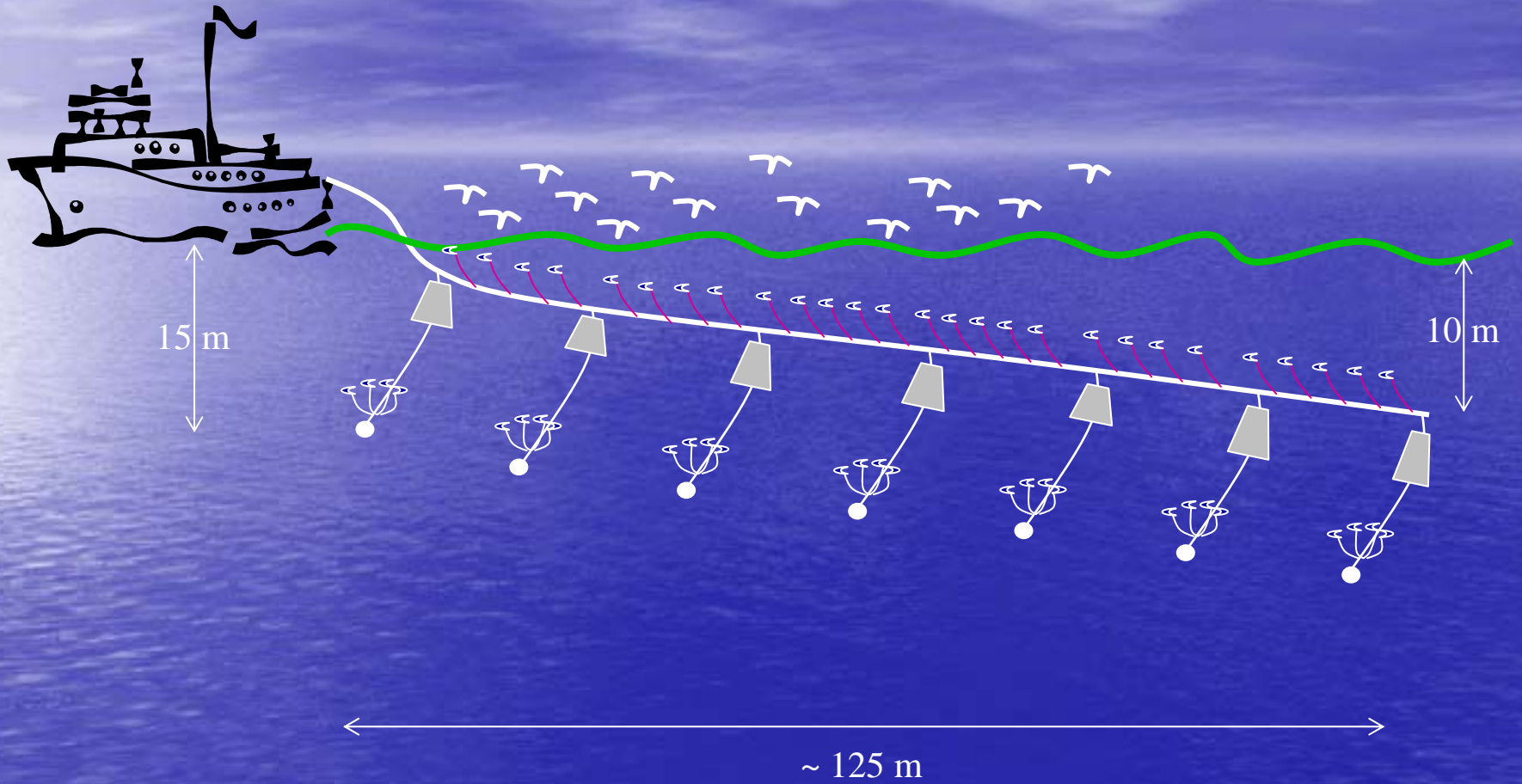
Windsock-shaped netting sleeve



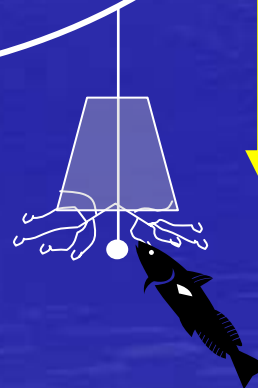
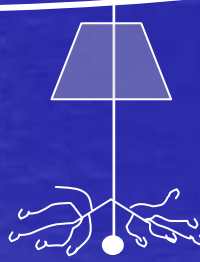
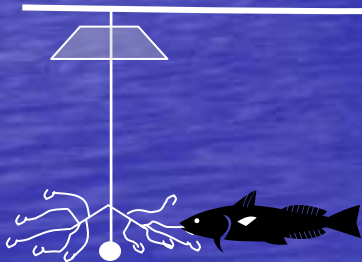
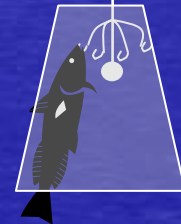
“sleeve net”
Ø ~ 2-3 cm



SETTING

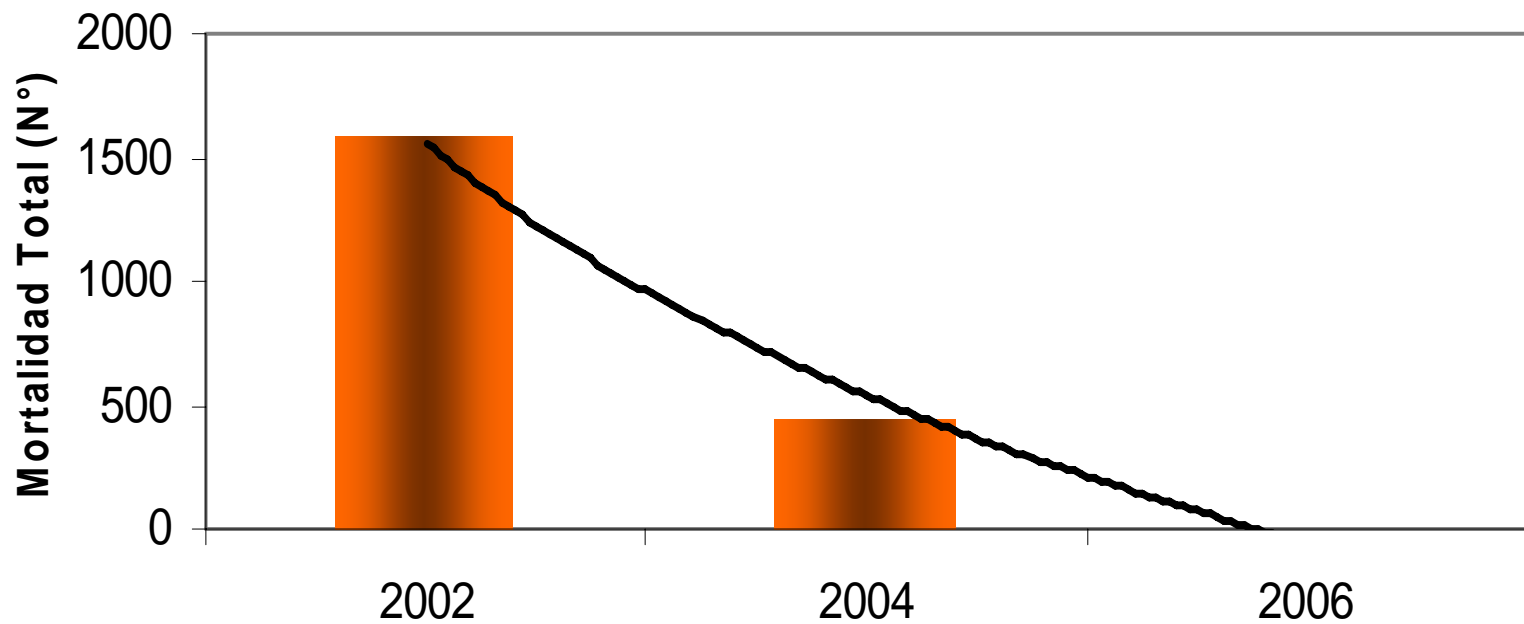


HAULING

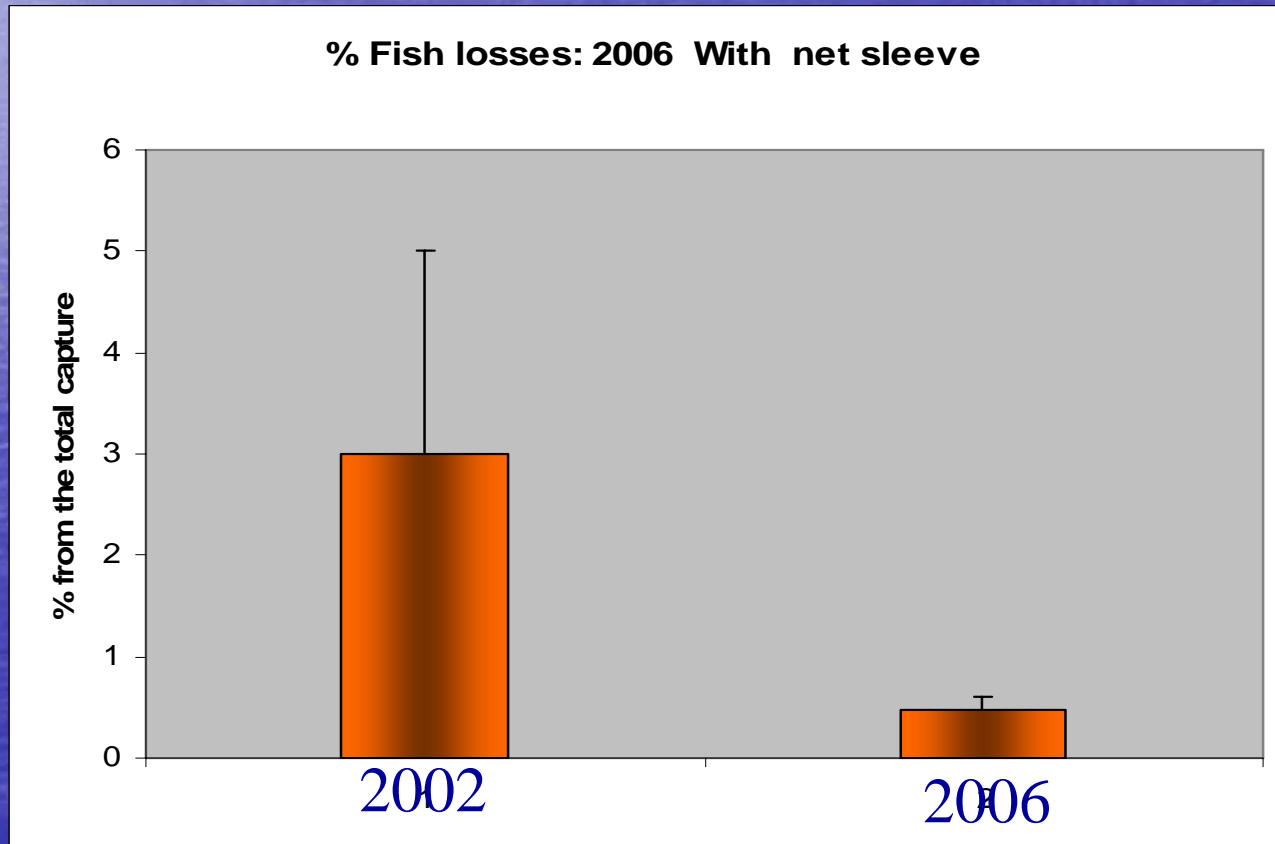


Additional benefits: Not more incidental capture of birds

Mortalidad Incidental En pesquería del Bacalao de Profundidad



Result of the application of the netting sleeve , comparing 2002 (Hucke et al.2005) and present work.





Special thanks to---Ed Melvin (Washington Sea Grant), Rob Suryan (Oregon State University), Greg Balogh (USFWS), Eric Gilman (IUCN), Cleo Small (BirdLife International), Carlos Moreno (Universidad de Austral de Chile), NMFS-AFSC, NMFS-PIRO, & NMFS-PIFSC---for their research, the use of their slides and sharing of information.

