



Groundfish Science Report

Northwest Fisheries Science Center

September 13, 2017

NOAA

**NOAA
FISHERIES
SERVICE**





Overview

- **Survey Status**
 - Pacific Hake – Summer Survey
 - Groundfish Bottom Trawl Survey
- **Observer Program News**
 - Groundfish Mortality Report
 - Halibut Report
 - Seabird bycatch Workshop
- **BREP Research Projects**
- **Science Updates**



Groundfish Survey Updates



Shortraker rockfish, leg 2, off OR



Sablefish catch, leg 2, off Astoria

2017 Hook and Line Survey

- Sept. 18 – Oct. 6, 2017
- Vessels: CPFVs Mirage, Aggressor, Toronado
- 200 sites (include CCAs)
- All rockfish in federal MPAs descended



Rockfish Descender

2017 Groundfish Survey – Part 2

Aug. 14 – Oct. 24, 2017

Vessels: F/Vs Noah's Ark, Ms. Julie

Severe hypoxia documented off WA and OR ($\text{DO} < 0.5 \text{ ml L}^{-1}$)



2017 Integrated Ecosystem and Pacific Hake Acoustic-Trawl Survey

June 27, 2017 through September 13, 2017

- June 27, 2017 through September 13, 2017
- Vessels:
 - NOAA Ship *Bell M. Shimada*
 - Canadian F/V *Nordic Pearl*
- Coverage
 - 10 nmi transect spacing,
 - 144 transects
 - 50-1500 m depth or minimum of 35 nmi



Observer Program News



Estimated Discard and Catch of Groundfish Species in the 2016 US West Coast Fisheries

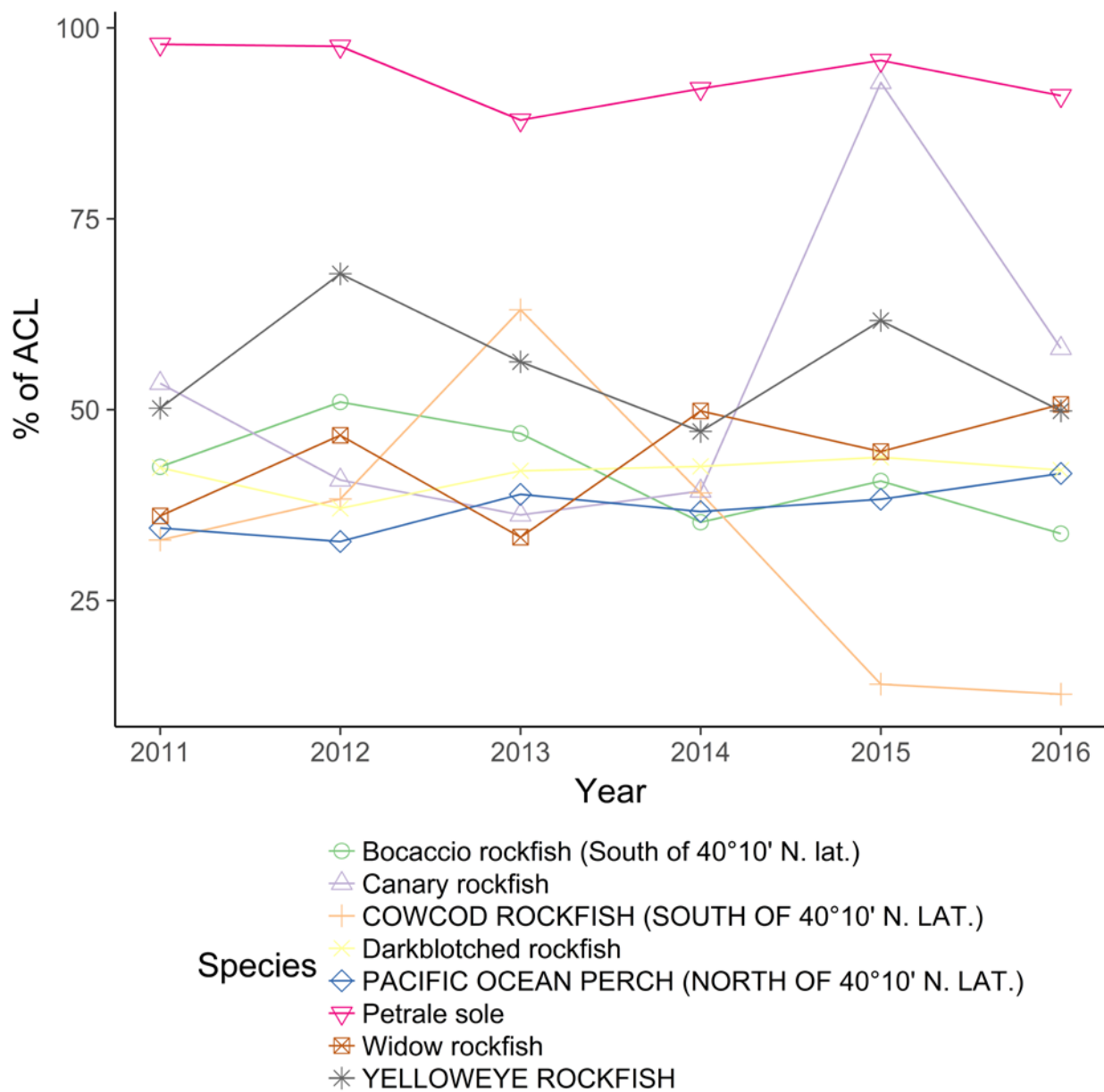
Kayleigh A. Somers, Jason Jannot,
Neil Riley, Vanessa Tuttle, Jon McVeigh
September 2017



2016 Achievement of Harvest Goals

- No groundfish exceeded 2016 harvest goals
- Two species achieved greater than 90% of their ACL harvest goals:
 - Sablefish, north of 36° N. latitude (92%)
 - Petrale sole (91%)

30 FMP-listed groundfish species or complexes (70%)
had fishing mortality estimates <50% of 2016 ACL





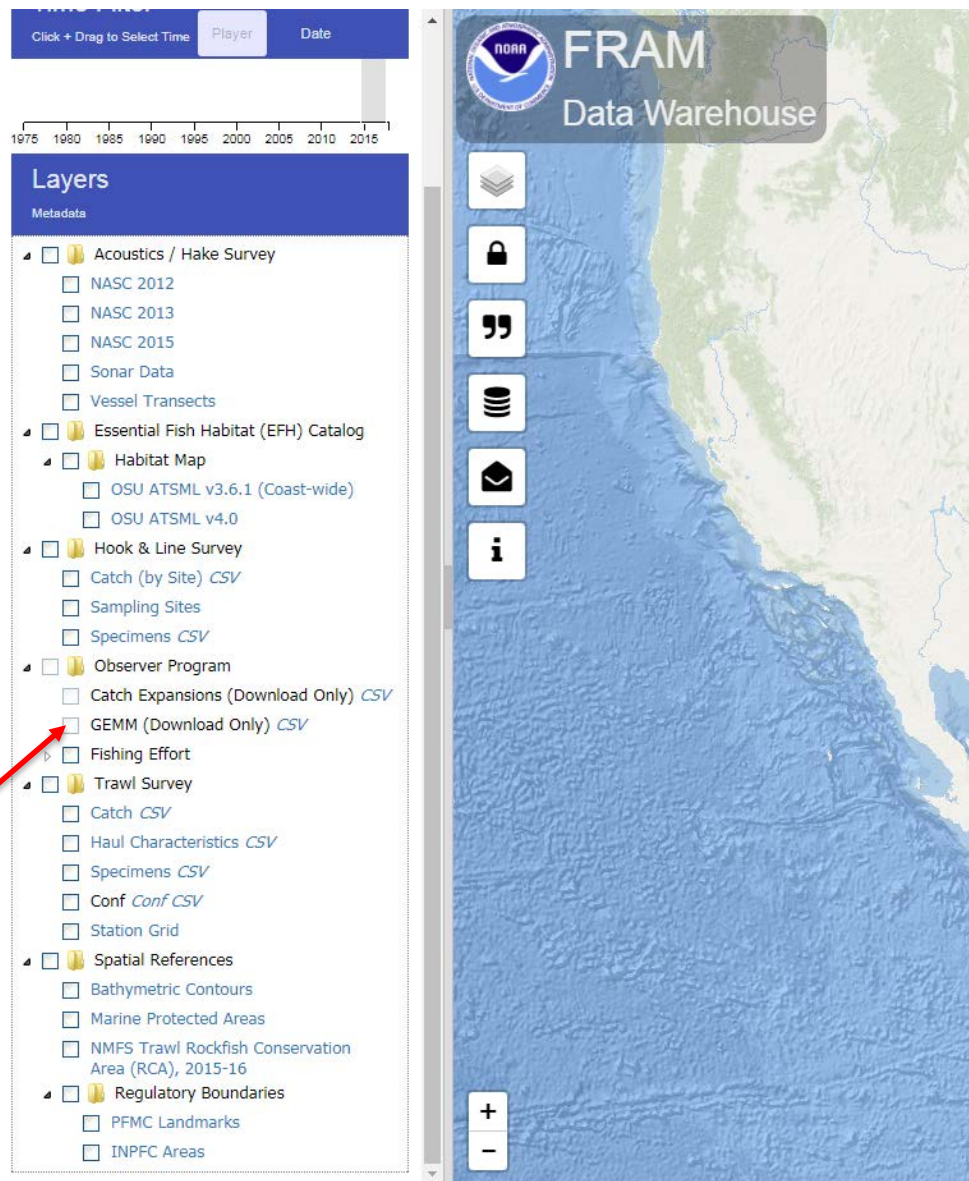
2002-2016 Mortality Estimates Online

Groundfish Expanded
Mortality Multiyear
(GEMM) for 2002 to
2016 available on public
website

— <https://www.nwfsc.noaa.gov/data>

— Or search for “NWFSC
data warehouse”

— Under “Observer
Program”, download
CSV of GEMM





Pacific Halibut Bycatch in US West Coast Fisheries (2002-2016)

Jason Jannot, Kayleigh Somers

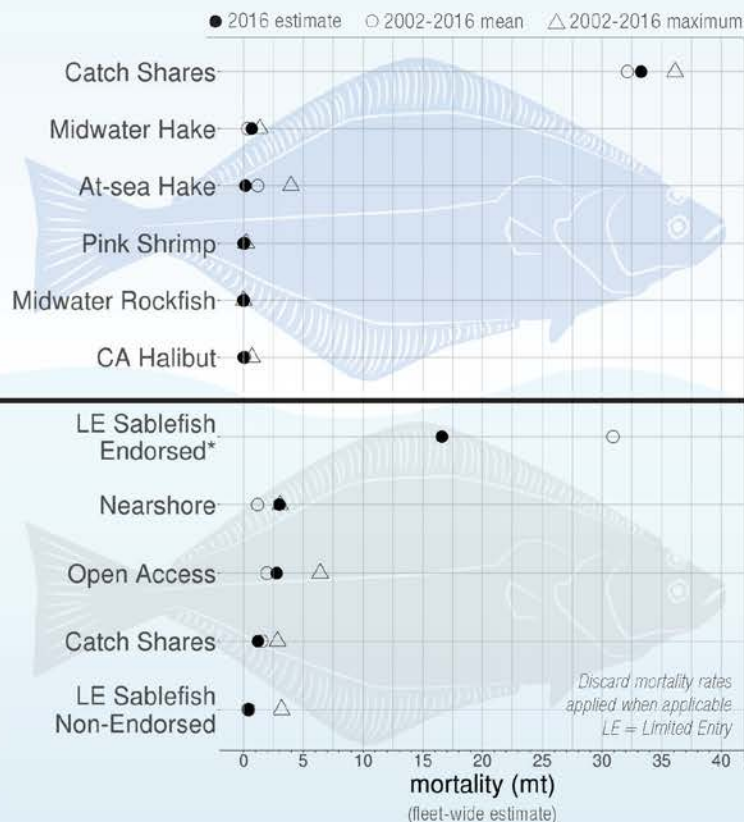
Neil Riley, Vanessa Tuttle, Jon McVeigh

September 2017

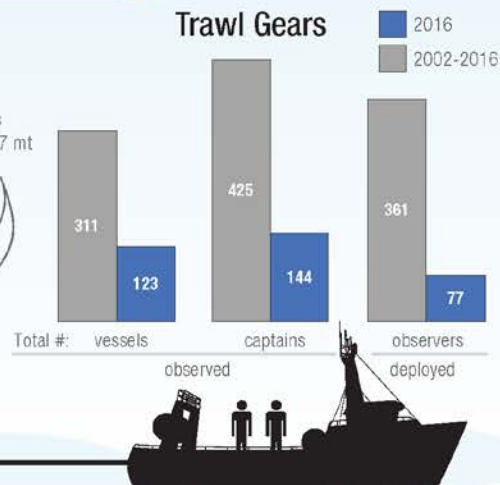
PACIFIC HALIBUT BYCATCH 2002-2016

Pacific Halibut Bycatch
Observed 2002-2016

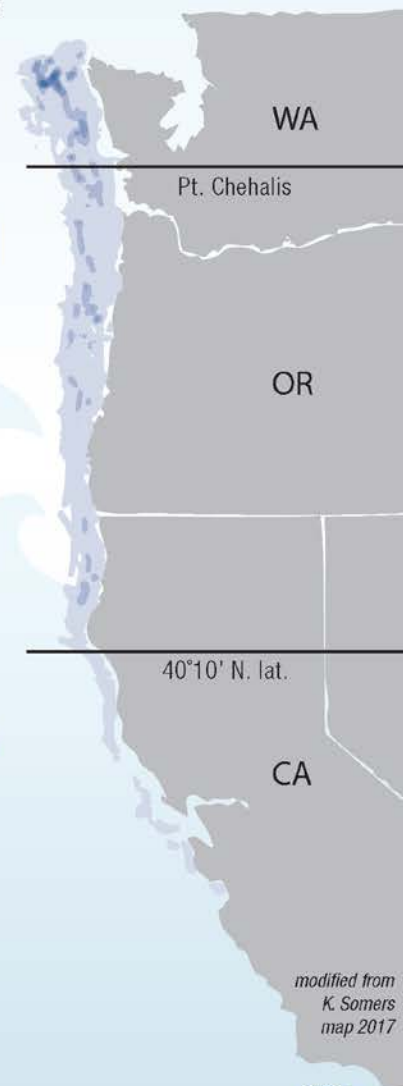
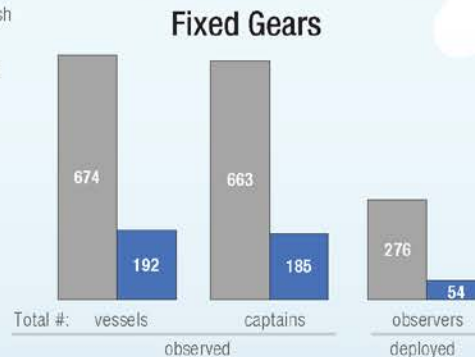
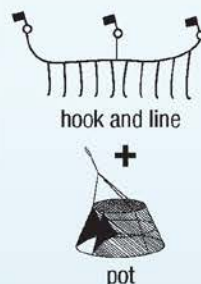
0.05 minimum (mt/sq km) 12.7 maximum



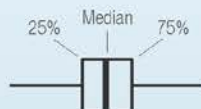
2016 Catch Shares
Bycatch Allocation: 90.7 mt



△ = 104.3 mt
2002-2016 *LE Sablefish



Trawl Gears



Fixed Gears

2016
N = 7170



2016
N = 1835



2016

2002-2016

N = 47555



2002-2016
N = 6359



2002-2016

20 40 60 80 100 120
length (cm)

20 40 60 80 100 120
length (cm)

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

WEBSITE: <http://tinyurl.com/PhalibutReports>



modified from
K. Somers
map 2017

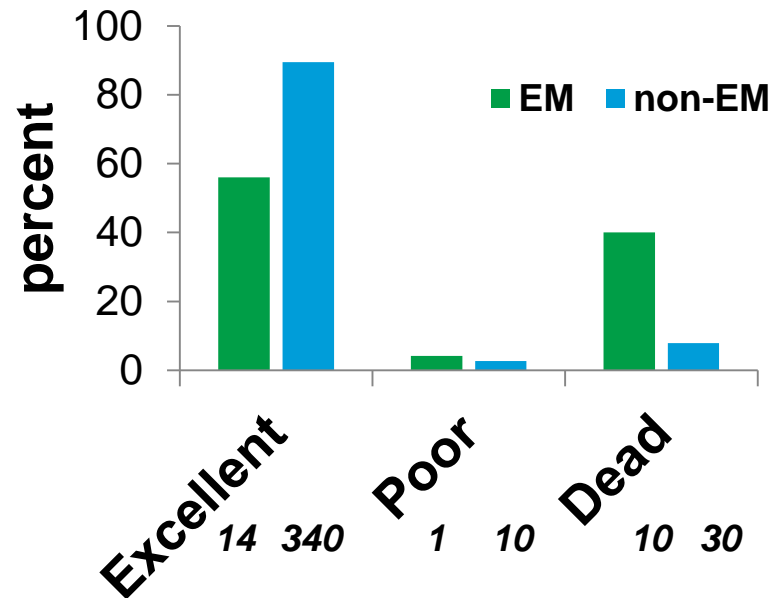
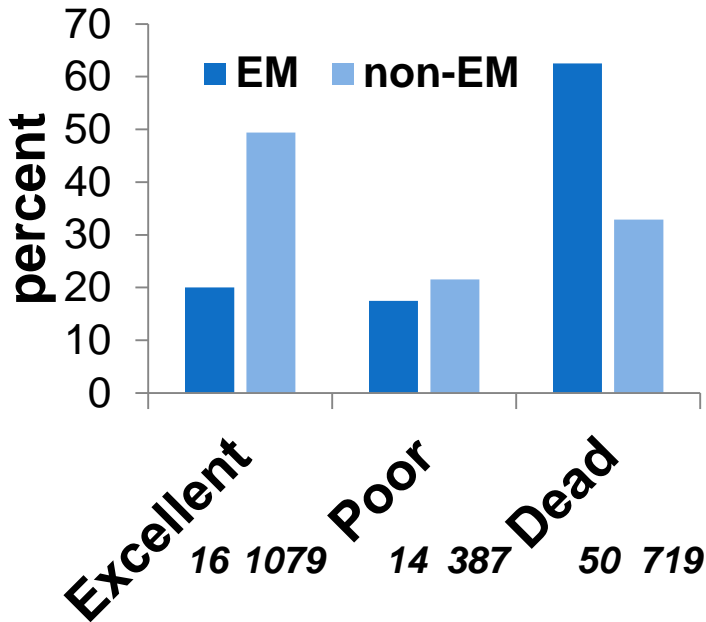
Pacific halibut Mortality Estimates



Sector	2015 (mt)	2016 (mt)
IFQ Vessels, non-EM	34.57	31.86
Electronic Monitoring EFP (IFQ)	1.39	3.29
At-Sea Hake	0.06	0.15
Sablefish and Open Access Fixed Gear	11.12	19.72
State Fisheries	1.43	2.99

IBQ P. halibut allocation	2015		2016	
North of 40° 10' N. latitude	84.5 mt	43%	90.7 mt	39%

The percent of observed viabilities differs between EM and non-EM vessels



Trawl		
	Total Discard (mt)	DM R
EM	3.10	0.68
Non-EM	45.65	0.48

Pot		
	Total Discard (mt)	DM R
EM	0.96	0.39
Non-EM	3.01	0.13

Seabird Cable Strike Mitigation Workshop

November 7-8, 2017
Seattle, Washington

- 2-day Seabird cable strike mitigation workshop
- Goal: develop innovative, practical gear-modifications for reducing seabird cable strike mortality.
- All welcome!
- Contact:
 - 206-860-3479
 - Vanessa.Tuttle@noaa.gov).



BREP Research Projects



NMFS SFA BREP Funds 5 West Coast Projects

- 1) Developing radio and satellite smart buoys for bycatch mitigation
- 2) Minimizing seafloor and benthic macroinvertebrate impacts: An evaluation of elevated sweeps on a west coast groundfish bottom trawl (PSMFC)
- 3) Measuring the overall effectiveness of LED lights to reduce eulachon and darkblotched rockfish bycatch in the ocean shrimp trawl fishery (PSMFC)
- 4) Evaluation of pound nets as stock-selective fishing tools in the lower Columbia River Basin (Wild Fish Conservancy)
- 5) Uncovering blind spots: Novel methods to assess fine-scale seabird-fisheries overlap to prioritize conservation management (Oregon State University)



Science Updates: Recent Publications



Spatial growth variability in marine fish: example from northeast Pacific groundfish

Vladlena Gertseva^{1*}, Sean E. Matson², Jason M. Cope¹

¹ Fishery Resource Analysis and Monitoring Division, NWFSC, NMFS, NOAA, Seattle, WA 98112, USA

² Sustainable Fisheries Division, WCR, NMFS, NOAA, Seattle, Washington 98115, USA

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ICES Journal of Marine Sciences (2017), 74 (6): 1602–1613.

Examined spatial variability in growth of eight groundfish species to identify shared spatial patterns.



Species	Sex	Asymptotic length (L_{∞})						von Bertalanffy growth coefficient (k)					
		Hypotheses						Hypotheses					
		No trend	VAN-COL COL break	COL-EUR EUR break	EUR-MTY MTY break	MTY-CON CON break	Cline EUR	No trend	VAN-COL COL break	COL-EUR EUR break	EUR-MTY MTY break	MTY-CON CON break	Cline EUR
Canary rockfish	Female				•								•
	Male						•						•
Widow rockfish	Female		•									•	
	Male		•										•
Petrale sole	Female						•			•			
	Male					•		•					
Darkblotched rockfish	Female						•						•
	Male						•						•
Dover sole	Female		•										•
	Male						•						•
Sablefish	Female						•					•	
	Male						•					•	
Aurora rockfish	Female						○		○				
	Male						○				○		
Splitnose rockfish	Female						○					○	
	Male						○						○



Novel Catch Projection Model for a Commercial Groundfish Catch Shares Fishery

Sean E. Matson^{1*}, **Ian G. Taylor**², **Vladlena V. Gertseva**², Martin W. Dorn³

¹ Sustainable Fisheries Division, WCR, NMFS, NOAA, Seattle, Washington 98115, USA

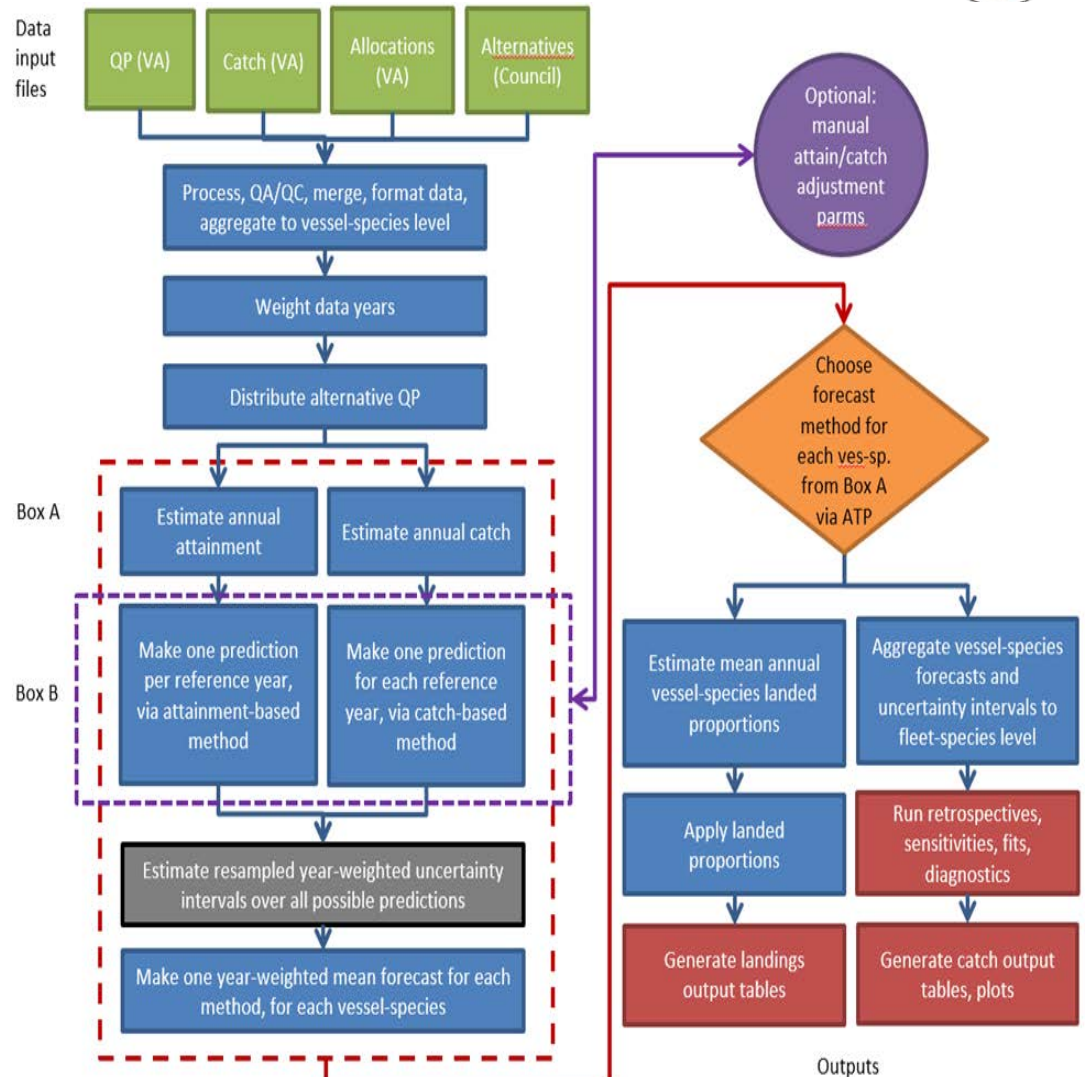
² Fishery Resource Analysis and Monitoring Division, NWFSC, NMFS, NOAA, Seattle, WA 98112, USA

³ Resource Assessment and Conservation Engineering Division, AFSC, NMFS, NOAA, Seattle, WA 98115, USA

Ecological Modelling, 349(2017): 51–61

Highlights:

- Novel projection model
 - total and landed catch for individual vessels and the entire fishery.
- Developed catch and landings projections for thirty groundfish species or complexes.
- Approach can be tailored to a other quota based questions and fisheries.



VA = Vessel Accounts database system in the National Marine Fisheries Service, used to acquire catch and quota pound input data. QP = Quota Pounds [data]. ATP = Attainment Threshold Parameter (see Methods), "parms" is an abbreviation for parameters.



Comparing estimates of abundance trends and distribution shifts using single- and multispecies models of fishes and biogenic habitat

James T. Thorson^{1*} and Lewis A.K. Barnett²

¹ Fisheries Resource Assessment and Monitoring Division, Northwest Fisheries Science Center, National Marine Fisheries Service, NOAA, Seattle, WA, USA

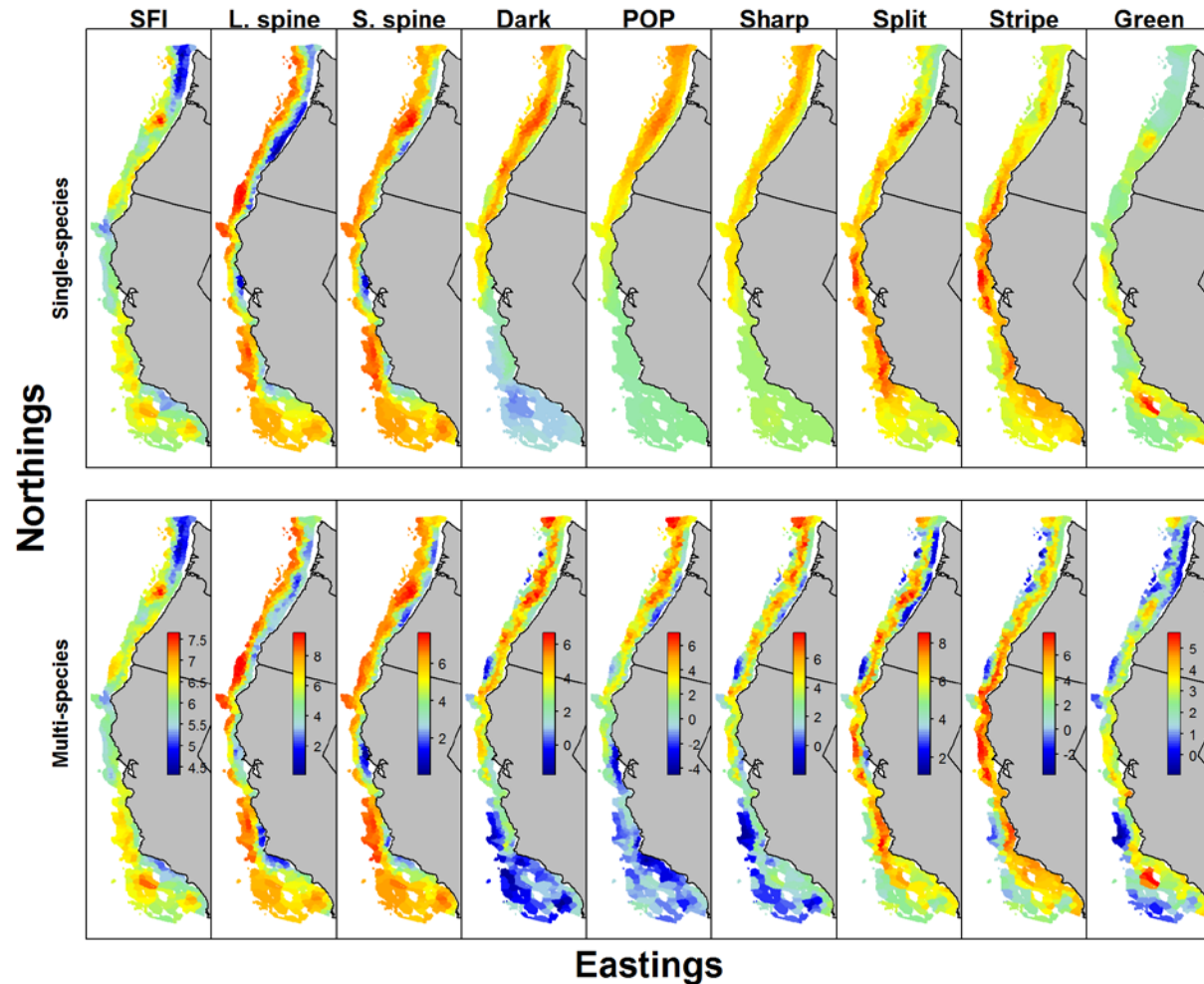
² School of Aquatic & Fishery Sciences, University of Washington, Seattle, WA, USA; under contract to Fishery Resource Analysis and Monitoring Division, Northwest Fisheries Science Center, NOAA, Seattle, WA, USA

**Corresponding author: tel: +1 971 678 5683; e-mail: James.Thorson@noaa.gov*

ICES Journal of Marine Sciences (2017), 74(5): 1311–1321

Estimate rockfish density using multispecies models

- Develops multispecies density models for index standardization and habitat analysis
- Multispecies models are better at identifying fine-scale habitat quality, or predicting catch rates
- Best uses – habitat evaluation, EFH.





Initial Economic Impacts of the U.S. Pacific Coast Groundfish Fishery Individual Fishing Quota Program

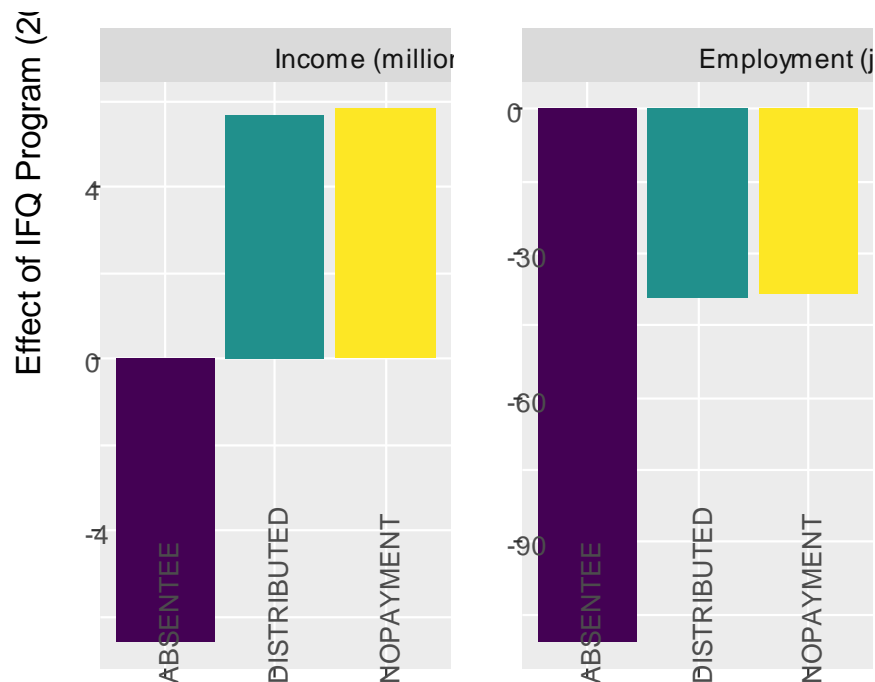
Jerry Leonard¹ and Erin Steiner¹

¹ Fisheries Resources Analysis and Monitoring Division, Northwest Fisheries Science Center

North American Journal of Fisheries Management 37, no. 4 (July 2017): 862–81.



- IFQ program income and employment
 - West Coast wide
 - 12 port areas
- **Income (2011 + 2012):**
 - Absentee scenario -- decreased by \$6.6 million
 - No Payment scenario -- increased by \$5.6 million
- **Employment:**
 - Declined under all scenarios
 - Most dramatically under Absentee Scenario



Scenario		
ABSENTEE	DISTRIBUTED	NOPAYMENT
quota payments paid outside of West Coast	quota payments distributed to ports based on EDC data	ignore quota payments



Large river habitat complexity and productivity of Chinook salmon in Puget Sound Rivers:

An application of NMFS' Puget Sound Habitat Status and Trends Monitoring Program (PSHSTM)

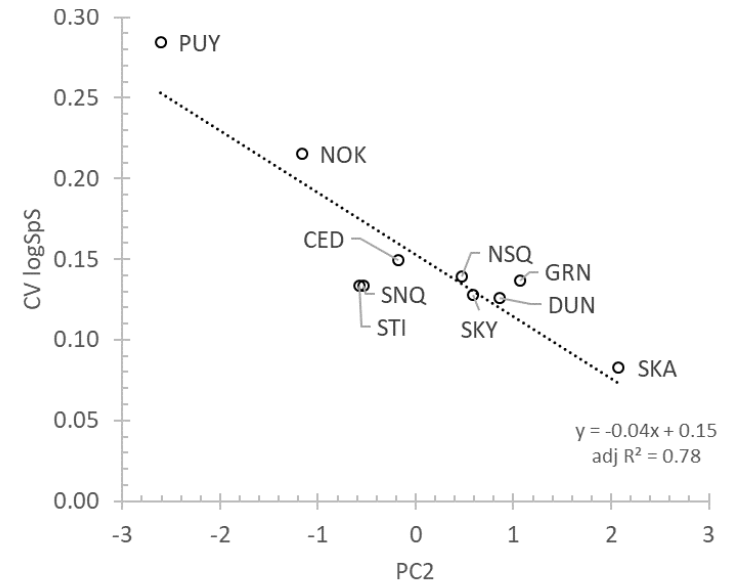
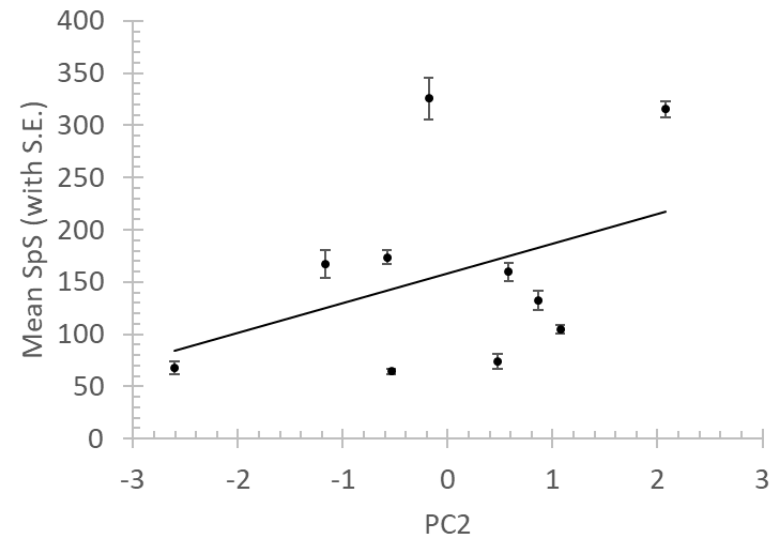
Jason E. Hall, Correigh M. Greene, Oleksandr Stefankiv, Joseph
Anderson, Britta Timpane-Padgham, Timothy J. Beechie, and
George R. Pess

Subyearling Chinook productivity and Habitat Complexity

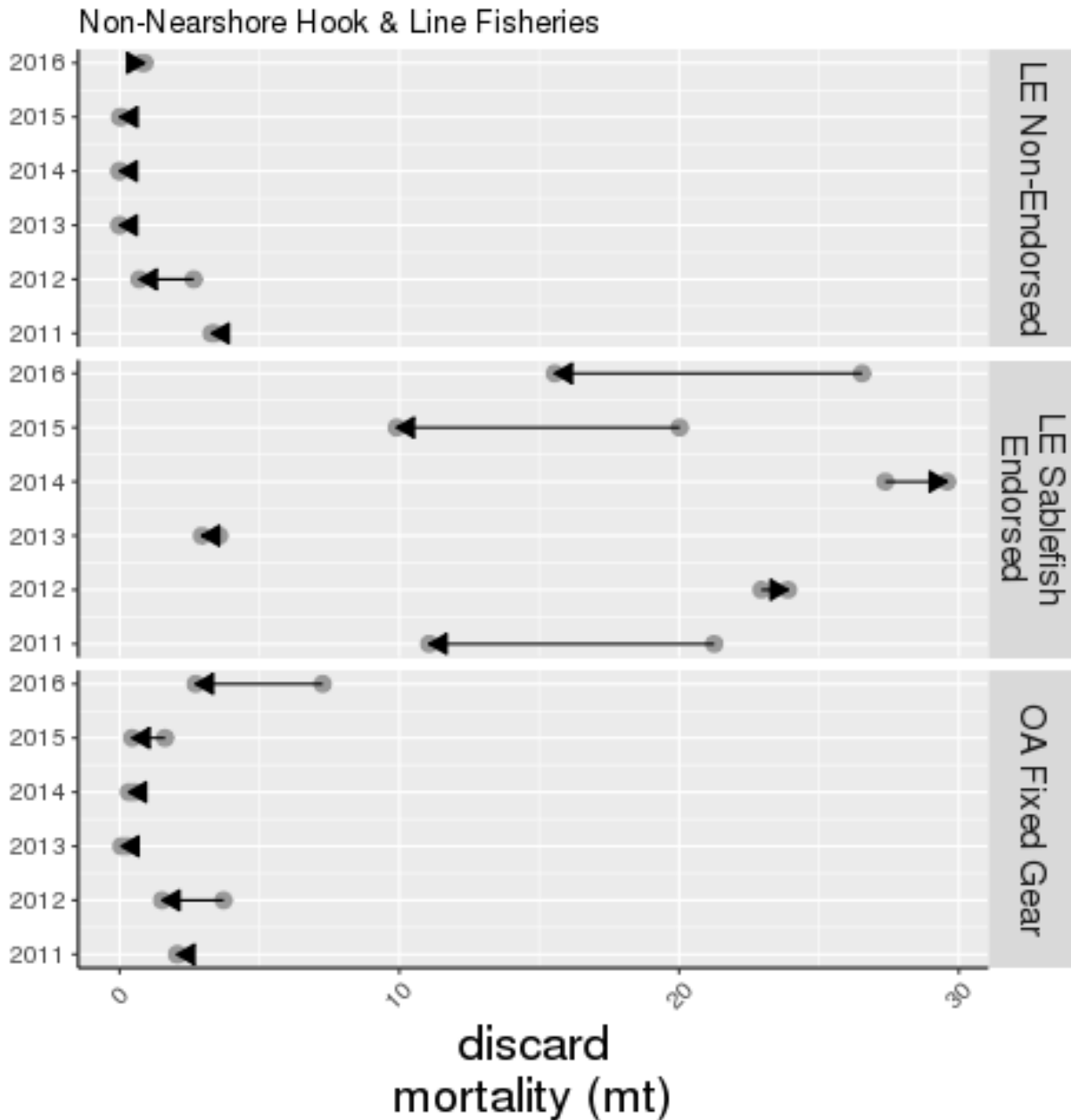


Best models: habitat complexity + annual variation in either peak flows or spawner densities

Increasing complexity = higher productivity and resilience?



Questions?



Viability method
decreased
estimated P.
halibut mortality
in most years