Science, Service, Stewardship

Groundfish Science Report

Michelle McClure
Northwest Fisheries Science Center

September 09, 2018

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NWFSC NORTHWEST FISHERIES SCIENCE CENTER

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Overview

- Total Mortality and Bycatch Reports
  - Groundfish
  - Halibut
  - Seabirds (+ bonus workshop report)
  - Salmonids
- Trawl openings and closings
- Hake Summer Cruise Activities
- Science Updates

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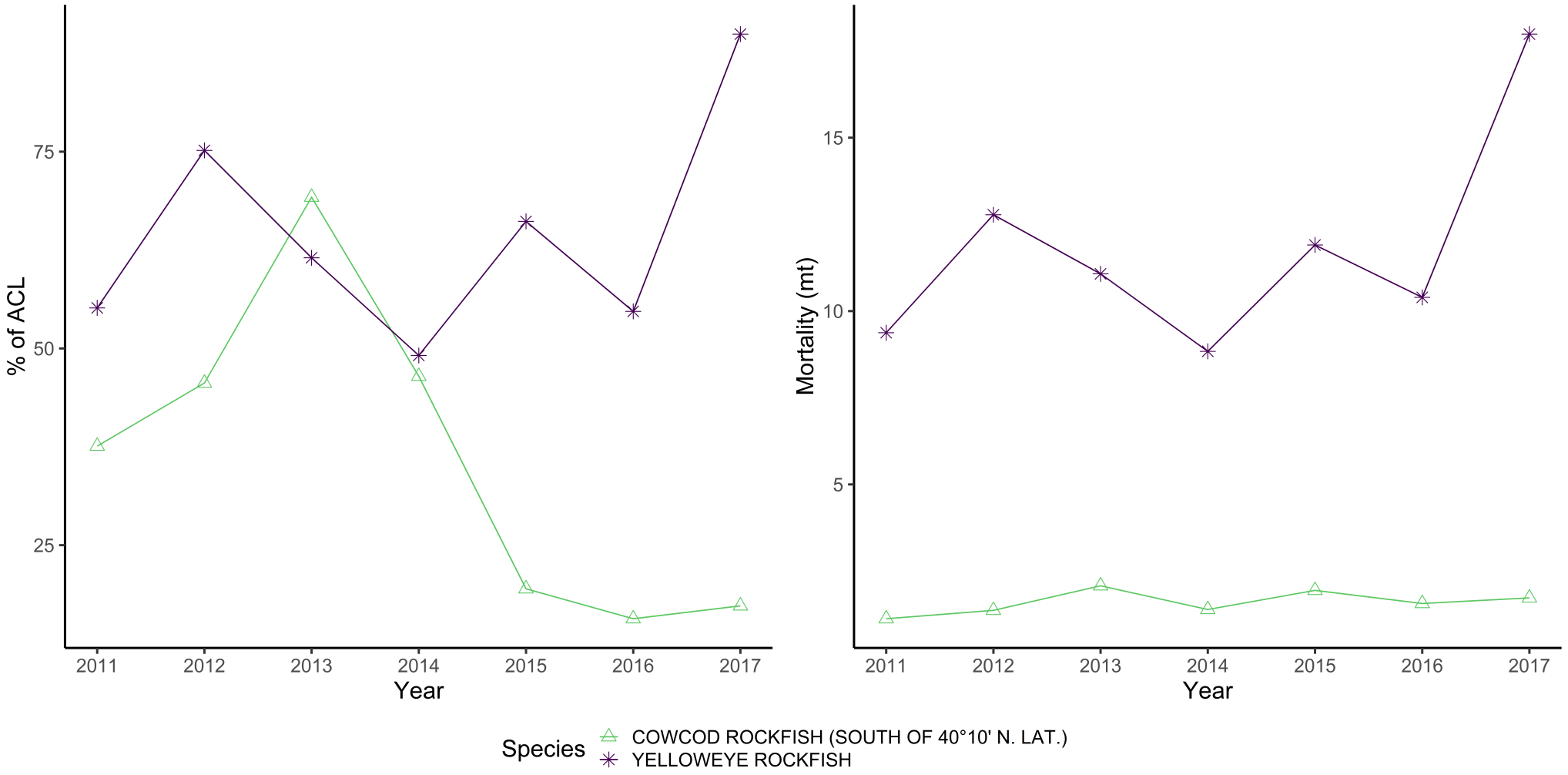
Estimated Discard and Catch of Groundfish Species in the 2017 US West Coast Fisheries

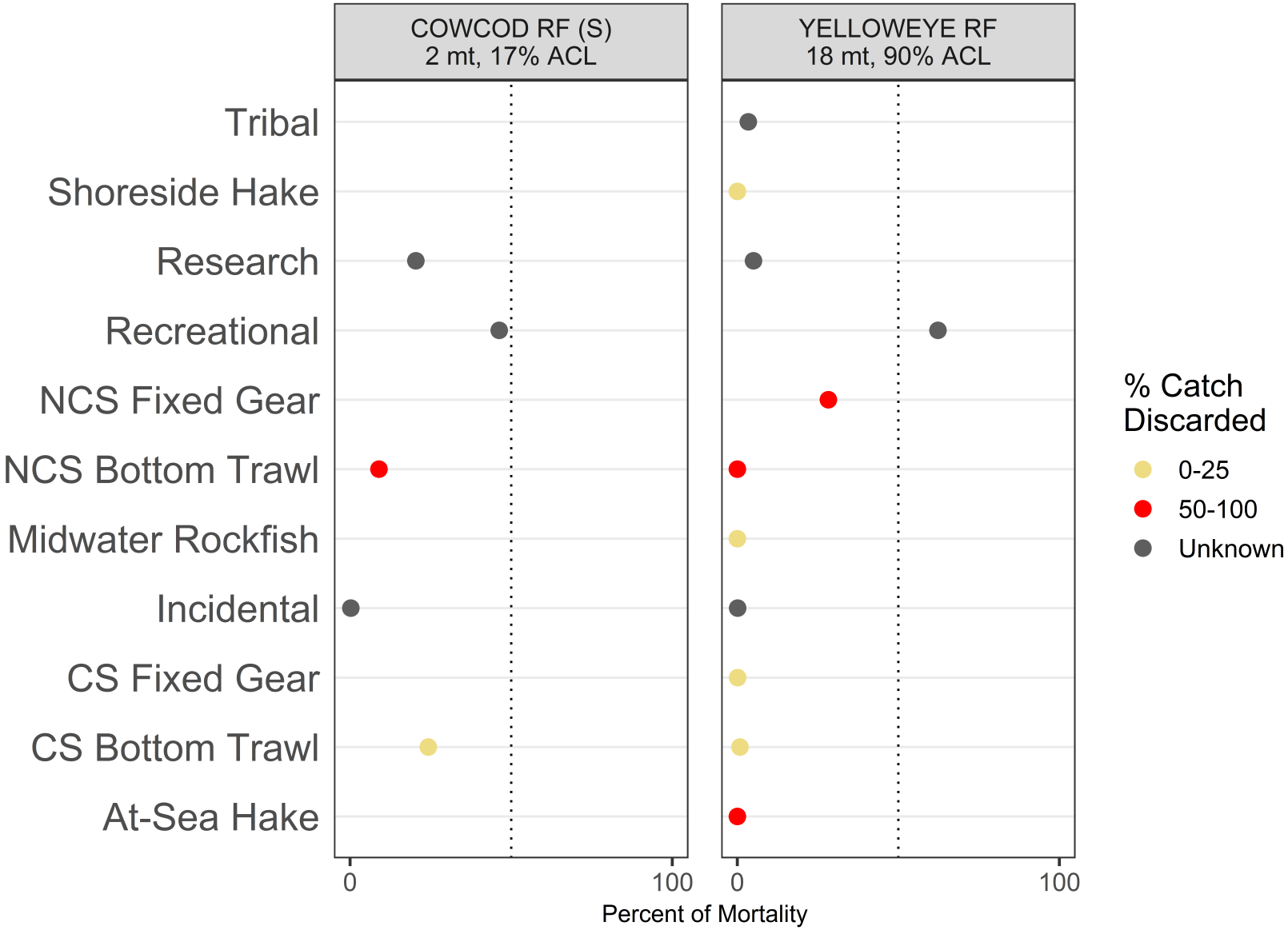
Kayleigh A. Somers, Jason Jannot, Kate Richerson,
Neil Riley, Vanessa Tuttle, Jon McVeigh

September 2018

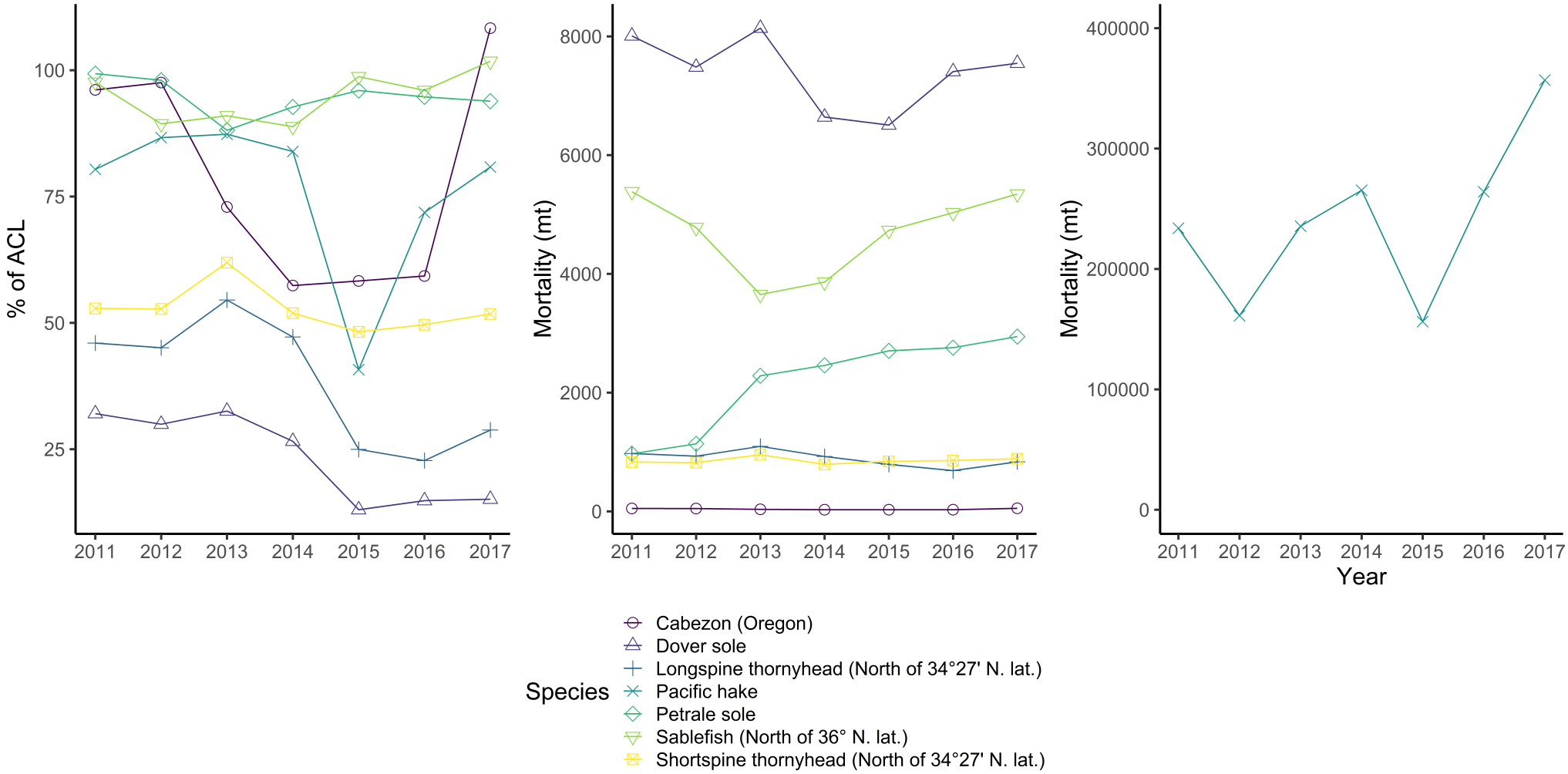
HG Attainment of Rebuilding Species



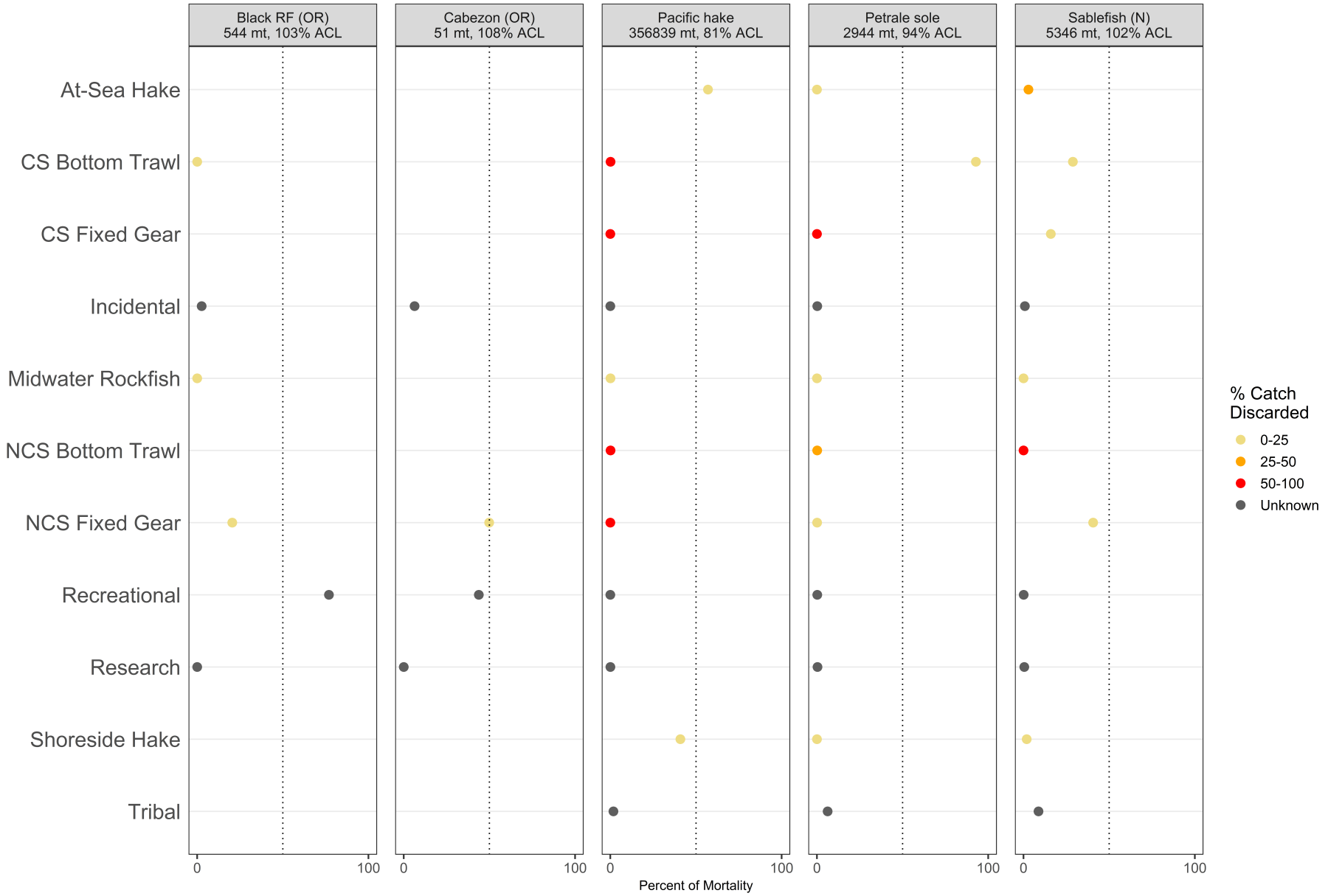
Mortality Contribution to Rebuilding Species



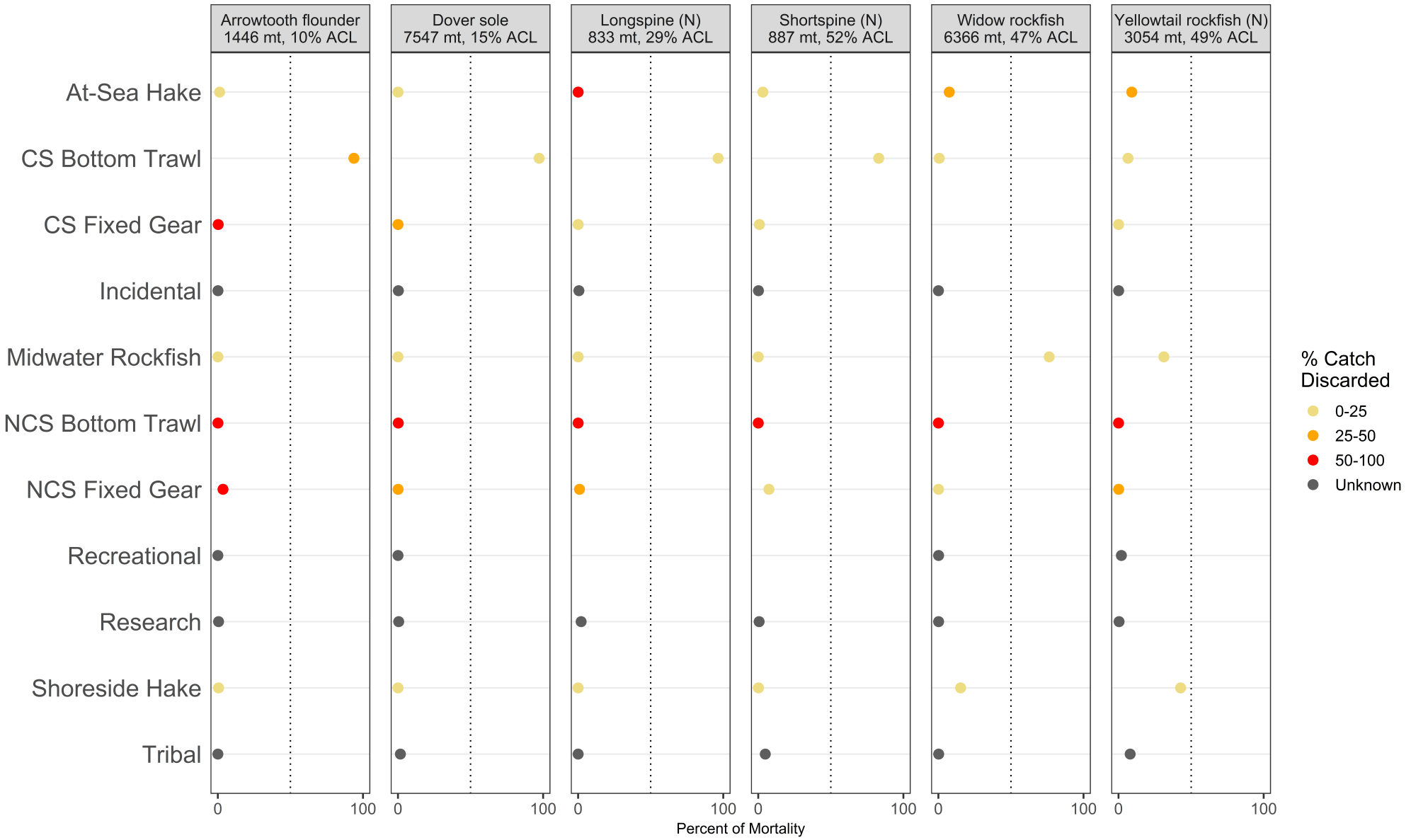
Harvest Goal Attainment of Highly Targeted and Attained Species



Mortality Contribution to Highly Attained Groupings



Mortality Contribution to other Targeted Groupings



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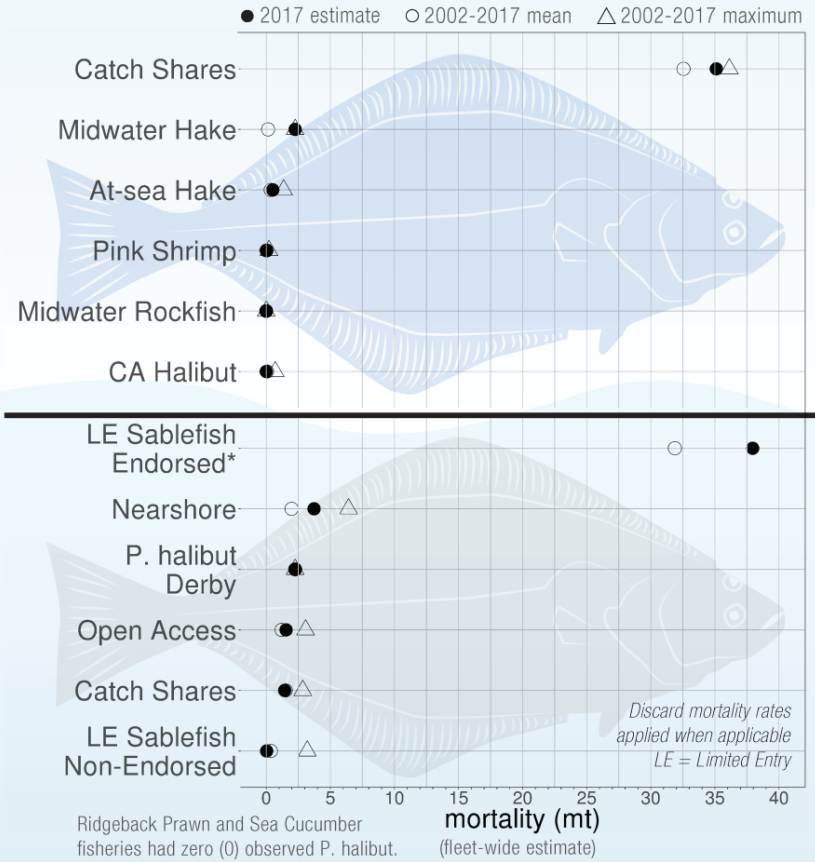
Pacific Halibut Bycatch in U.S. West Coast Fisheries (2002-2017)

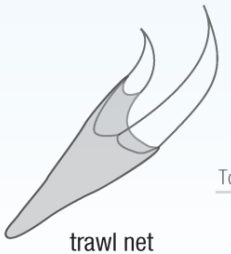
Jason E. Jannot, Kayleigh Somers,
Neil Riley, Vanessa Tuttle, Jon McVeigh

PACIFIC HALIBUT BYCATCH 2002-2017



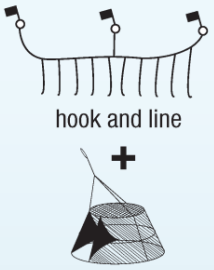
Ridgeback Prawn and Sea Cucumber fisheries had zero (0) observed P. halibut.

2017 Catch Shares
Bycatch Allocation: 35.9 mt



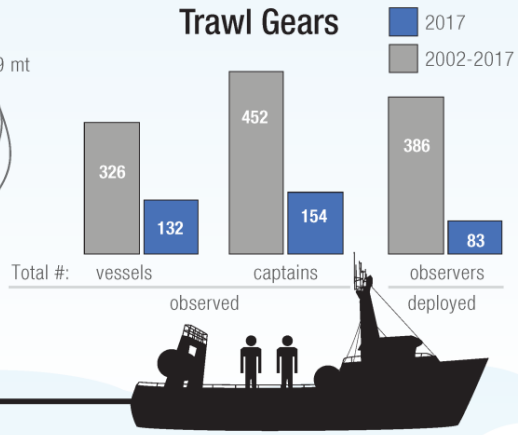
trawl net

△ = 107.3 mt
2002-2017 *LE Sablefish

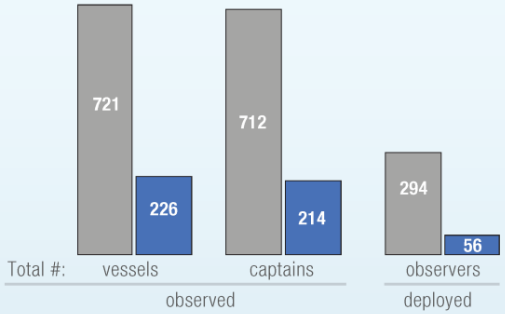


hook and line + pot

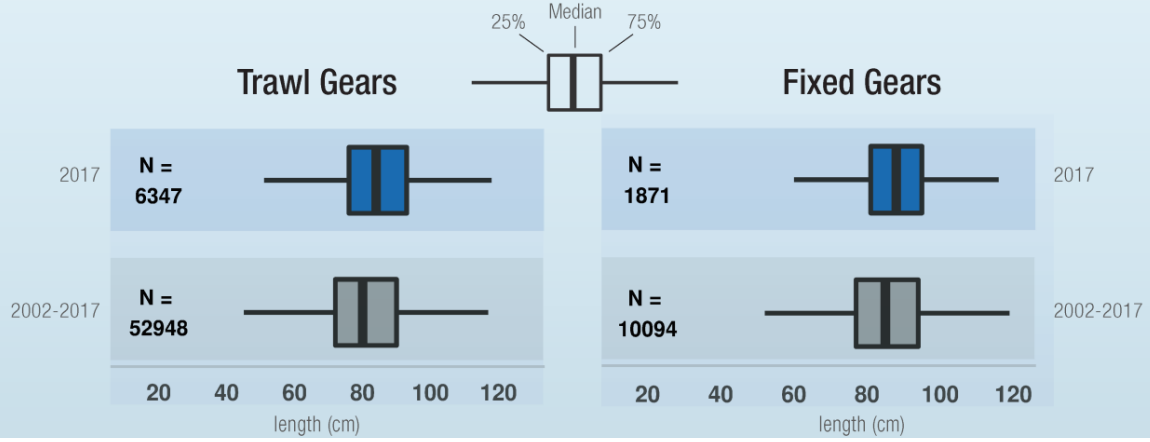
Trawl Gears



Fixed Gears



Pacific Halibut Bycatch
Observed 2002-2017



CONTACT INFO: Jason Jannot
NWFSC, Seattle, WA
jason.jannot@noaa.gov

WEBSITE: http://tinyurl.com/PhalibutReports

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Pacific Halibut Mortality Estimates

Sector	2016 (mt)	2017 (mt)
IFQ vessels, non-EM	31.86	31.41
Electronic Monitoring EFP	3.29	5.47
At-sea Hake	0.15	0.55
Sablefish and OA Fixed Gear	19.72	41.71
P. Halibut Derby (discard only)	--	2.26
State Fisheries	2.99	1.55

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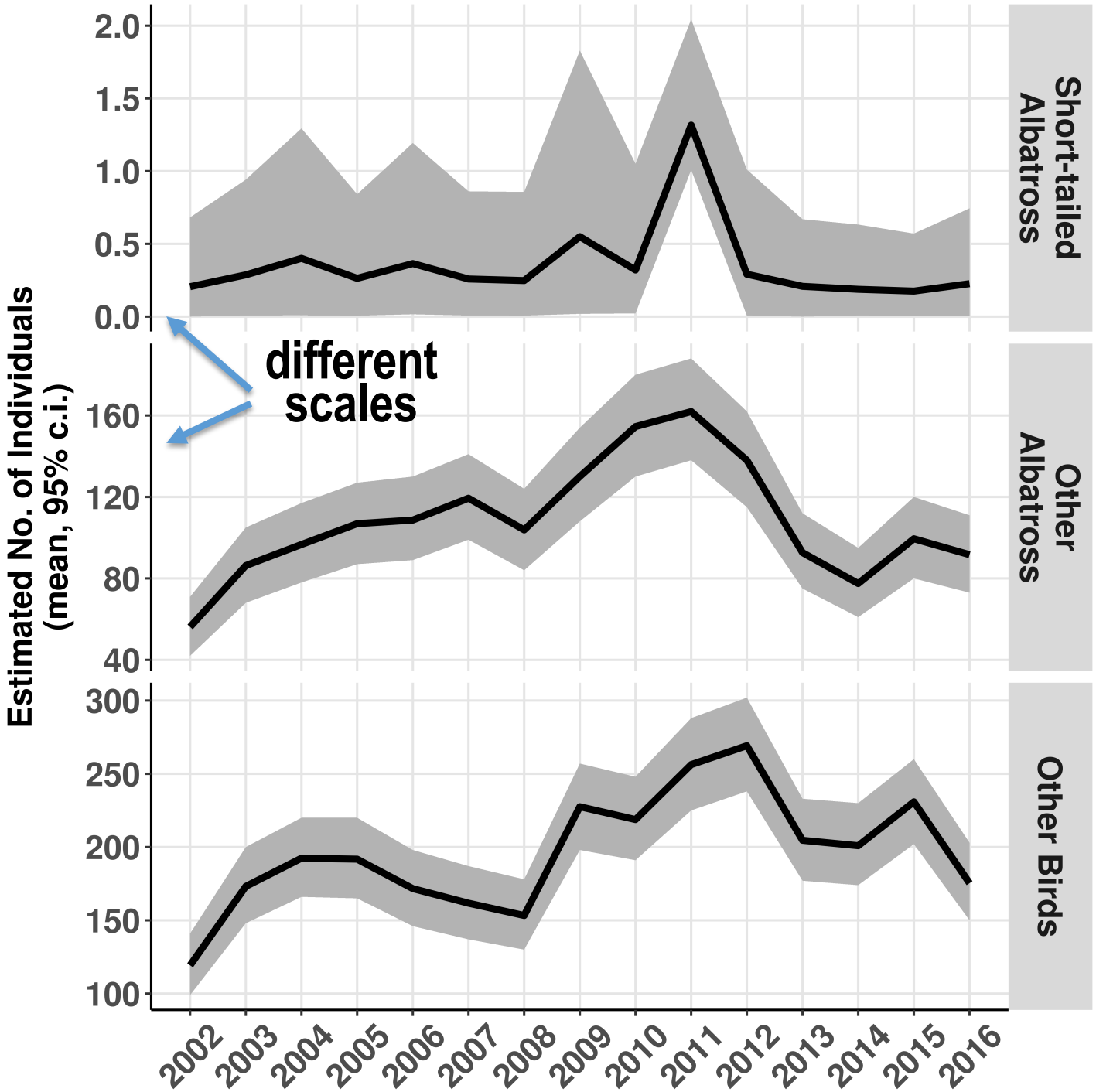
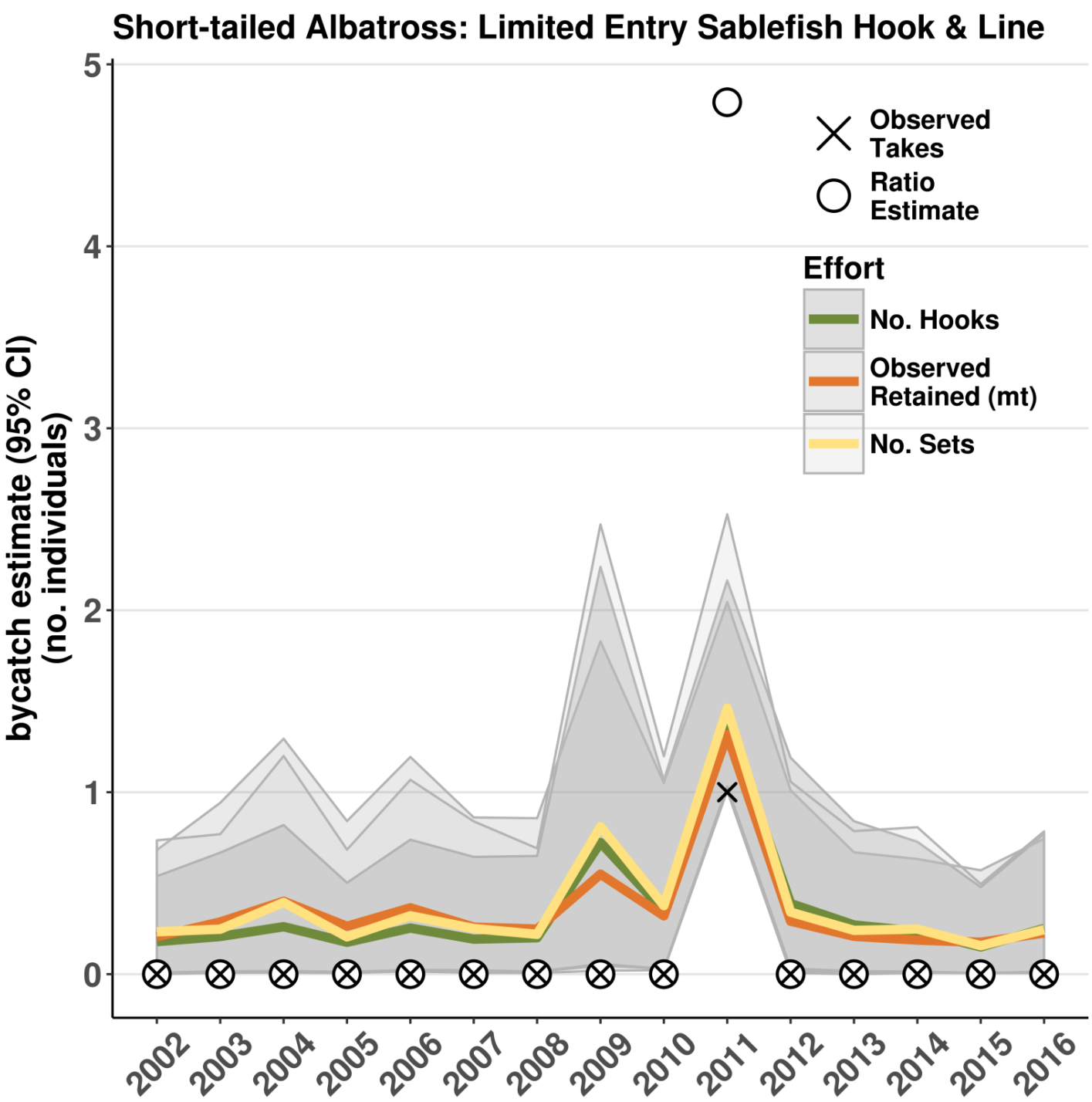
Seabird Mortality in U.S. West Coast Groundfish Fisheries (2002-2016)

Jason E. Jannot, Thomas P. Good,
Kayleigh Somers, Vanessa Tuttle, Jon McVeigh



Seabird Mortality Groundfish Fisheries 2002-2016 All Gears All Sectors



Short-tailed Albatross Bayesian and Ratio Estimates

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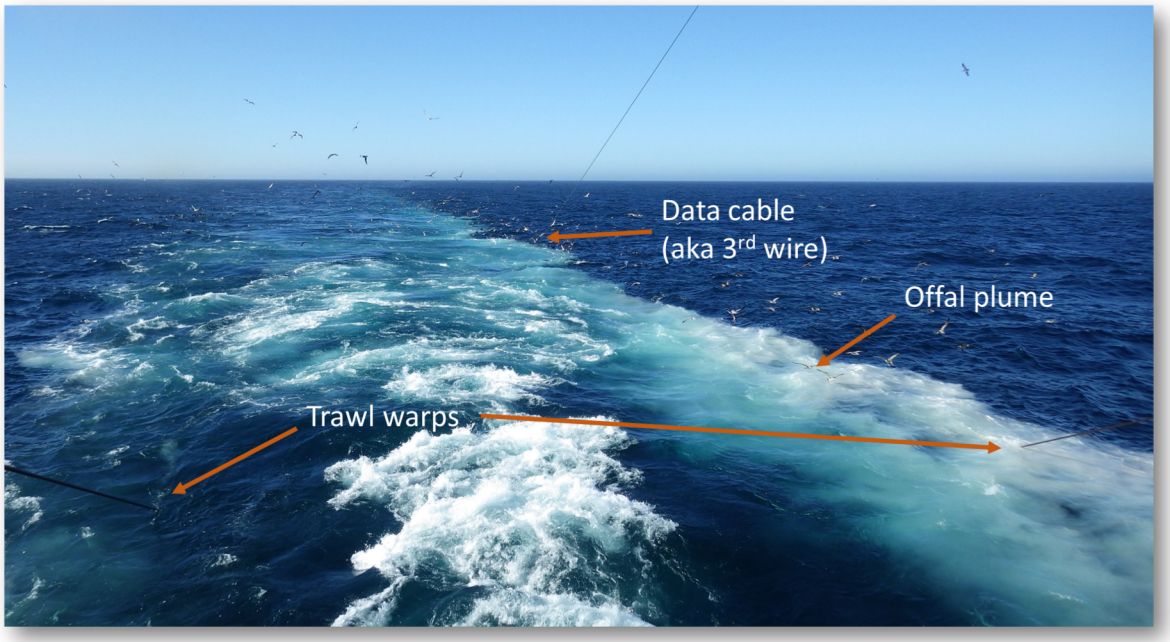
U.S. West Coast and Alaska Trawl Fisheries Seabird Cable Strike Mitigation Workshop, November 2017: Summary Report

Jason E. Jannot, Tom P. Good, Vanessa Tuttle,
Anne Marie Eich, Shannon Fitzgerald



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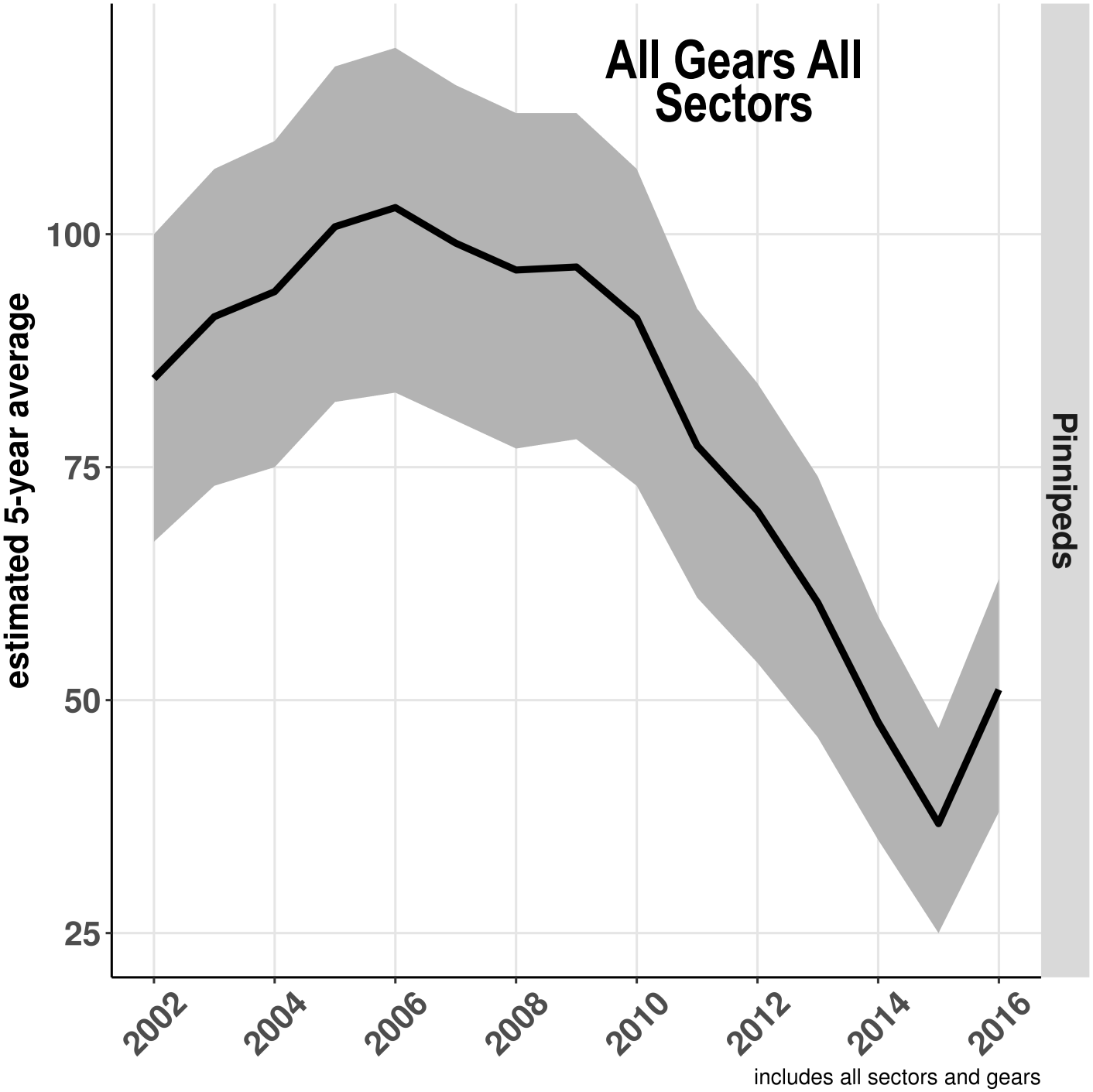
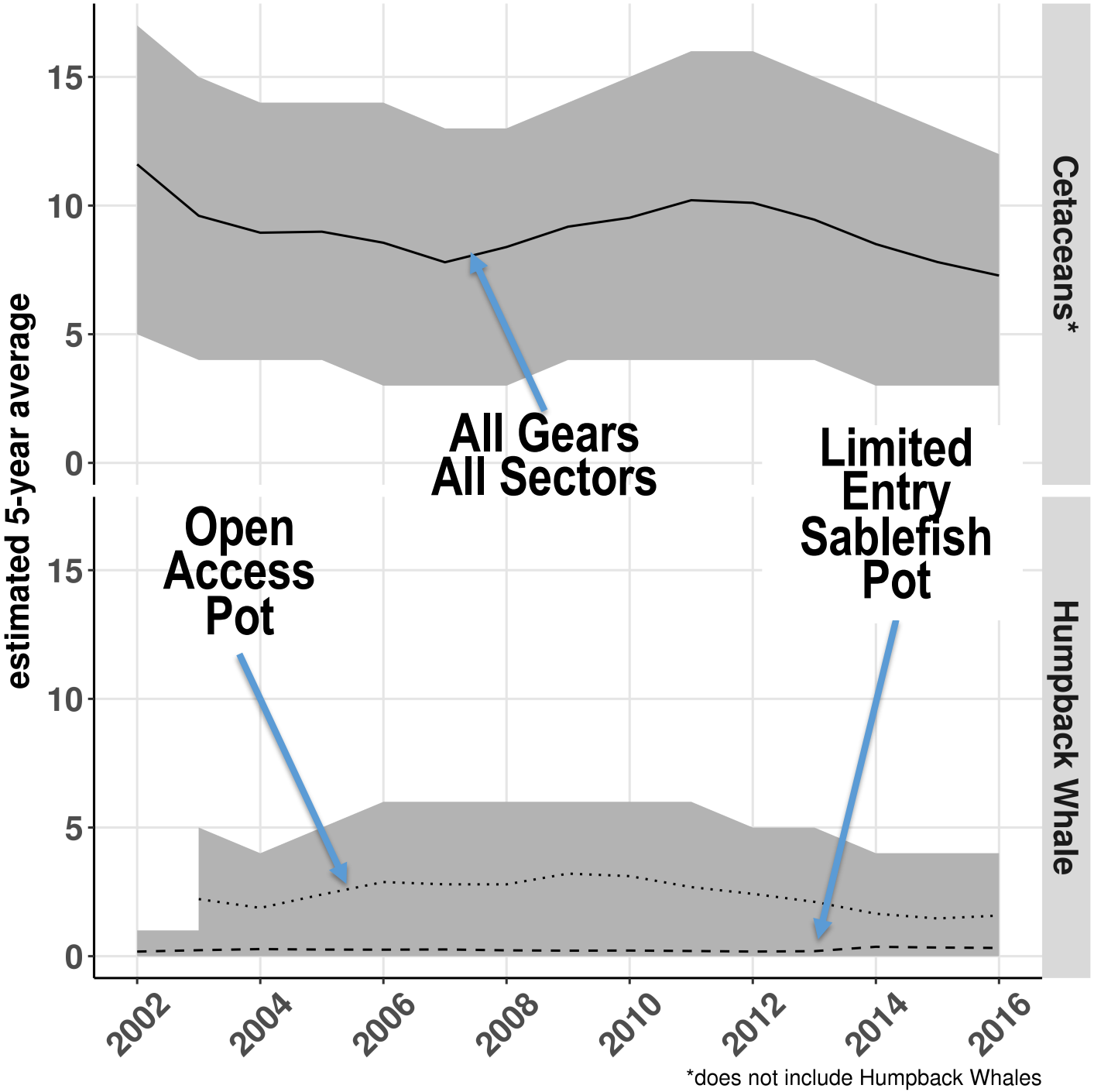
Marine Mammal Mortality in U.S. West Coast Groundfish Fisheries (2002-2016)

Jason E. Jannot, Kayleigh Somers,
Vanessa Tuttle, Jon McVeigh,
James V. Carretta, Van Helker



Pinniped Bycatch Groundfish Fisheries 2002-2016



Cetacean Bycatch Groundfish Fisheries 2002-2016

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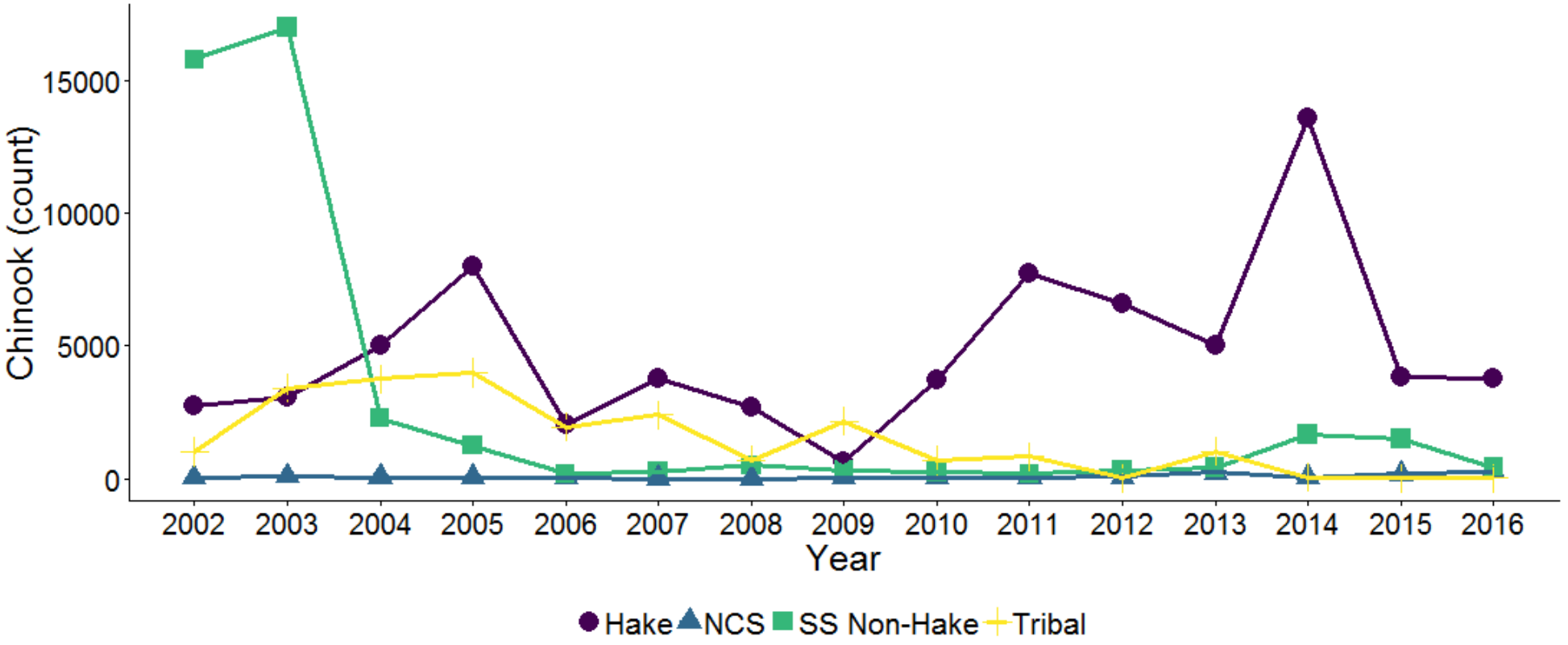
Estimated Bycatch of Salmon in the 2002-2016 US West Coast Fisheries

Kayleigh A. Somers, Jason Jannot, Kate Richerson,
Neil Riley, Vanessa Tuttle, Jon McVeigh

September 2018


Chinook (count)
15000
10000
5000
0
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Year
Hake
NCS
SS Non-Hake
Tribal

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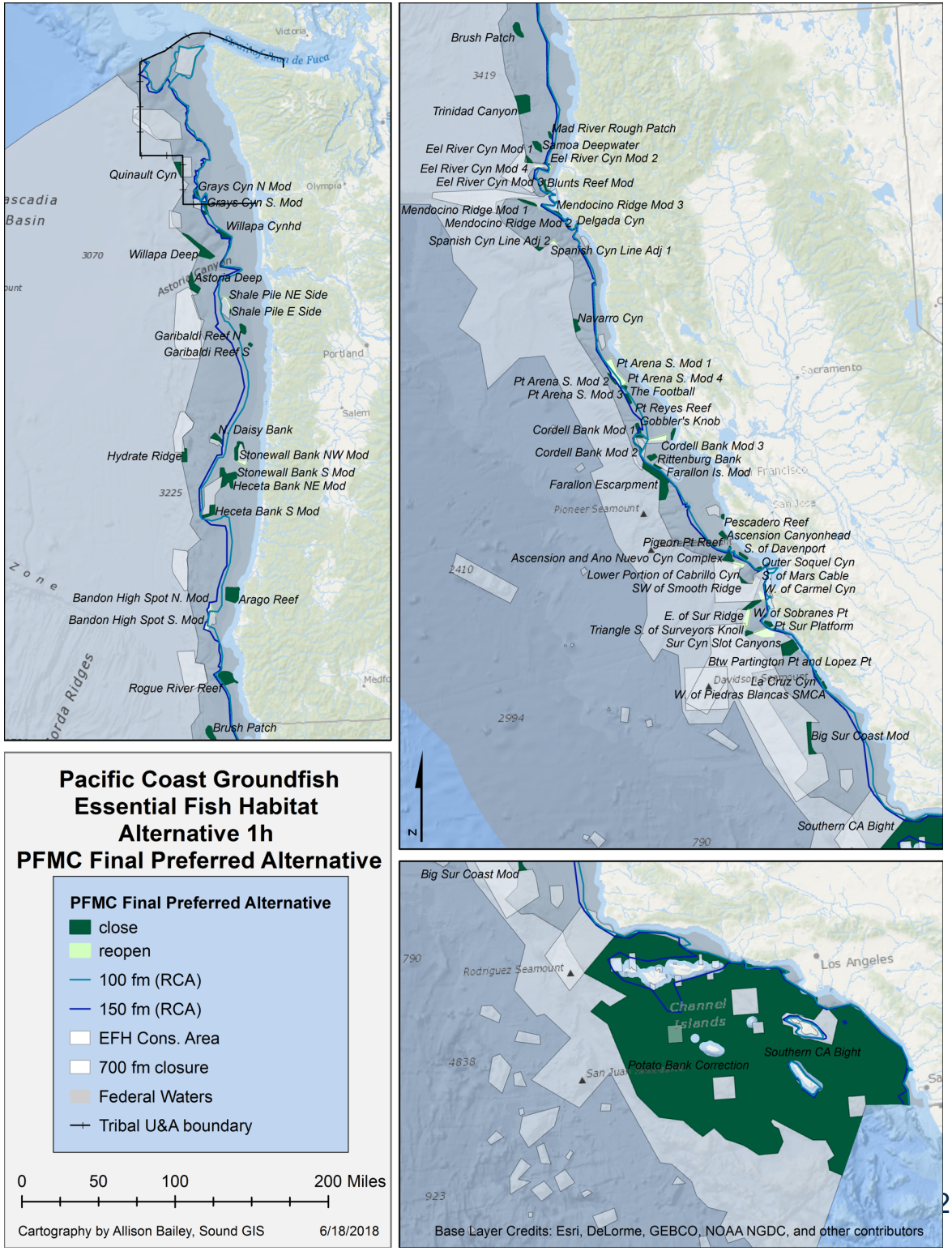
Trawl Openings and Closings

- Excellent opportunity to evaluate gear impacts and recovery times
- Coordinating with Deep Sea Coral program

- **Seeking industry input – November meeting**
  - **Questions**
  - **Choice of locations**



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2018 Hake Cruise and Research

Hake-relevant at-sea studies

Four focal research areas:

2018 Research cruise

1. Simrad EK80 & comparison with EK60

- Install, test, calibrate new EK80 echosounders aboard the Bell M. Shimada
- EK80 new standard & to be used 2019 survey

2. Re-run Reuben Lasker & Saildrone transects

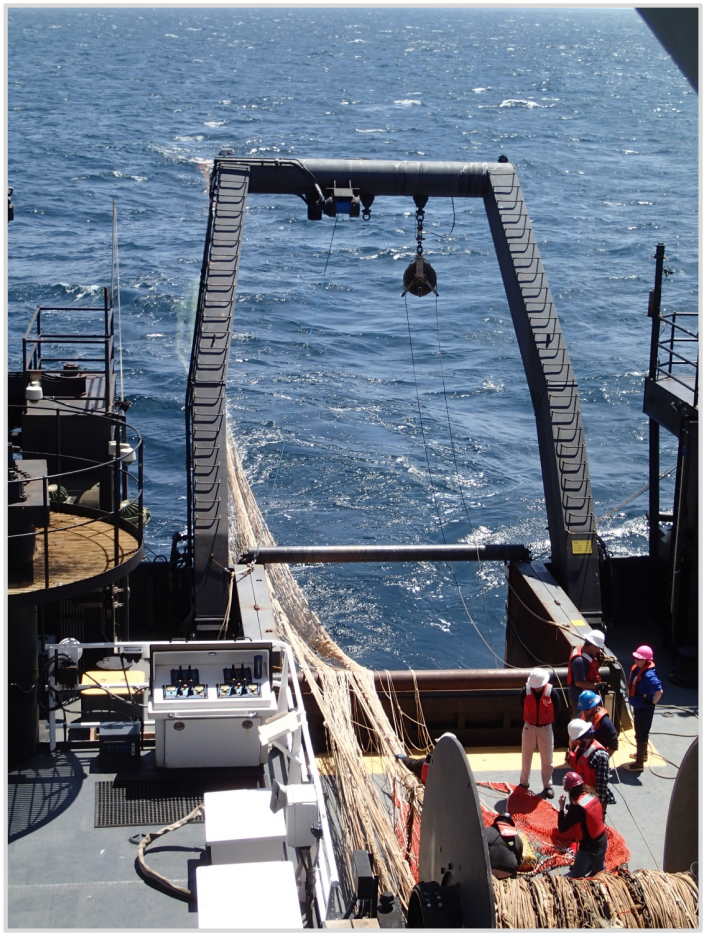
- Compare distributions, validate hake targets

3. Trawl codend liner testing (32 vs 7 mm)

- Evaluate differences in catch, net dynamics

4. Ocean data, diet analysis, electronic logs

- Increase at-sea and data efficiency



Aug 19- Sept 14, FSV Bell M. Shimada

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Science Updates: Recent Publications

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Building effective fishery ecosystem plans

Phillip S. Levin[1], Timothy E. Essington[2,] Kristin N. Marshall[3], Laura E. Koehn[2], Lee G. Anderson[4], Alida Bundy[5], Courtney Carothers[6], Felicia Coleman[7], Leah R. Gerber[8], Jonathan H. Grabowski[9], Edward Houde[10], Olaf P. Jensen[11], Christian Möllmann[12], Kenneth Rose[10], James N. Sanchirico[13], Anthony D.M. Smith[14]

[1] University of Washington and The Nature Conservancy; [2]University of Washington; [3]NOAA Fisheries Northwest Fisheries Science Center; [4] University of Delaware; [5]Department of Fisheries and Oceans Canada; [6]University of Alaska Fairbanks; [7]Florida State University; [8]Arizona State University; [9]Northeastern University; [10]University of Maryland; [11]Rutgers University; [12]University of Hamburg; [13]University of California Davis; [14]CSIRO Oceans and Atmosphere

Marine Policy (Accepted Jan 19, 2018)

- FEPs are a means to address management goals broader than a single FMP
- We provide a blueprint for FEPs to translate EBFM to action using a structured planning process
- Process is feasible, uses existing science tools, policy instruments, and management structures

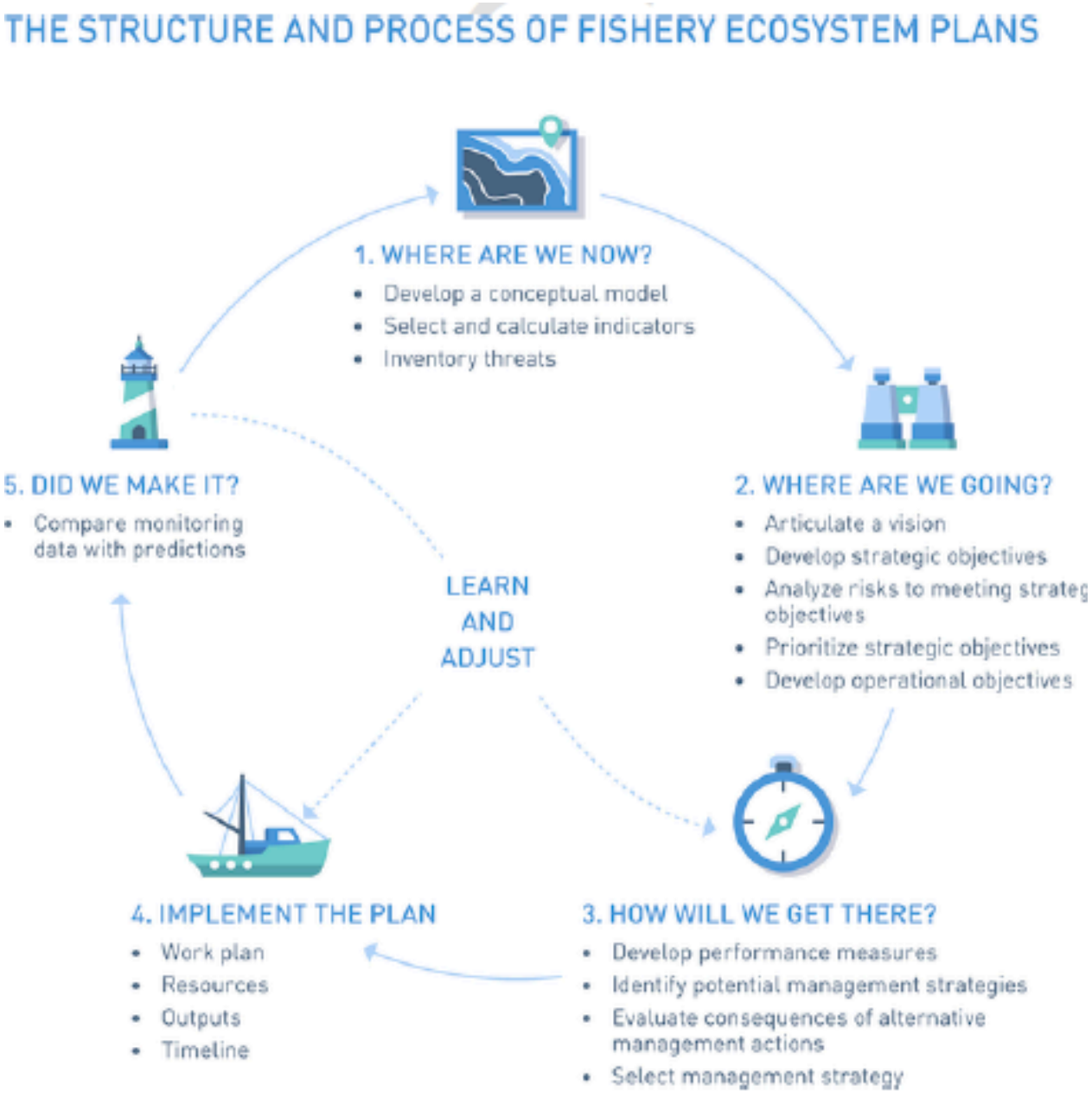


Fig. 1. The FEP loop is an interpretation of adaptive management as applied to Fishery Ecosystem Planning.

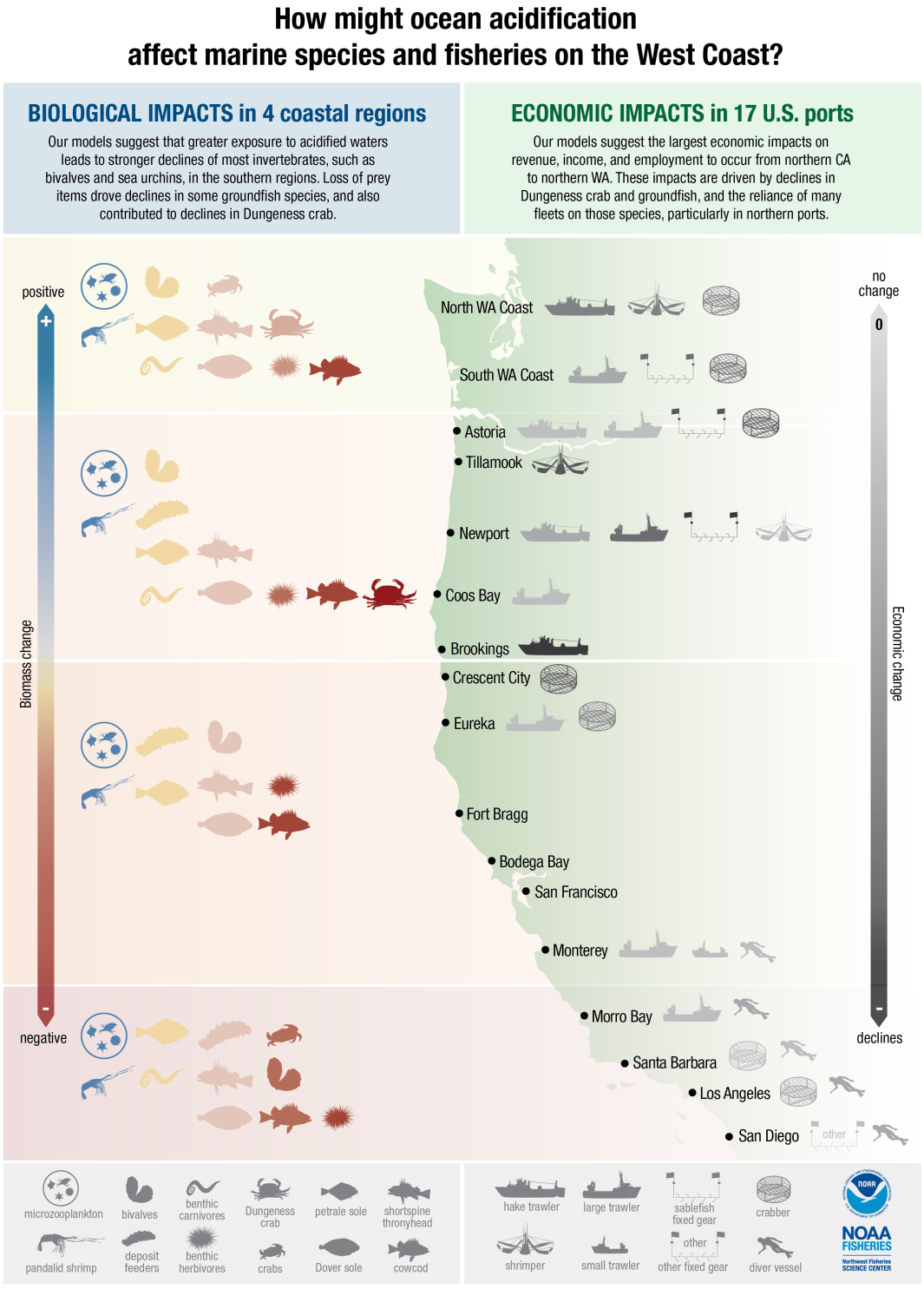
Consequences of spatially variable ocean acidification in the California Current: Lower pH drives strongest declines in benthic species in southern regions while greatest economic impacts occur in northern regions

Emma E. Hodgson[a], Isaac C. Kaplan[b], Kristin N. Marshall[c], Jerry Leonard[c], Timothy E. Essington[a], D. Shallin Busch[d], Elizabeth A. Fulton[e,f], Chris J. Harvey[b], Albert Hermann[g, h], Paul McElhany[b]

[a]School of Aquatic and Fishery Sciences, University of Washington; [b]Conservation Biology Division, Northwest Fisheries Science Center, National Marine Fisheries Service, NOAA; [c]Fishery Resource Analysis and Monitoring Division, Northwest Fisheries Science Center, National Marine Fisheries Service, NOAA; [d]Ocean Acidification Program, Office of Oceanic and Atmospheric Research and Northwest Fisheries Science Center, National Marine Fisheries Service, NOAA; [e]CSIRO Oceans and Atmosphere; [f]Centre for Marine Socioecology, University of Tasmania; [g]NOAA Pacific Marine Environmental Laboratory; [h]Joint Institute for the Study of the Atmosphere and Ocean, University of Washington

Ecological Modelling 383(10): 106-117
https://doi.org/10.1016/j.ecolmodel.2018.05.018

- Atlantis ecosystem model forced by oceanographic model and coupled to economic input-output model projects effects of ocean acidification
- 50 year projections suggest stronger declines in biomass in southern regions than northern regions
- Projected economic impacts greater in northern regions, driven by declines in Dungeness crab



NOTE: Only species groups and fleets expected to be affected are shown on this figure.

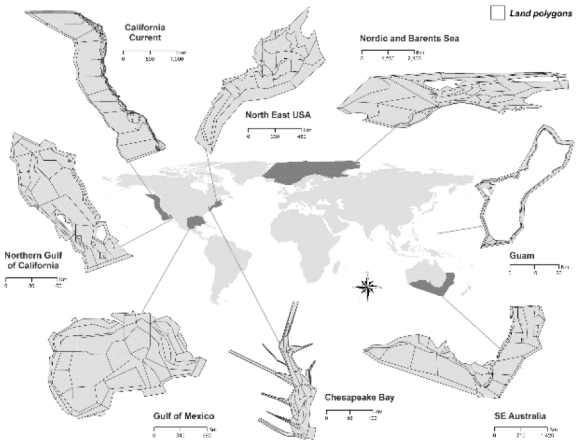
Ocean futures under ocean acidification, marine protection, and changing fishing pressures explored using a worldwide suite of ecosystem models

Olsen, E., Kaplan, I.C., Ainsworth, C., Fay, G., Gaichas, S., Gamble, R., Girardin, R., Eide, C.H., Ihde, T.F., Morzaria-Luna, H., Johnson, K.F., Savina-Rolland, M., Townsend, H., Weijerman, M., Fulton, E.A., and Link, J.S.

Frontiers in Marine Science

Accepted 2018-02-20

- Ocean acidification generally reduced biomass
- Marine protected areas led to “winners and losers”
- Fishing led to generally smaller impacts than OA



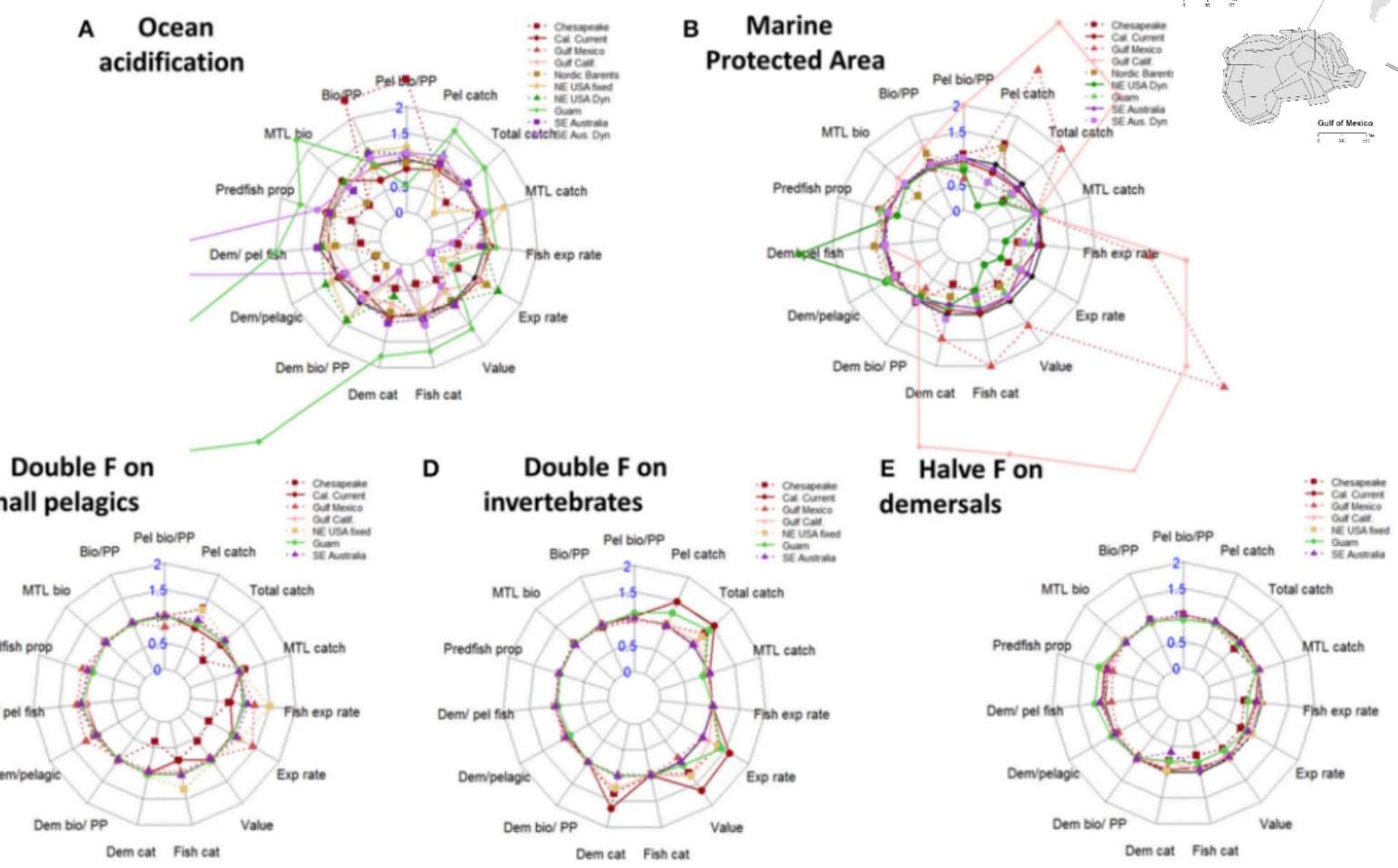


FIGURE 7 | Ecological and fishery indicators for scenarios. Metrics are generally ordered by: Ecological indicators (left), fishery indicators (right), pelagic (top), and demersal (bottom). **(A)** Ocean acidification, via an additional 1% (day^{-1}) mortality rate added for selected groups. Truncated values: Guam Dem/pelagic = 8.4; SE Aus. Dyn Dem/pel fish = 6.4. **(B)** Spatial management closing 50% of continental shelf (<250 m depth) to fishing. **(C)** Doubling fishing on small pelagic fish. **(D)** Doubling fishing on invertebrates. **(E)** Halving fishing rates for demersal fish.

Shark Interactions With Directed and Incidental Fisheries in the Northeast Pacific Ocean: Historic and Current Encounters, and Challenges for Shark Conservation

(*Book Chapter*)

Jackie King[1], Gordon McFarlane[1], **Vladlena Gertseva[2]**, Jason Gasper[3], Sean Matson[4], Cindy A. Tribuzio[5]

[1]Fisheries and Oceans Canada, Nanaimo, BC;
[2]Northwest Fisheries Science Center, National Marine Fisheries Service, Seattle, WA;
[3]Alaska Regional Office, National Marine Fisheries Service, Juneau, AK;
[4] West Coast Regional Office, National Marine Fisheries Service, Seattle, WA;
[5] Auke Bay Laboratories, National Marine Fisheries Service, Juneau, AK.

*Corresponding author: tel: +1 206 860 3457; e-mail: Vladlena.Gertseva@noaa.gov

Northeast Pacific Shark Biology, Research, and Conservation, Part B.
Editors: Shawn Larson and Dayv Lowry.
Academic Press, London, United Kingdom. 2017. Pages 9-44.

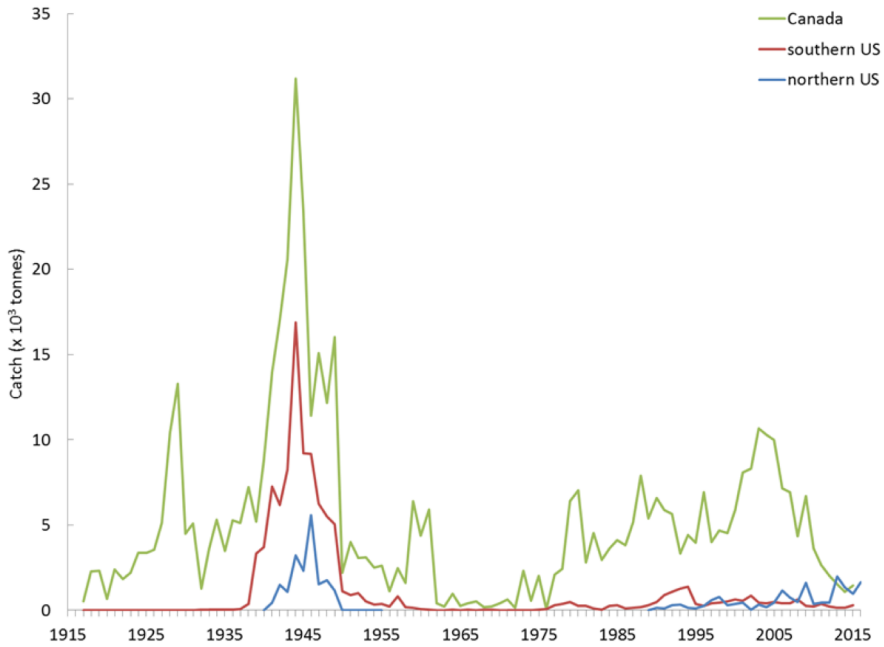
Highlights:

NE Pacific catch:

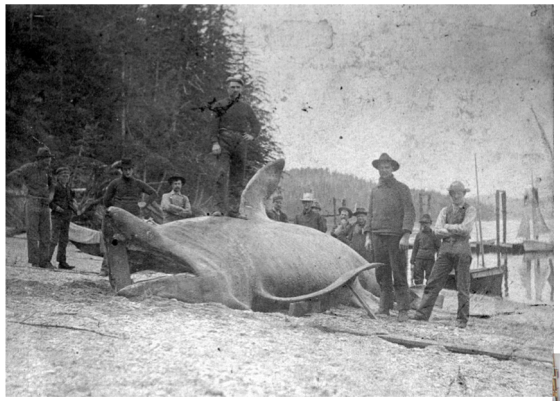
- Peaked in the ‘40s
- Greatest in Canada

Good data improve management and conservation:

- Accurate catch statistics,
- Stock delineation,
- Life history parameter estimates,
- Improved assessments methods of population status and trends.



Pacific spiny dogfish catch (landings and discards) for Canada, southern US waters (California, Oregon and Washington) and northern US waters (Alaska).



Left: Basking shark caught by fishermen in Rivers Inlet, BC, Canada, July 1901.

Right: Pacific spiny dogfish shark bycatch in mid-water trawl gear from the Pacific hake fishery in southern US waters.

Questions?