

Preventing Albatross Bycatch in the West Coast Sablefish Longline Fishery



Ed Melvin & Troy Guy

Rob Suryan & Amanda Gladics

Tom Good and Jason Jannot



Slide 1

GAJ3

I updated the OSU logo, and harmonized fonts

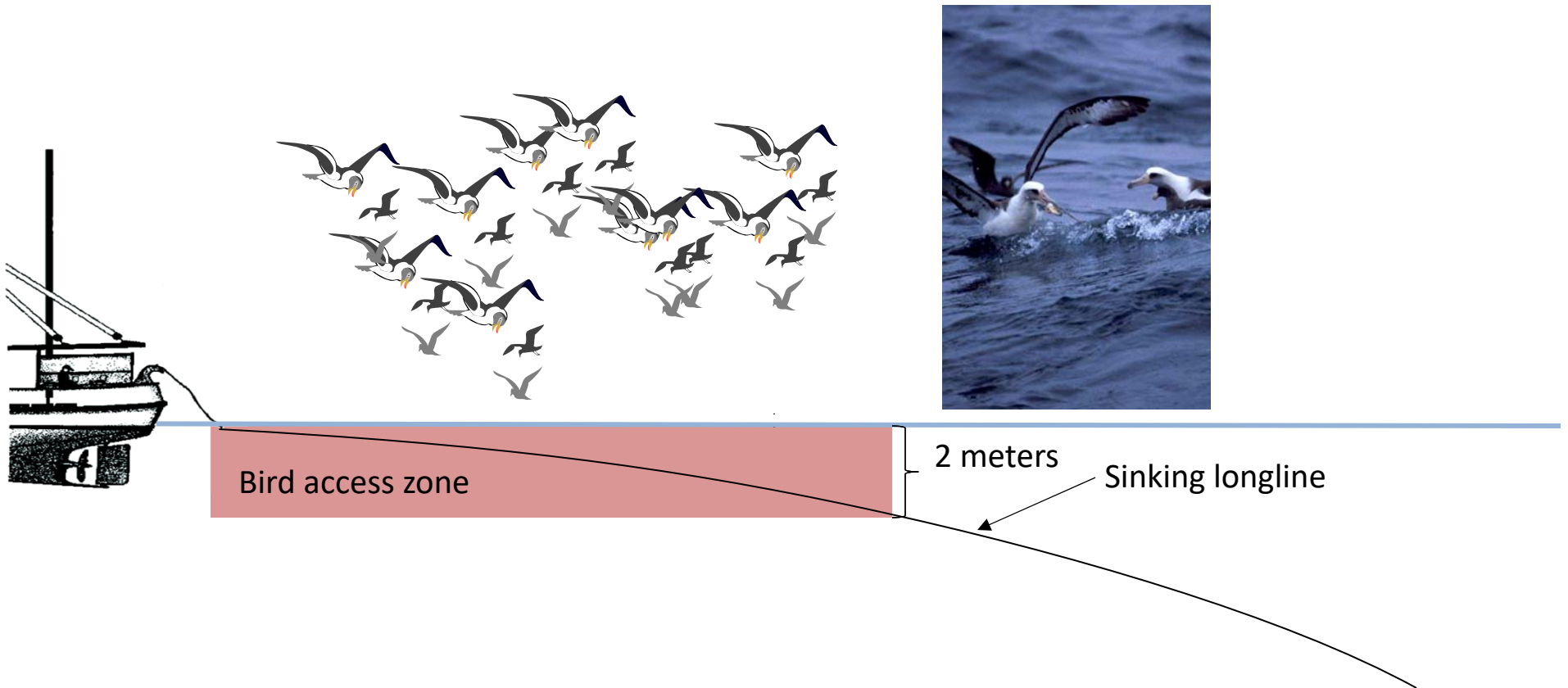
Gladics, Amanda Jean, 11/1/2018

Today: Summary of Two Studies

- About streamer lines
- Work at-sea to determine if Alaska seabird bycatch avoidance requirements a good fit for west coast longline fisheries?
- Retrospective analysis of observer data
 - the effects of night setting and
 - bycatch rates of individual vessels (small vs. large vessels)
- Distribution and fishery overlap of albatrosses along the west coast
 - Relevant to where seabird bycatch regulations are applied

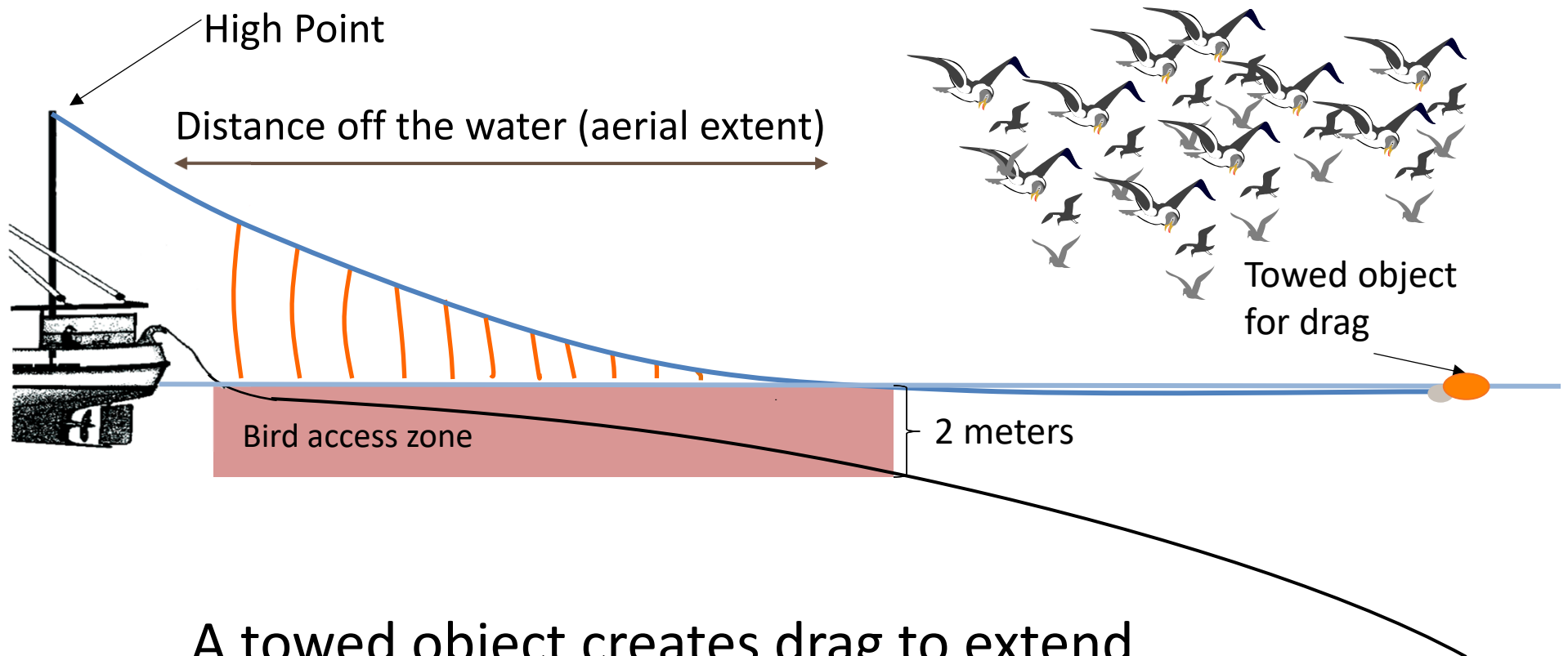
Seabird Bycatch In Longline Fisheries

Albatrosses can access baited hooks until they sink to 2 m



Streamer Lines

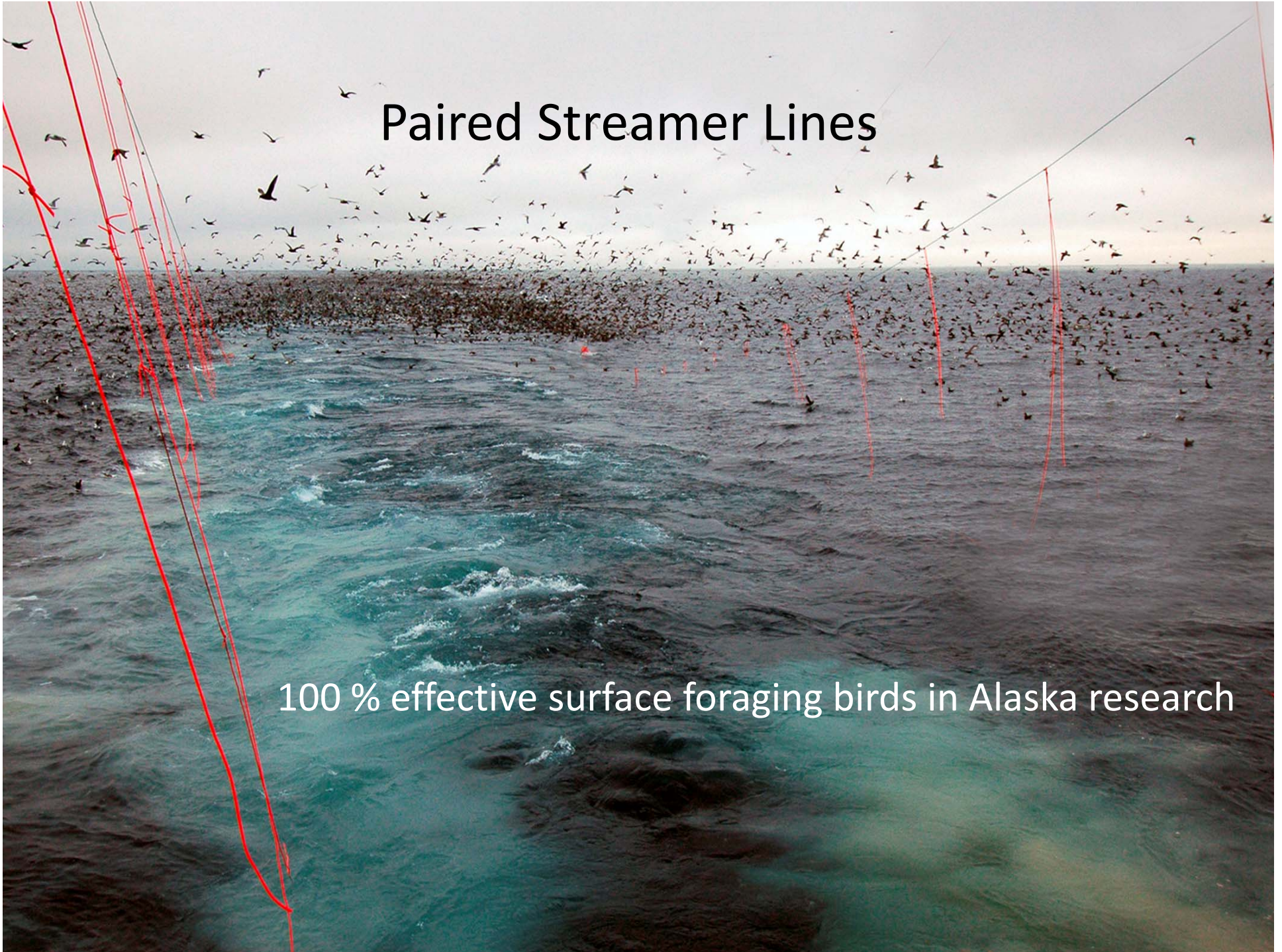
The aerial extent with streamers scares birds from where birds can access baits



A towed object creates drag to extend the streamer line aerial extent

Paired Streamer Lines

100 % effective surface foraging birds in Alaska research



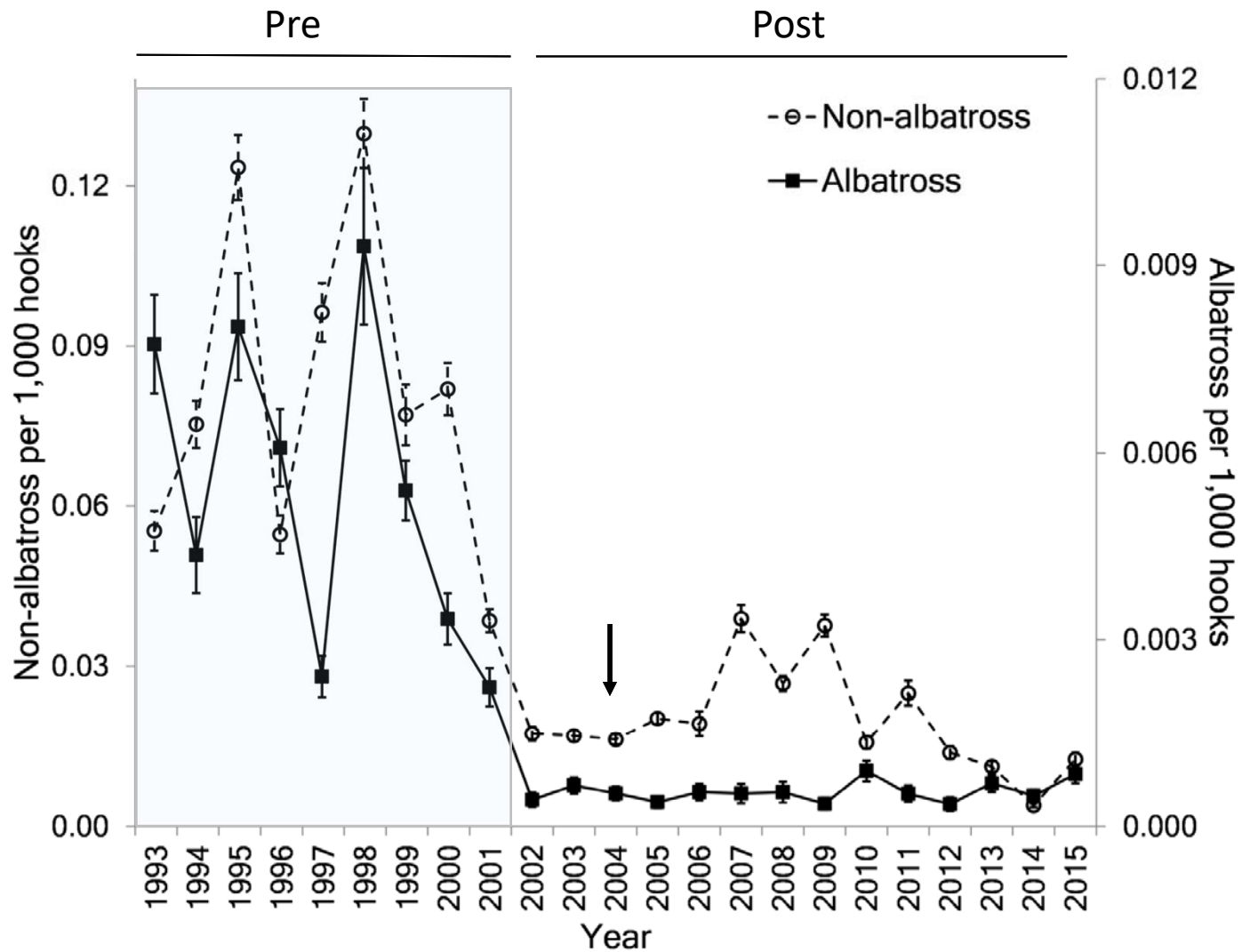
Single Streamer Line



97 % effective surface foraging birds in Alaska research

Streamer Lines Work

Seabird Bycatch Rates Pre and Post
Streamer Line adoption in Alaska Longline Fisheries



Melvin et al. Submitted. Lessons from seabird conservation in Alaska longline fisheries

Fishery-specific solutions to seabird bycatch in the U.S. West Coast sablefish fishery

Fisheries Research 196 (2017) 85–95



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Objectives

- Are Alaska-style streamer lines effective in the West Coast sablefish fishery? GAJ11
 - Sink rates to estimate the bait access distance
 - Albatross attacks on hooks (proxy for bycatch)
- Are there practical alternatives to SLs?
- Worked at-sea with 7 vessels from the LE endorsed fleet from 2010 to 2014
 - 3 vessels $\geq$ 55 ft
 - 4 vessels $<$ 55 ft



Photo by Amanda Gladics

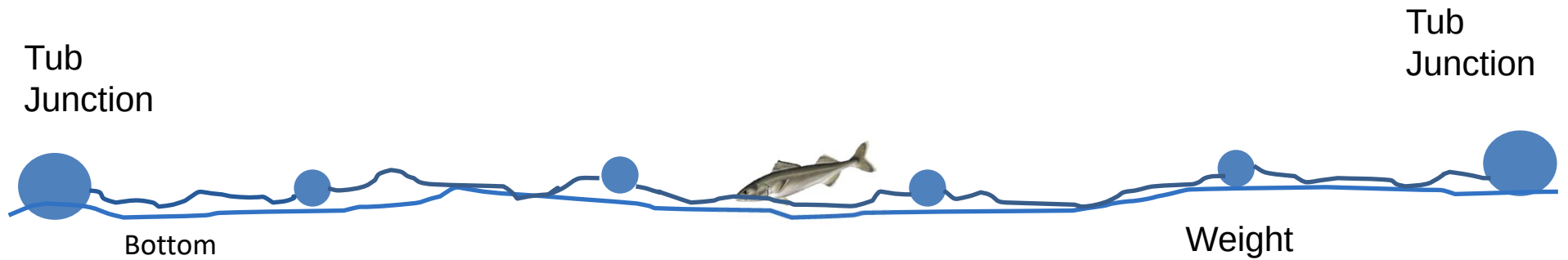
Slide 9

GAJ11

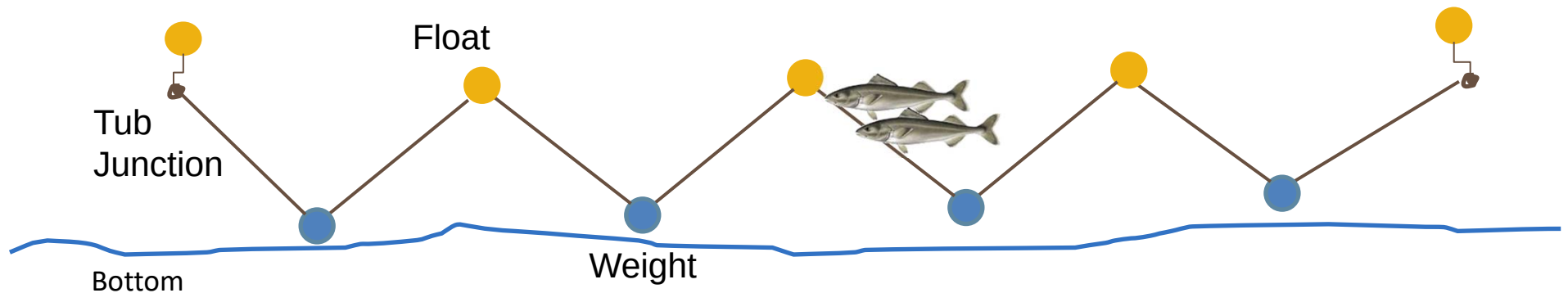
I just re-jiggered this to get bigger font. Take it or leave it.

Gladics, Amanda Jean, 11/1/2018

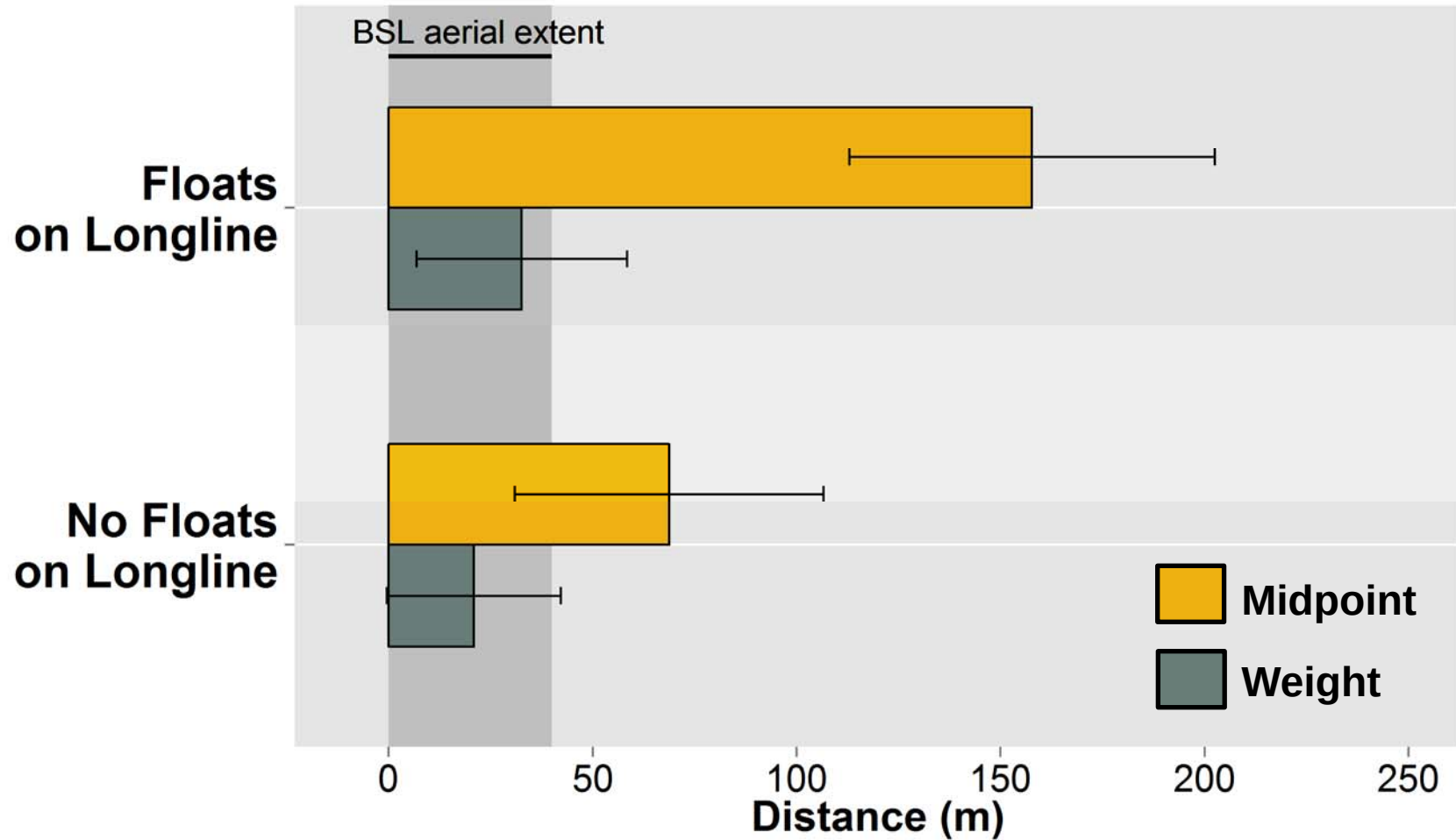
Longline without Floats



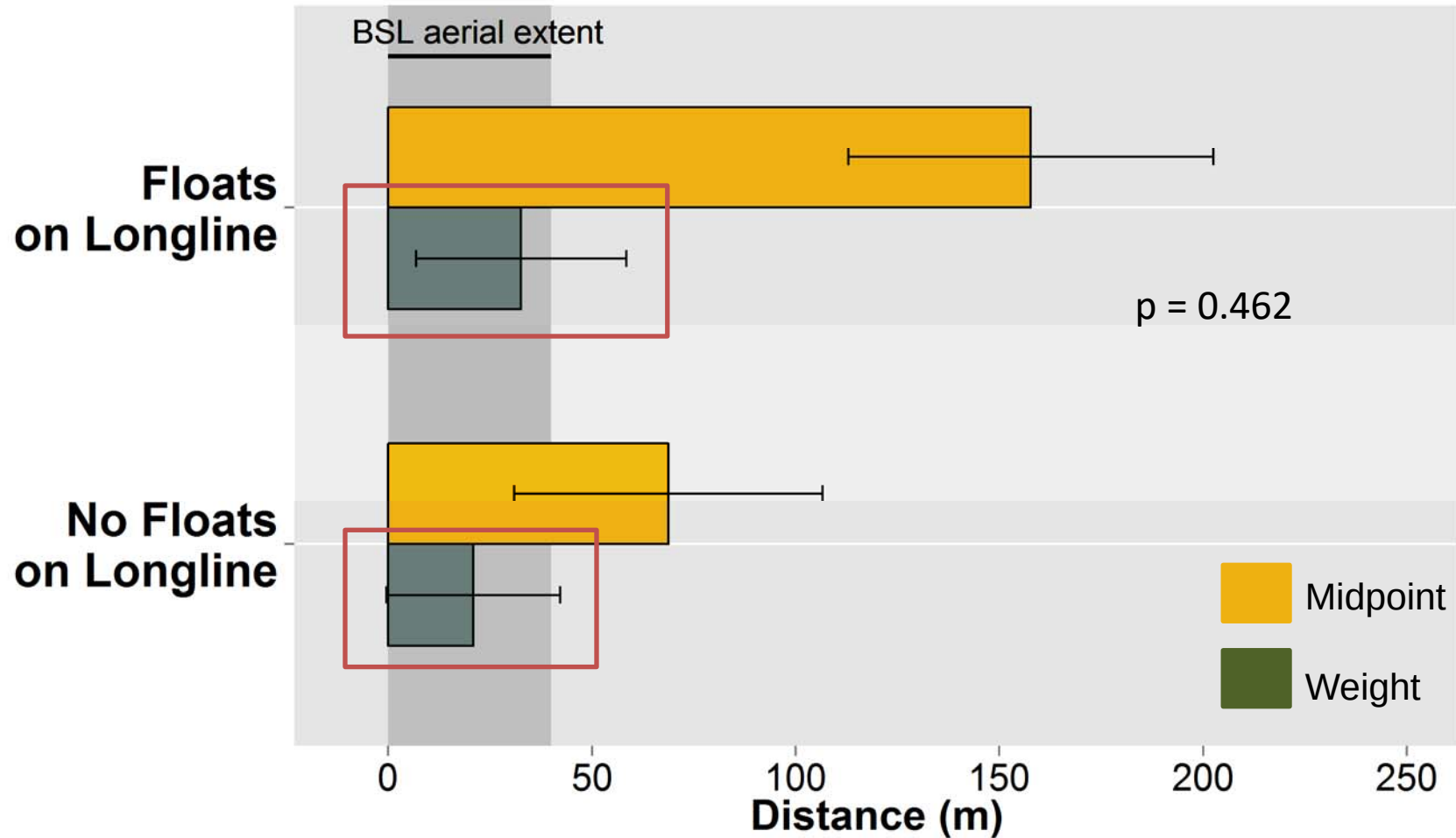
Longline with Floats



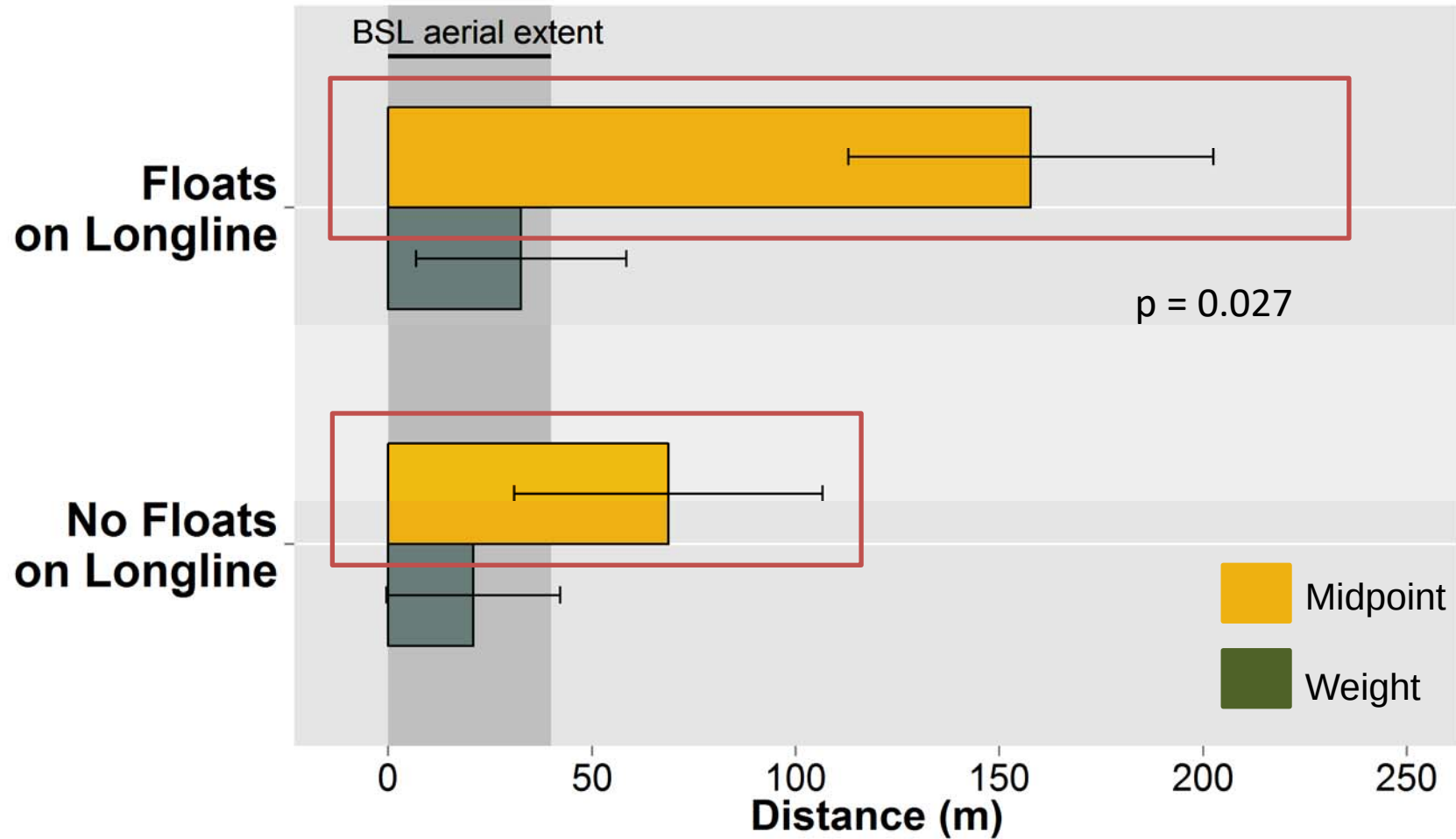
Distance astern that albatrosses can access gear



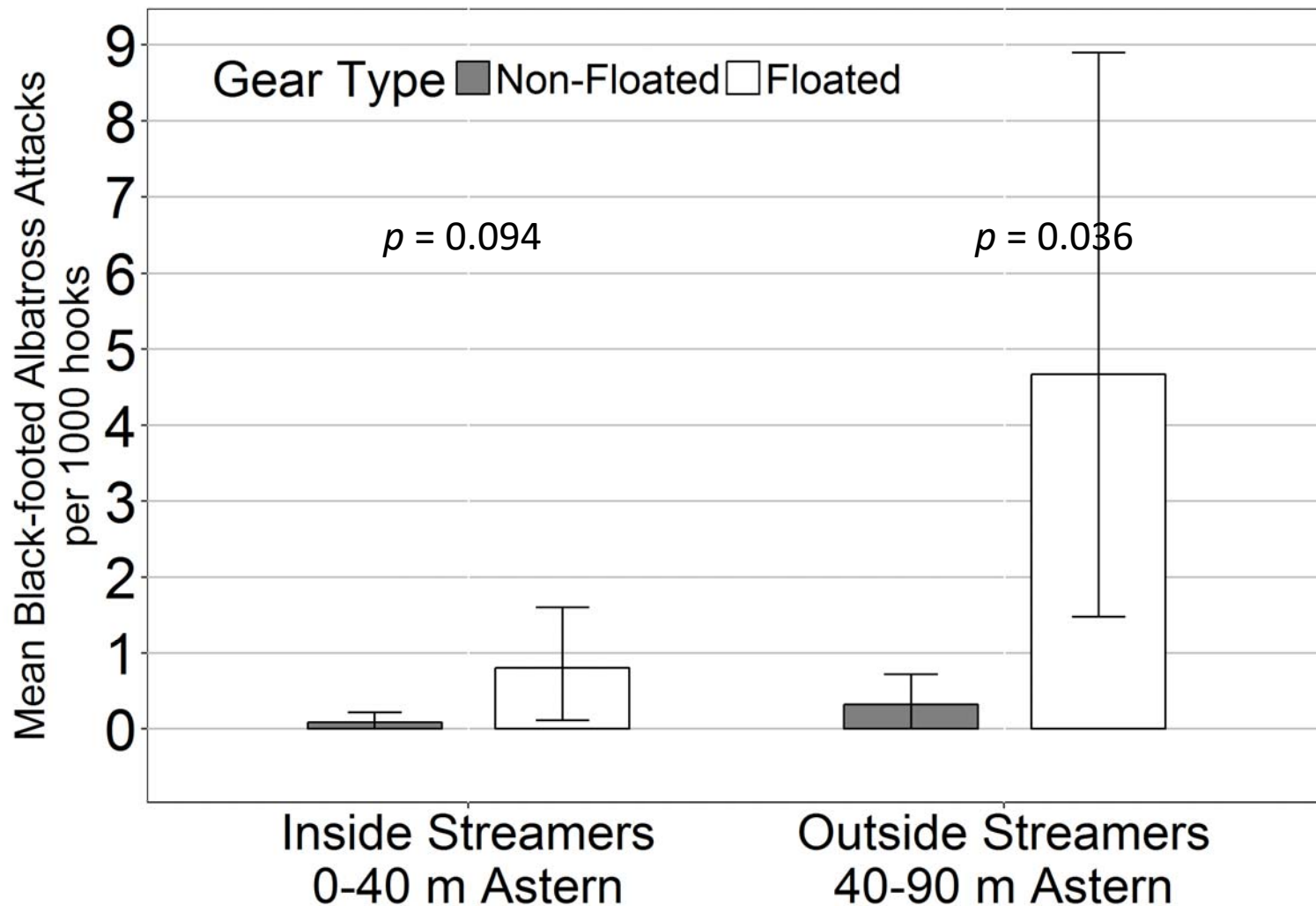
No difference between floated and non-floated longline at weight



Albatrosses Can Access Floating Gear Twice as Far Astern



Black-footed Albatross Attacked Floated Longlines at significantly higher rates overall ($p < 0.001$)



Retrospective Analysis of Observer Data (2002 – 2017)

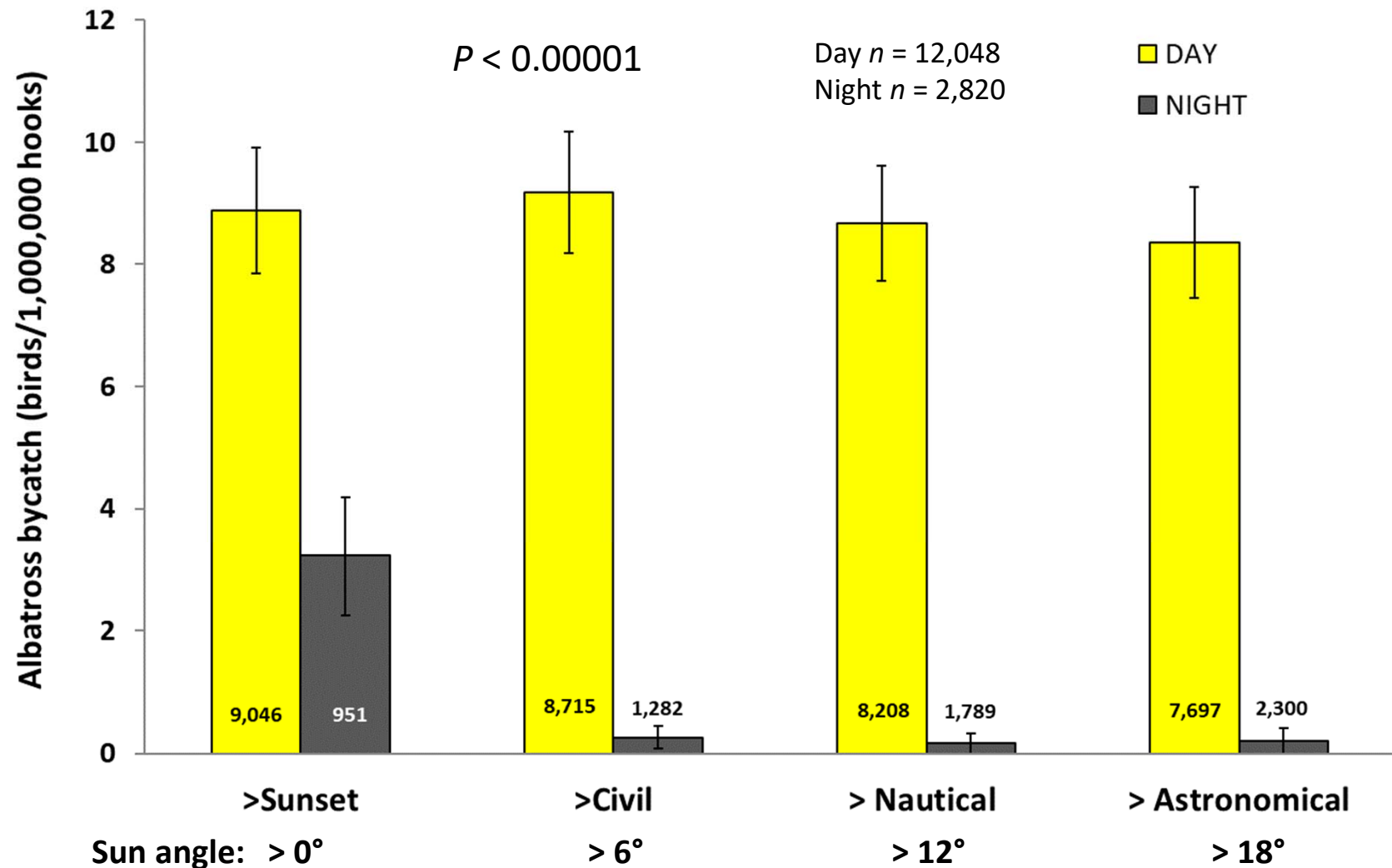
Fisheries Sectors

- Limited entry sablefish
- Limited entry sablefish daily landing limits
- Open access sablefish
- Catch shares sablefish (trawl leased)
- Nearshore H&L (non-sablefish)

Analyses of bycatch rates:

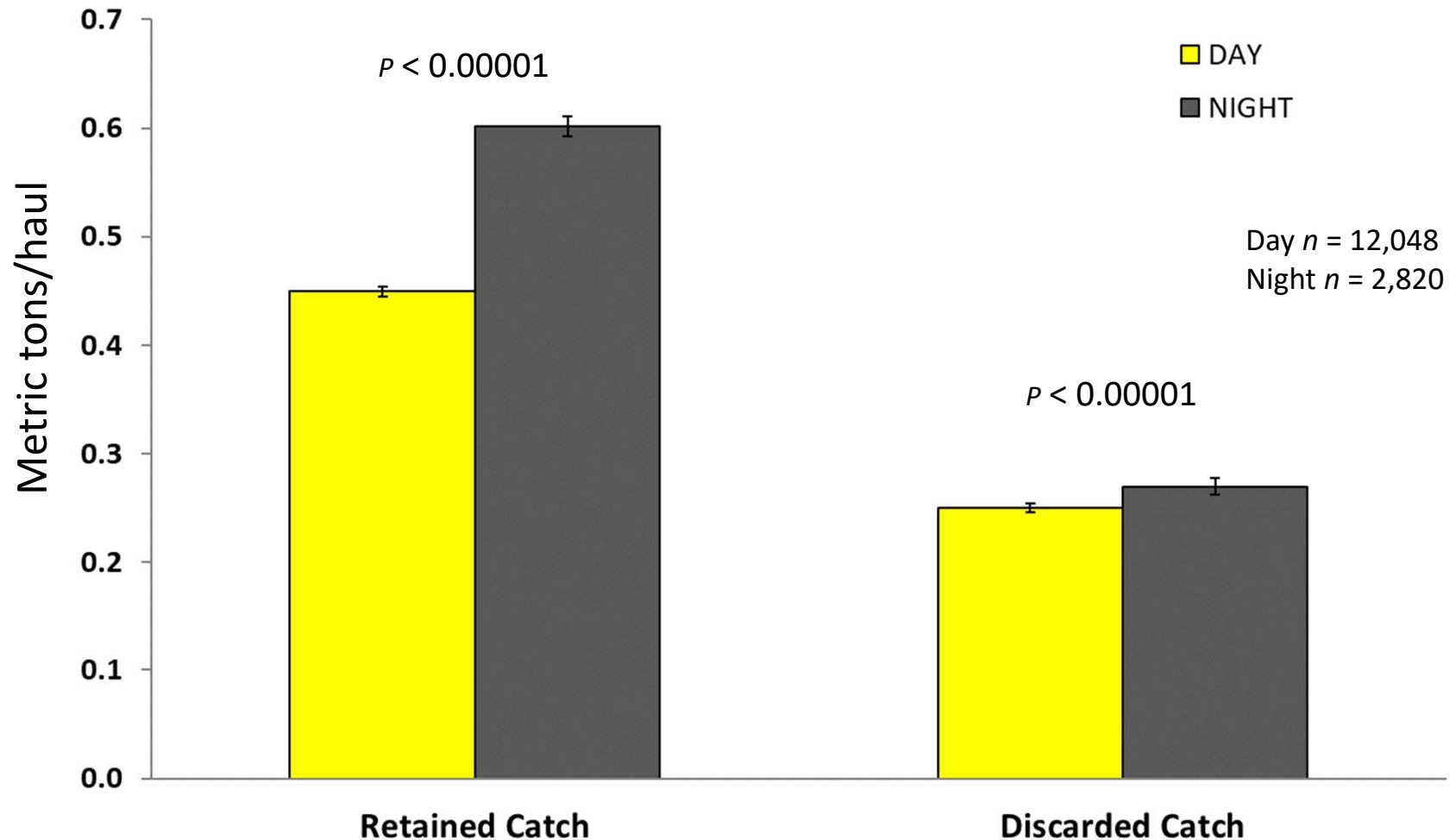
- night vs. day sets
 - Definition: when first hook was deployed
 - Contrast four definitions of night
- individual vessels/large (≥ 55 ft) versus small (< 55 ft)

Bycatch rates significantly higher during the day than at night and 30 times lower after civil twilight



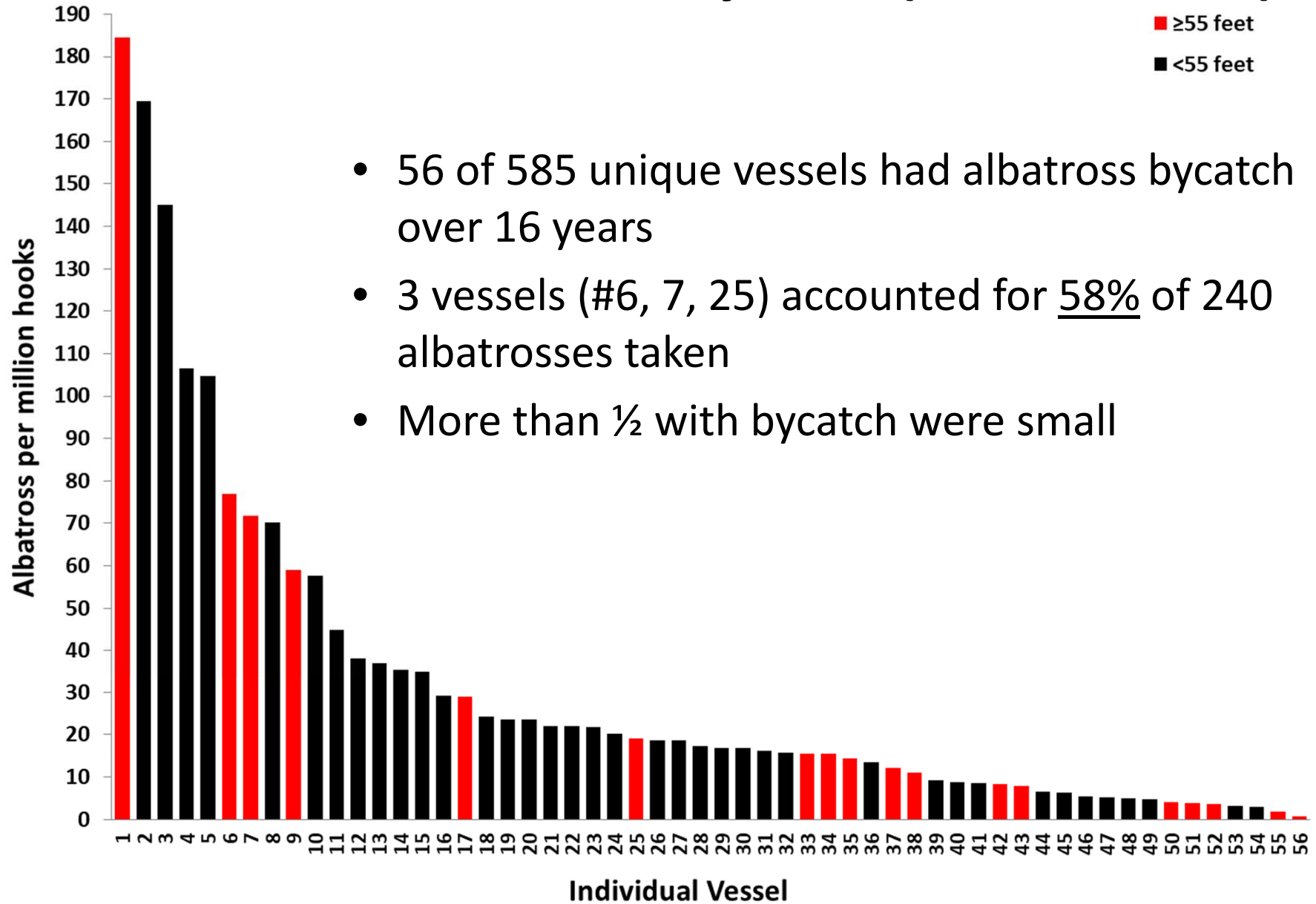
Source: Tom Good and Jason Jannot, NW Fisheries Science Center

Fish catch rates significantly higher for sets made at night : retained catch 40% higher at night



Source: Tom Good and Jason Jannot, NW Fisheries Science Center

Individual Vessel Bycatch (2002 to 2017)

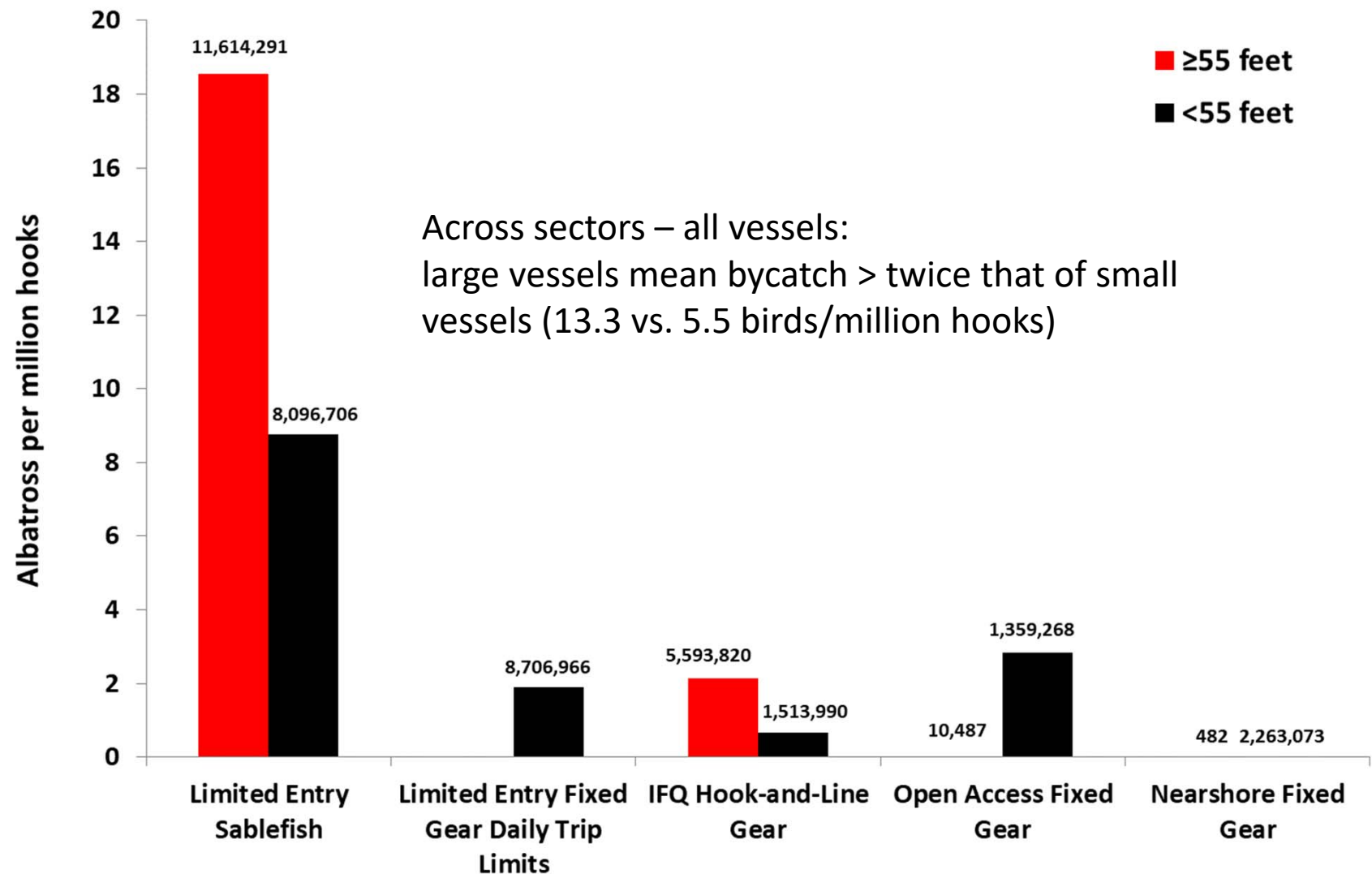


- 56 of 585 unique vessels had albatross bycatch over 16 years
- 3 vessels (#6, 7, 25) accounted for 58% of 240 albatrosses taken
- More than ½ with bycatch were small

Source: Tom Good and Jason Jannot, NW Fisheries Science Center

Mean bycatch rates were highest in the LE sablefish Sec

No albatross bycatch in the nearshore sector



Source: Tom Goo & Jason Jannot, NW Fisheries Science Center

Mean Albatross Bycatch in West Coast Hook and Line Fisheries by Sector (2002 – 2016)

Fishery	Black-footed albatross		Laysan albatross		Short-tailed albatross	
	Mean	Range	Mean	Range	Mean	Range
LE Sablefish	71.0	37.2 to 98.7	0.41	0.3 to 2.5	0.23	0.2 to 1.3
LE Daily Trip Limits	28.0	10.6 to 67.0	0	0	0	—#
Open Access	7.6	3.5 to 14.7	0	0	0	—#
Catch Shares	2.1	0 to 4.9	0	0	0	—#
Nearshore	0	—#	0	—#	0	—#
Hook and line overall	106.9	55.8 to 161.3	0.41	0.3 to 2.5	0.23	0.2 to 1.3

J.E. Jannot, T. P. Good, K. Somers, V. Tuttle, J. McVeigh. 2018. Seabird Mortality in U.S. West Coast Groundfish Fisheries 2002-2016.

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GAJ1 might consider putting a little bit of space or a line between the row reporting Hook and Line overall and the rows reporting sub-sectors.

Gladics, Amanda Jean, 11/1/2018

GAJ2 Alternately, you could put hook and line overall as the last row - since it's sort of the 'total'

Gladics, Amanda Jean, 11/1/2018

Part 1 Summary

- Alaska streamer line regulations:
 - highly likely to protect longlines without floats,
 - but not those with floats.
- Night setting (defined by civil twilight):
 - an alternative to streamer lines,
 - especially for vessels using GAJ13 coated longlines.
- Most vessels (90%) did not catch albatrosses
- Three vessels accounted for most of the albatrosses caught
 - opportunity for strategic outreach
- No albatross bycatch in nearshore (non-sablefish) sector

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GAJ13

"especially for vessels using floated longlines"?

Gladics, Amanda Jean, 11/1/2018

Overlap Of North Pacific Albatrosses With The U.S. West Coast Groundfish And Shrimp Fisheries

2013 *Fisheries Research* 147: 222-234.



Oregon State University
Hatfield



Troy J. Guy*¹, Sarah L. Jennings¹, Robert M. Suryan², Edward F. Melvin¹, Marlene A. Bellman³ and 15 co-authors

¹Washington Sea Grant, Seattle, WA

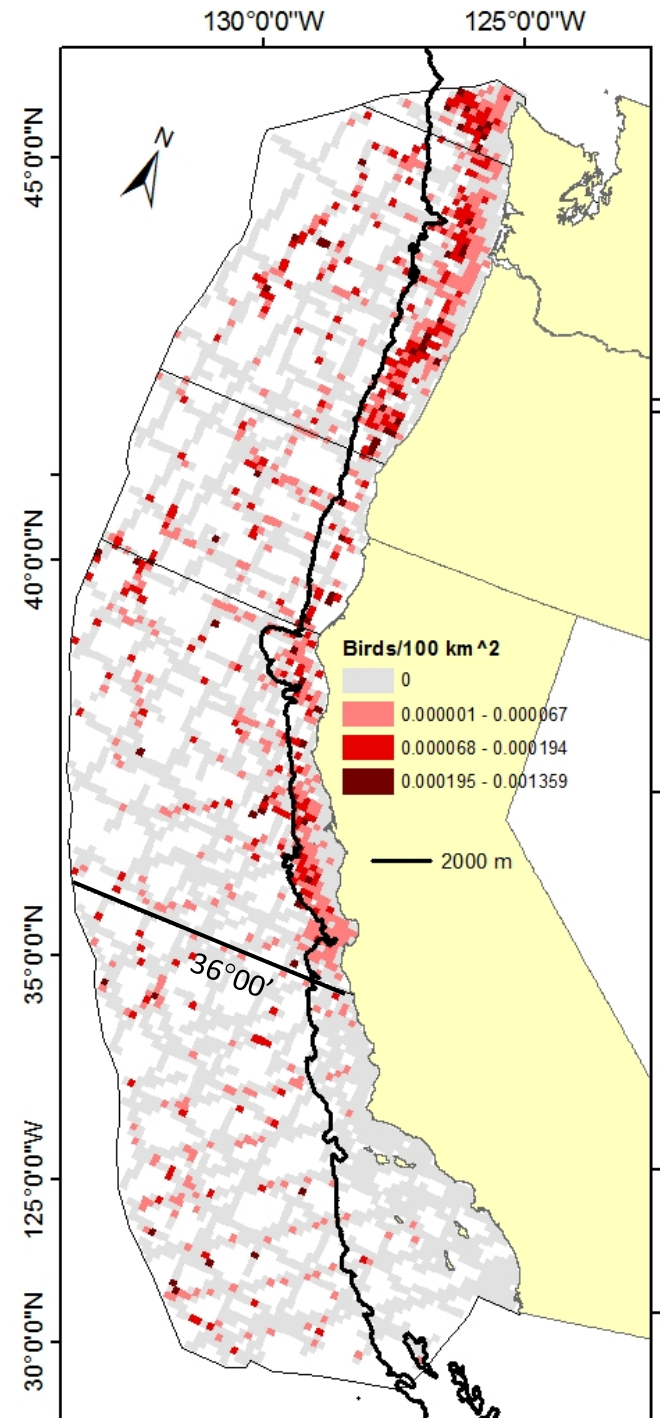
²Oregon State University, Hatfield Marine Science Center, Newport, OR

³Northwest Fisheries Science Center, National Marine Fisheries Service, Seattle, WA

Map of Black-footed albatross

At-Sea Surveys (2005 -2008)

- Most abundant albatross
 - 4075 recorded in 4 years
- Most (99%) north of 36° N latitude
- Most (95%) inside 2,000 m



Map of Laysan and Short-tailed albatross

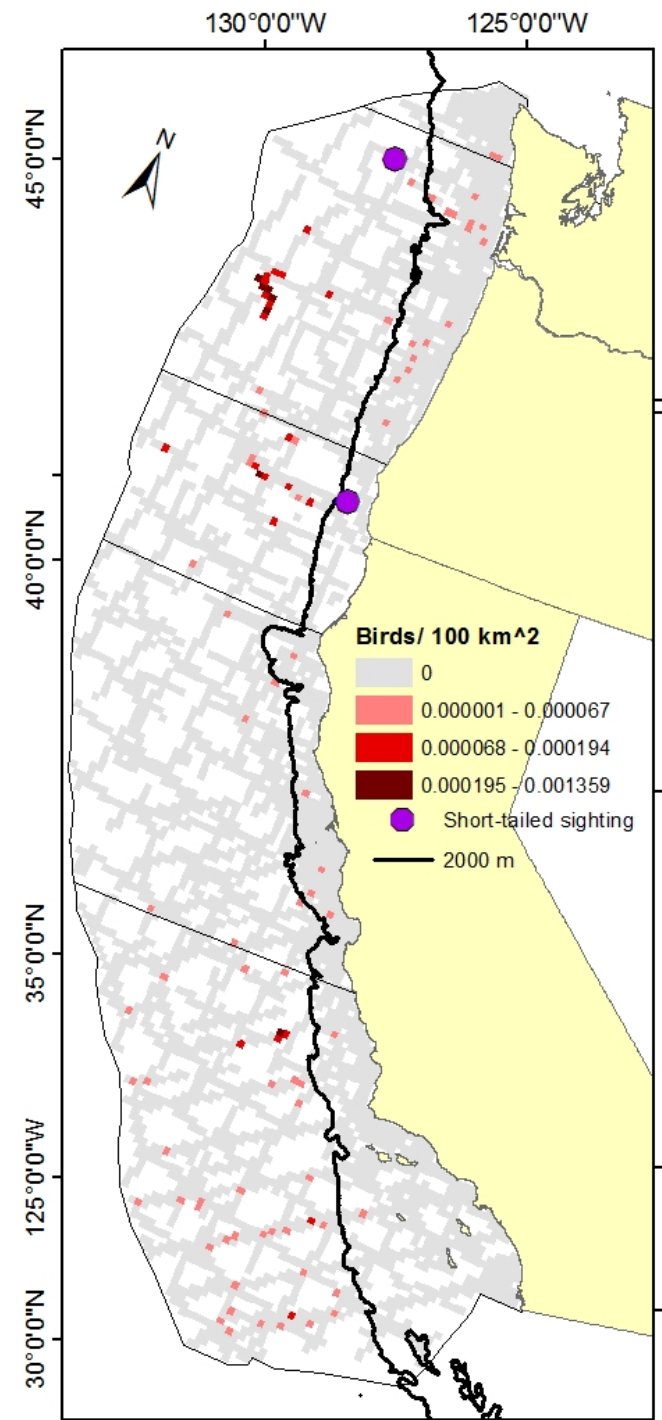
At-Sea Surveys (2005 -2008)

Laysan uncommon

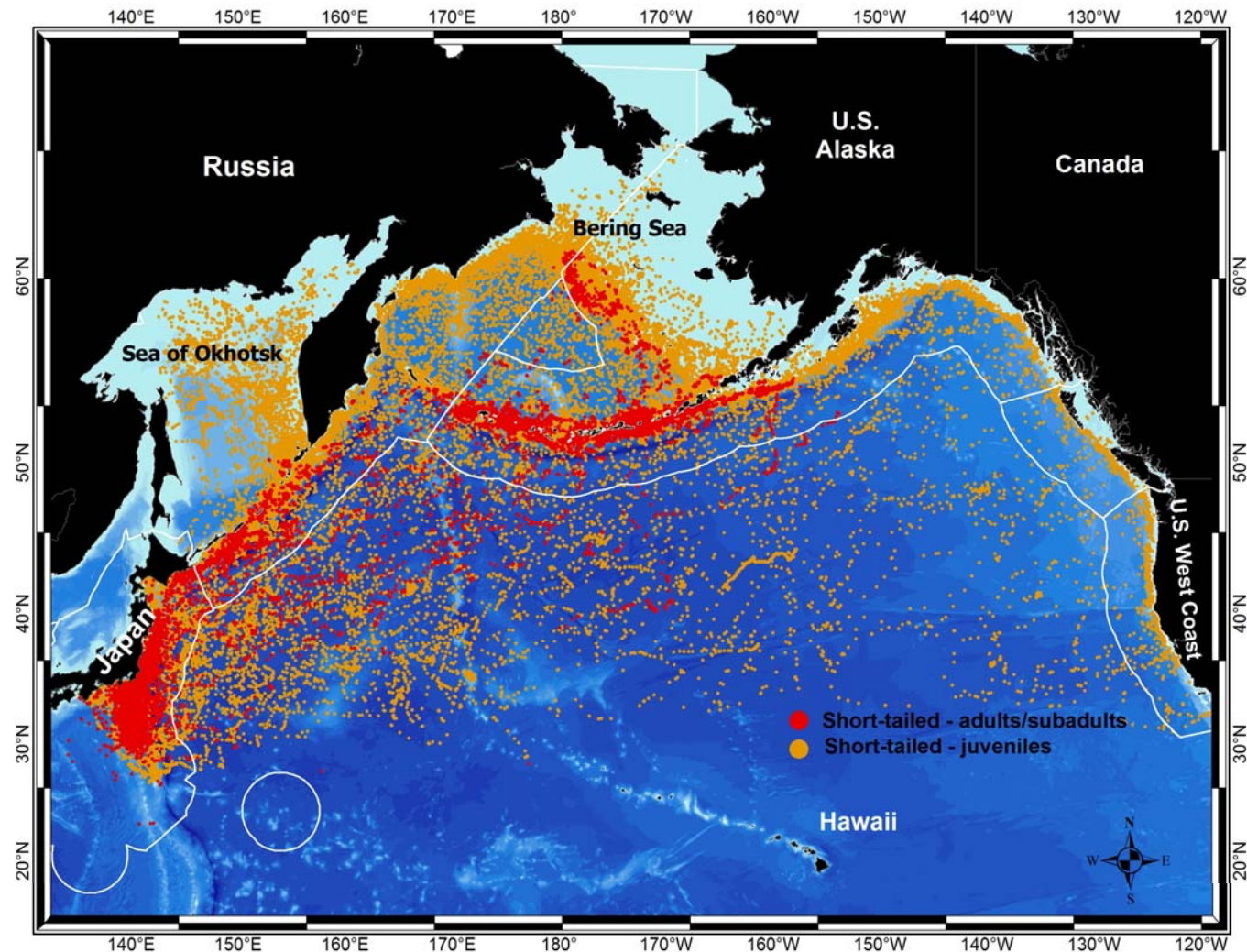
- 184 recorded
 - Most (75%) outside of 2000 m
 - Throughout EEZ

Short-tailed rare

- 2 recorded in four years



GPS tracking Locations of 99 Short-tailed Albatross (2002-2003; 2006-2014)



Robert M. Suryan and Kathy J. Kuletz. 2018. *Distribution, Habitat Use, and Conservation of Albatrosses in Alaska*. Iden 72:156-164.

Map of Satellite Tracked Albatrosses (1998-2010)

(12 BFAL, 8 STAL, 42 LAAL)

Map of 50% kernel density distributions

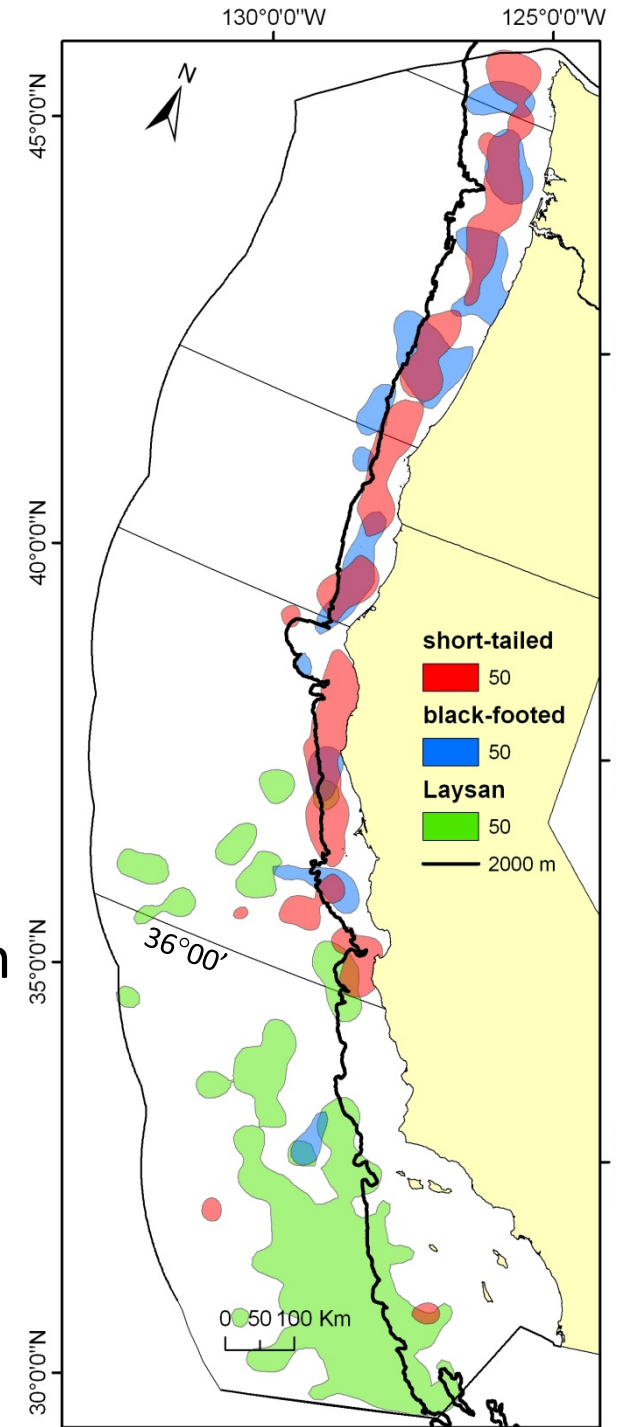
Most black-footed and short-tailed albatrosses

- Co-occur North of 36°
- Co-occur along the shelf break

Use black-footed albatross as a surrogate for short-tailed albatross in overlap/calculation

Most Laysan

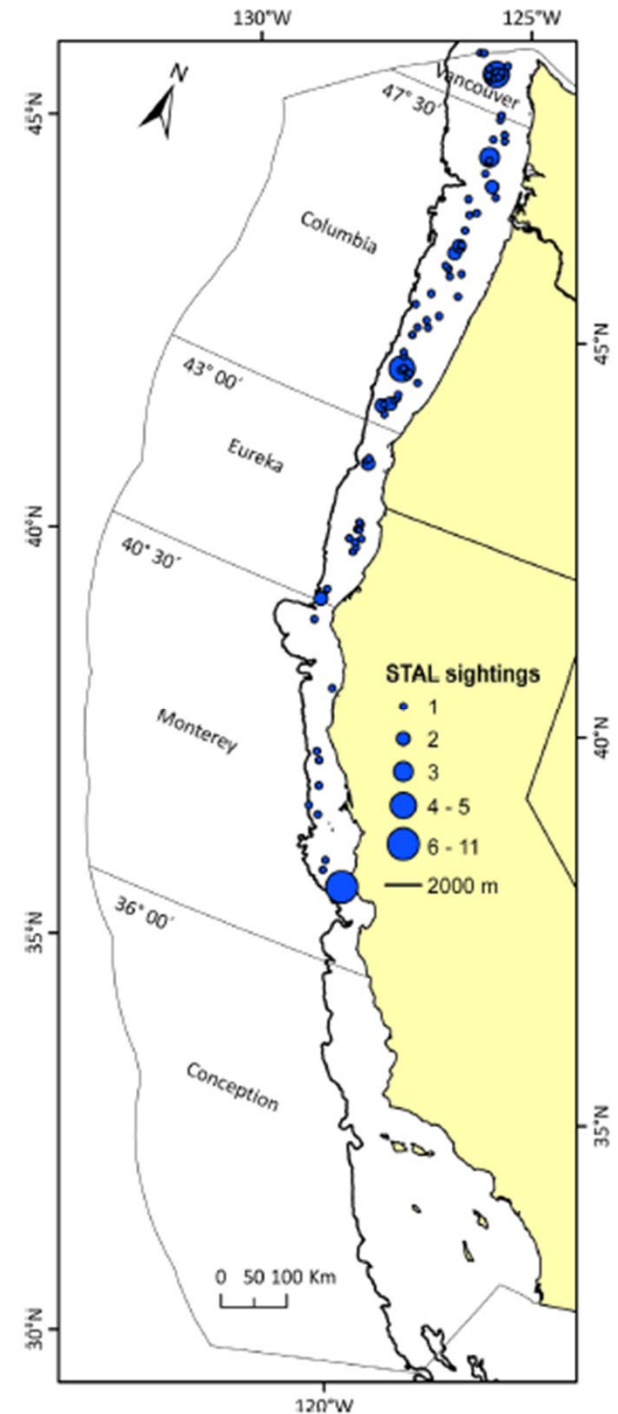
- South of 36°
- Outside of the shelf break



Short-tailed Albatross Opportunistic Sightings By Observers (2002-2010)

- 114 sighting over 8 years
- Sightings in every month of the year
- All North of 36° N latitude
- 2011 – 2018 Update (Jannot, unpublished data)
• One South of 36° N latitude

GAJ10



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GAJ8 Do we have any info about the seasonality of these opportunistic sightings?

Gladics, Amanda Jean, 11/1/2018

GAJ9 Answered my own question from an early draft of Troy's paper - STAL have been sighted by fisheries observers in every month of the year. Probably worth mentioning, or having in your back pocket.

Gladics, Amanda Jean, 11/1/2018

GAJ10 The way this was phrased originally seemed contradictory to the point above - but I think you mean this as an update. Maybe revise to stay consistent w/ the way the above point is phrased and clarify that this is data that is newer than the Guy et al. paper

Gladics, Amanda Jean, 11/1/2018

Overlap – Longline

(albatross density x fisheries effort)

Red above average, yellow below average

- Greatest overlap with the sablefish fishery is along the shelf break
- Little overlap with the near-shore longline fishery

Management Area	Longline (10,000 bird hooks/km2)					
	Sablefish longline			Near-shore longline		
	Shelf	Break	Slope	Shelf	Break	Slope
Vancouver	99.43	1575.01	2.90			
Columbia	46.60	2118.77	11.64	48.78		
Eureka	0.23	504.06	0.00	55.37		
Monterey	0.62	261.28	53.83	55.11		
Conception		20.80	0.02			

Part 2 Summary

- Black-footed common, Laysan uncommon, and short-tailed rare
- Black-footed and short-tailed co-occur primarily on the shelf break North of 36° N latitude
- All Opportunistic sighting of short-tailed albatross N. of 36° N
- Highest overlap with the sablefish hook and line fishery over the shelf break North of 36° N
- Minimal overlap with the nearshore hook and line fishery.
- Evidence to support consideration of exemptions:
 - N of 36 N latitude
 - Nearshore sector

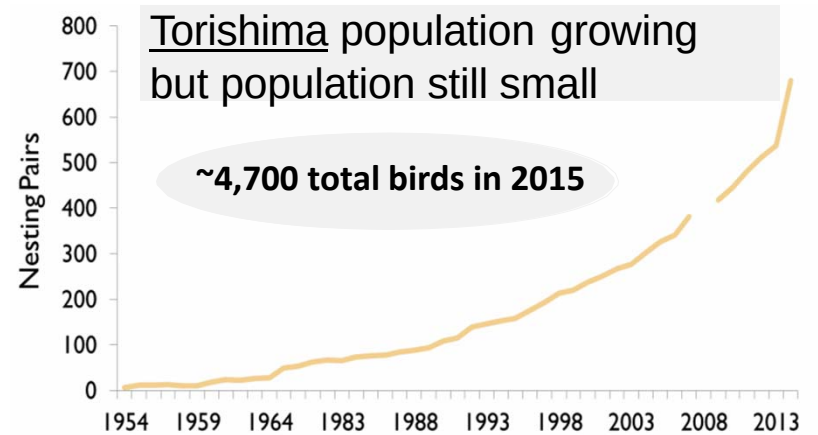
A photograph of a sunset over the ocean. The sun is a bright, glowing orb on the horizon, casting a long, shimmering reflection on the dark, choppy water. The sky is filled with soft, orange and yellow clouds. A single bird is captured in mid-flight, its wings spread wide, silhouetted against the bright sky. The overall mood is serene and contemplative.

Questions / Discussion ?

Short-tailed Albatross Recovery Plan

Goals for De-listing

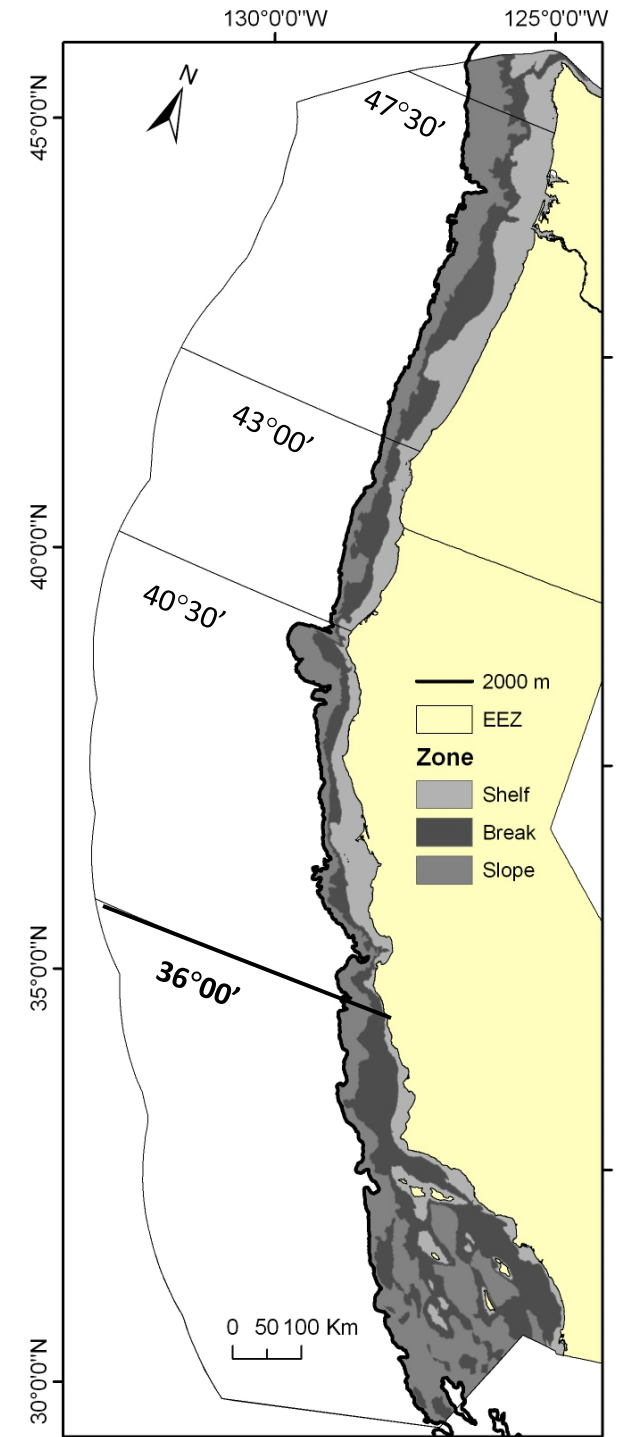
- Total breeding population
 - Goal projected to be reached in 2017
- Population growth rate
 - Recovery goal met now
- Colonies other than Torishima
 - Goal met for the Senkaku Islands?
 - Under political dispute
 - The last albatross count was in 2002
- New Colony
 - Projected to reach goals by 2052 without immigration
 - 3 successful breeding pairs recently established through translocation efforts



Short-tailed albatross chick, Mukojima, 2016

Study Area – West Coast

- U.S. EEZ off CA, OR, and WA
- 15 Analysis Zones
 - 5 Management Areas (INPFC)
 - Vancouver = Canada - $47^{\circ}30'$
 - Columbia = $47^{\circ}30'$ - $43^{\circ}00'$
 - Eureka = $43^{\circ}00'$ - $40^{\circ}30'$
 - Monterey = $40^{\circ}30'$ - $36^{\circ}00'$
 - Conception = $36^{\circ}00'$ - Mexico
 - 3 Bathymetric Domains
 - Shelf = $<200\text{m}$
 - Break = $200\text{m} - 1000\text{m}$
 - Slope = $1000\text{m} - 2000\text{m}$





Thank you

Englund Marine

LFSI

FVOA

WCGOP

NOAA Fisheries Staff

NOAA Northwest Fishery Science Center

David and Lucille Packard Foundation

National Fish and Wildlife Foundation

NOAA Northwest Region

Alrita

Augustine

Blackhawk

Celtic Aire

Eagle III

High Hopes

Top Gun

Grizzly

Pacific Hustler

Photo by Amanda Gladics

