Science, Service, Stewardship

Agenda Item E.1.b
Supplemental Science Center PowerPoint
April 2015

Groundfish Science Report

John Stein and Michelle McClure
Northwest Fisheries Science Center

April 11, 2015

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NWFSC NORTHWEST FISHERIES SCIENCE CENTER

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Overview

- News Flashes
- Pacific Hake Assessment and MSE
- Mid-water Trawl revised analysis
- Science Update

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NMFS 2015 BREP Call for Proposals

Please note the following deadlines:

Pre-Proposal:
Thursday, April 16, 2015

Full Proposals:
Thursday, May 28, 2015

NOAA / NMFS OFFICE OF SUSTAINABLE FISHERIES

National Bycatch Reduction Engineering Program

2015 Call for Proposals

Request for Federal Assistance (RFA)

NOAA/NMFS
Office of Sustainable Fisheries
1315 East-West Highway
Silver Spring, MD 20910
(301) 427-8567
Derek.Orner@noaa.gov
http://www.nmfs.noaa.gov/by_catch/index.htm

1

www.nmfs.noaa.gov/by_catch/bycatch_BREP.htm

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Nearshore Stock Assessments Workshop

- In Portland, March 31-April 2
- Attendees represented:
  - Assessment Teams for black and china rockfishes and kelp greenling
  - Staff from WDFW, ODFW, and CDFW
  - SSC, including all involved STAR Panel chairs
  - Fishing industry
- Reviewed uses and limitations of available data
- Discussed options for modeling each stock
- Very productive exchanges

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2015 Pacific Hake/Whiting Stock Assessment

As reported by the Joint Technical Committee

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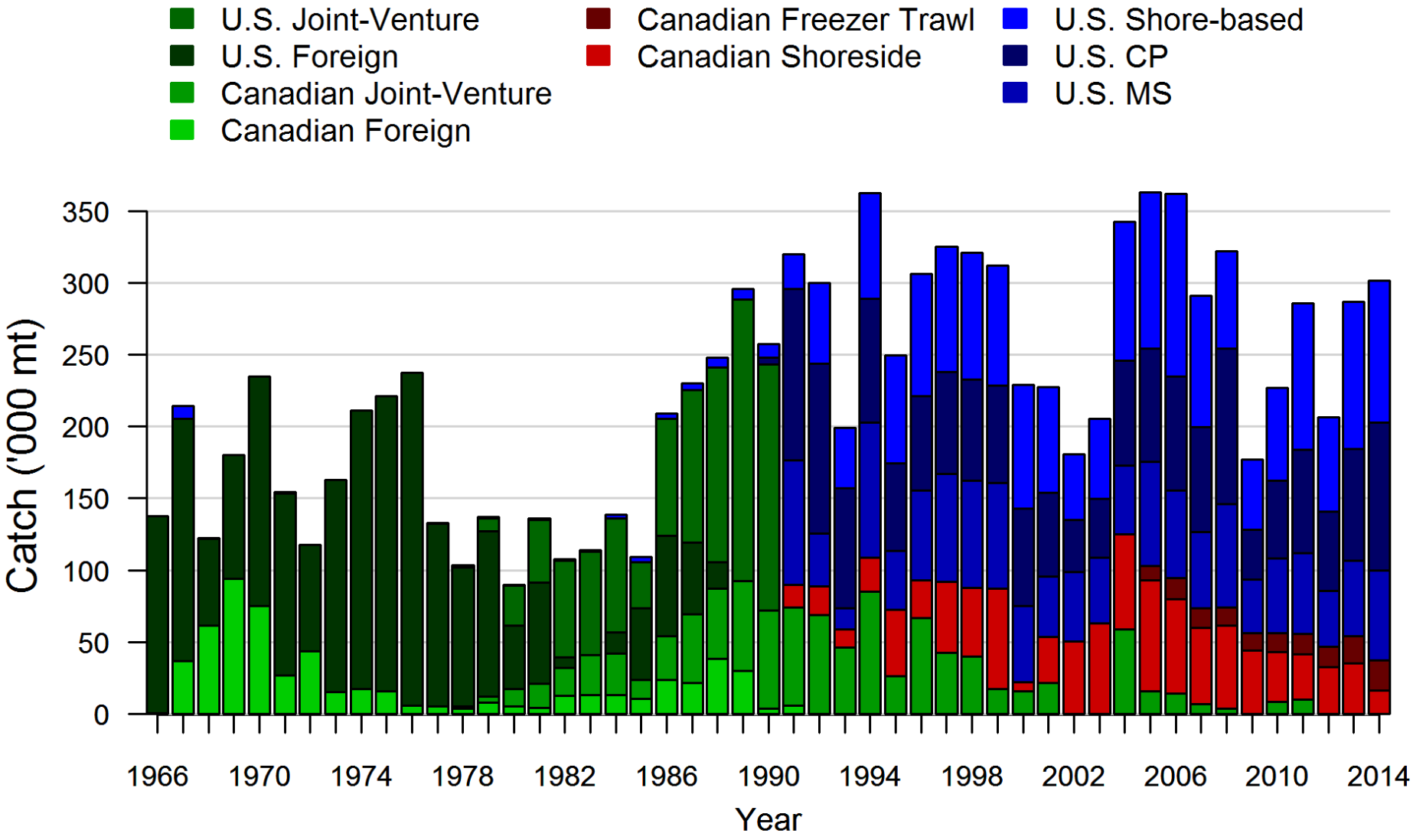
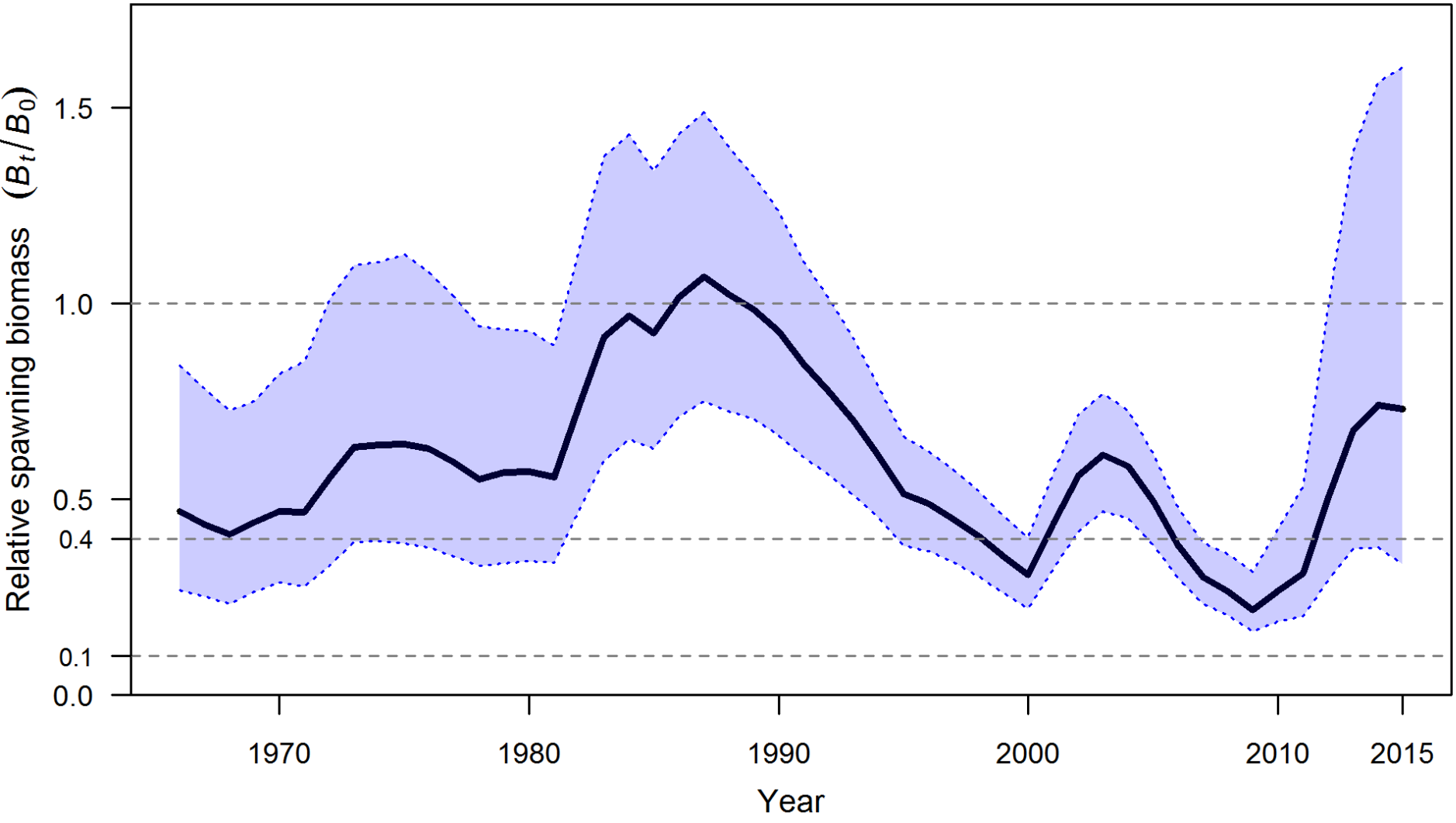
Overview of Pacific Hake/Whiting Data

- 2014 Coastwide catch = 301,573 t; (TAC (adjusted for carryovers) = 428,000 t.)
- No 2014 acoustic survey.
- Ages in 2014 fishery consistent with expectations.

Pacific Hake/Whiting Catches

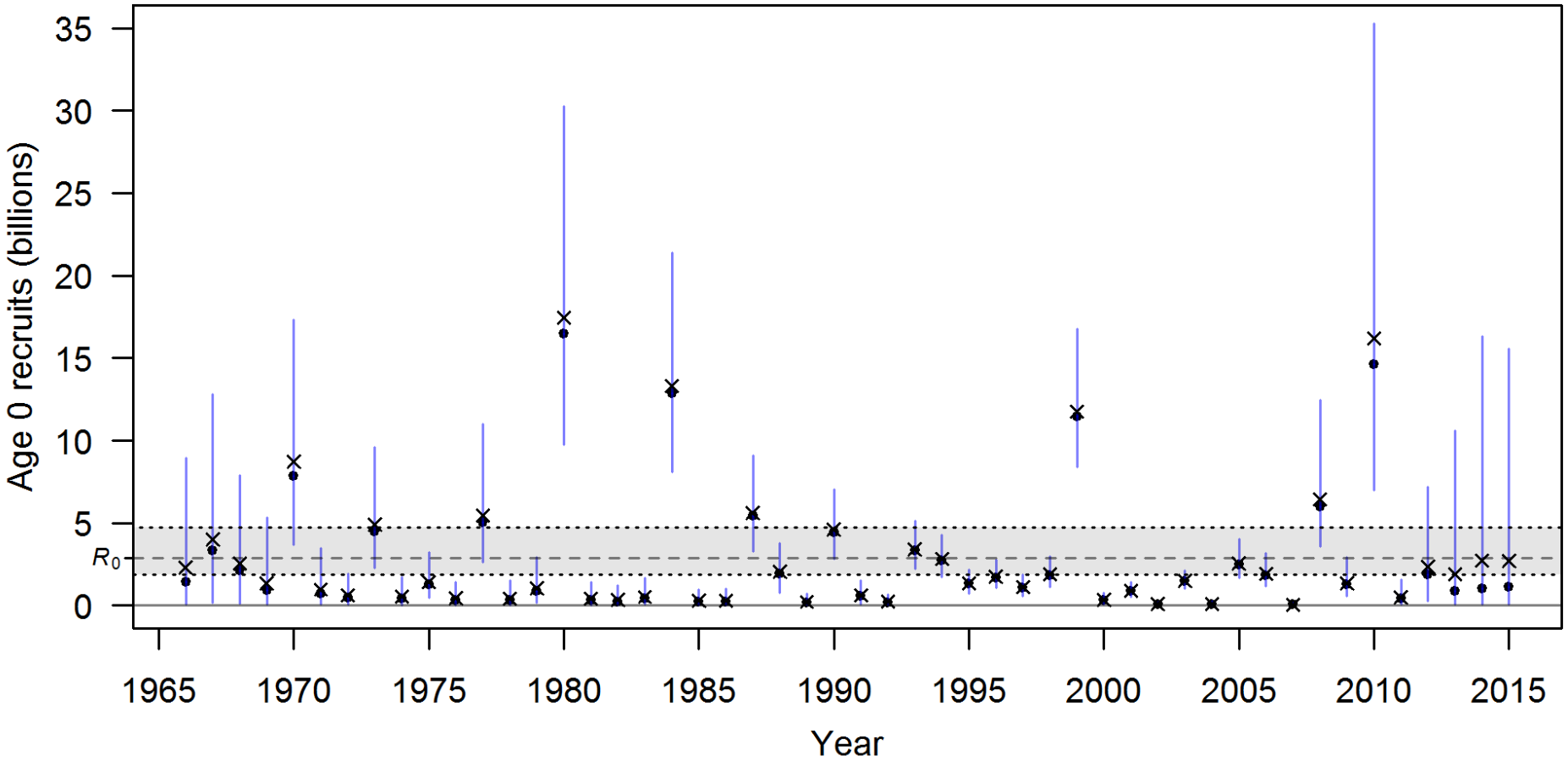


Estimated stock status (relative to B0)



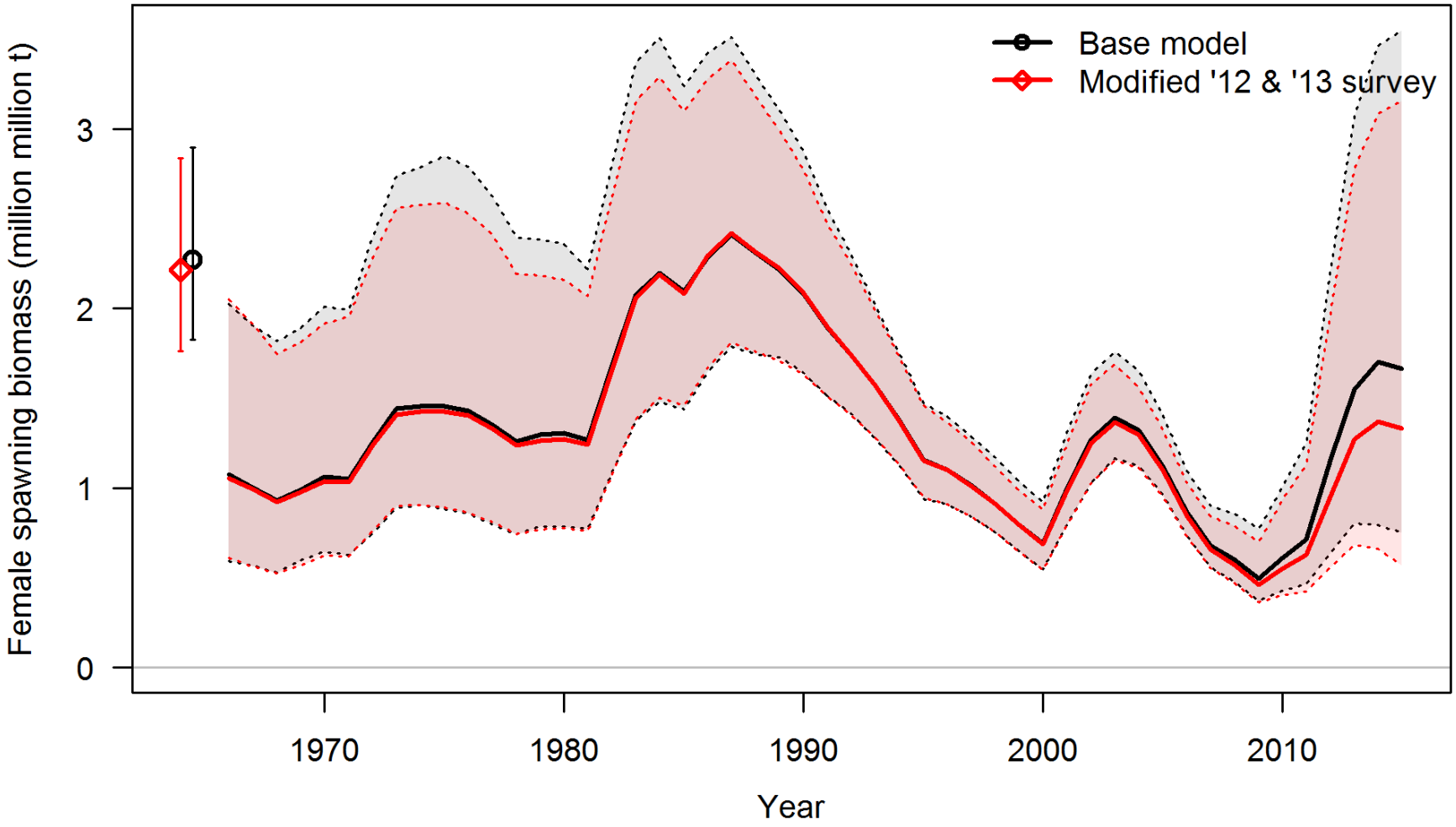
Estimated Recruitment

- 2008 and 2010 were good recruitment years
- Little information available about subsequent years



Sensitivity to survey biomass analysis

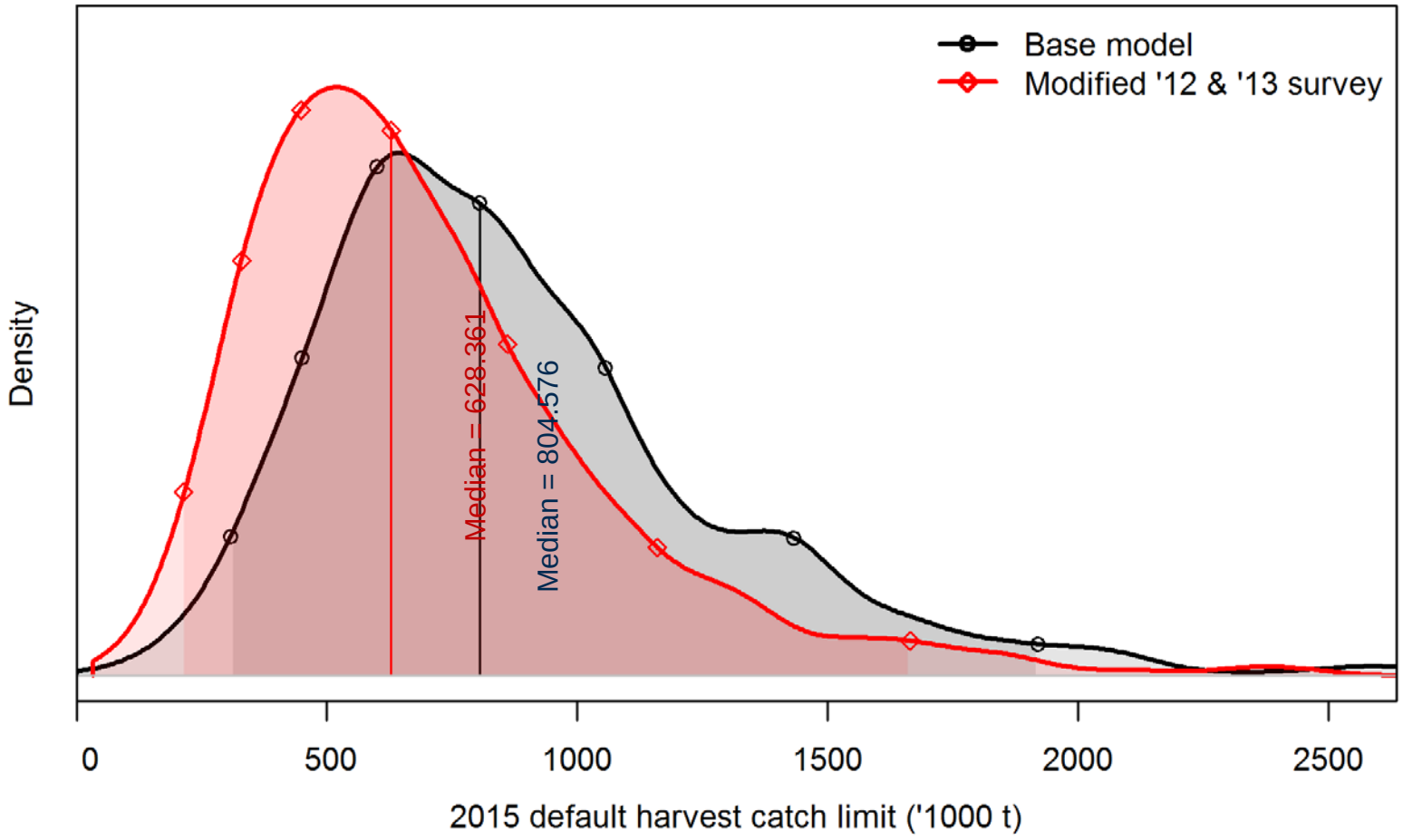
- Removing extrapolation in 2012 and 2013 reduces survey biomass resulting in smaller recent biomass.



Forecasts and catch predictions

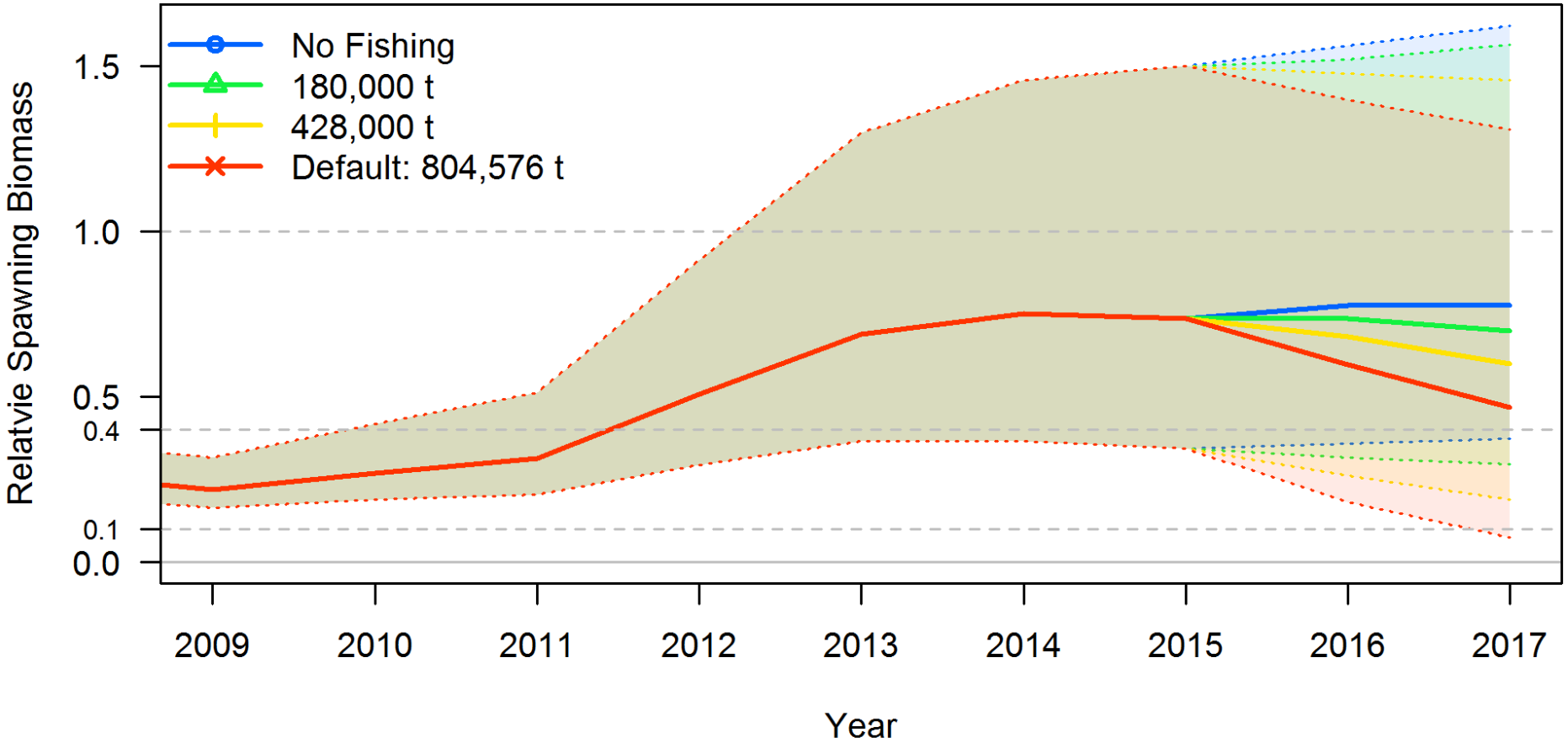
The 2015 coastwide (US + Canada) OFL is 804,576 t

- Slightly lower than last year.
- Sensitivity OFL is 628,361 t.



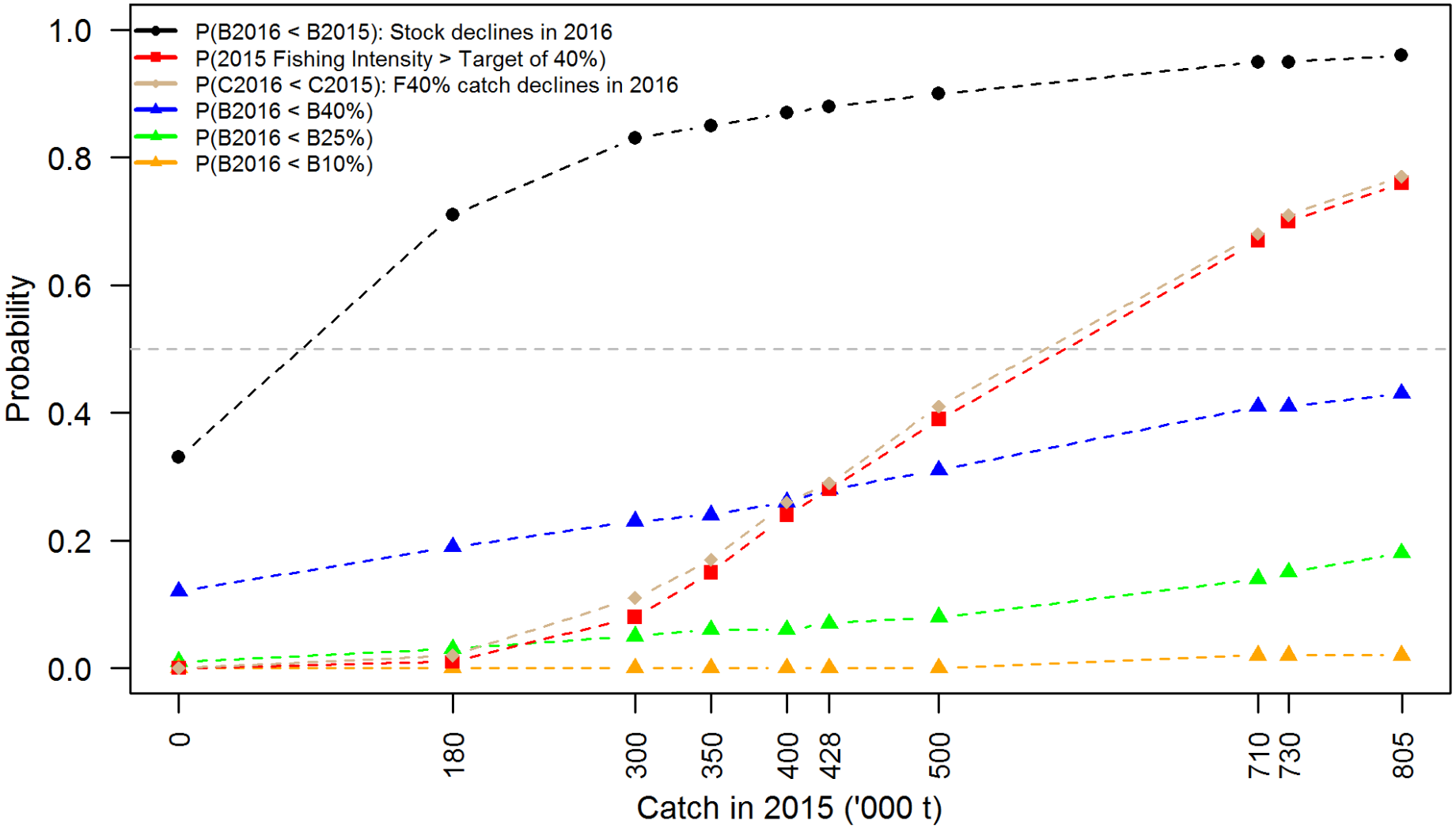
Forecasts

- Population is predicted to be level or declining with any fishing above 180,000 t.



Metrics for alternative survey model

- Lines show **2016** probabilities relative to reference points at different **2015** catch levels.



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Overview of Pacific Hake/Whiting Assessment

- Stock status is high based on good recruitment in 2008 and 2010 combined with stable catches.
- The catch limit based upon the median default harvest rate calculated for 2015 is 804K/ 628K t

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Expectations for the future

- Fishery in 2015 will depend on availability of fish in US and Canada and distribution relative to bycatch species.
- Biomass estimate from 2015 acoustic survey will be very important to 2016 assessment and catch advice.
- Joint Technical Committee continues development of a Management Strategy Evaluation.
- More investigation into environmental links to patterns of hake migration and distribution.

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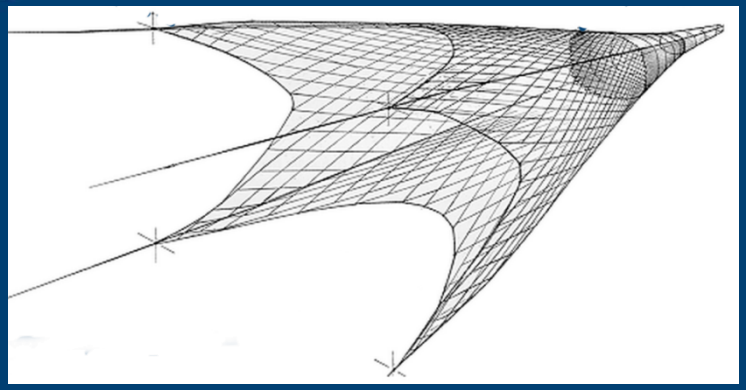

Seafloor Contact in Midwater Trawls Engaged in the Pacific Hake Fishery

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PFMC Informational Report 4:
NMFS Report on Analysis of Seafloor Contact in Midwater Trawls Engaged in the US West Coast Pacific Hake Fishery

1. To what extent do midwater trawlers participating in Pacific Coast hake fisheries fish within the EFH Conservation Areas?
2. Is it likely that midwater trawlers participating in hake fisheries contact the seafloor during fishing, and how often?
3. What can we say about the significance of seafloor contact?

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Midwater trawler hauls within the EFH Conservation Areas

Straight connection b/w start and stop assumed

Range for towline model = 3.7 – 11.9%

Towline Length Proportion	# Hauls	% Total
(outside) =0%	20,112	88.1%
>0%	2,711	11.9%
>=10%	2,345	10.3%
>=20%	2,033	8.9%
>=40%	1,561	6.8%
>=50%	1,411	6.2%
>=60%	1,265	5.5%
>=80%	1,096	4.8%
>=90%	1,007	4.4%
=100%	846	3.7%

Table 4

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Change through time in EFHCA hauls

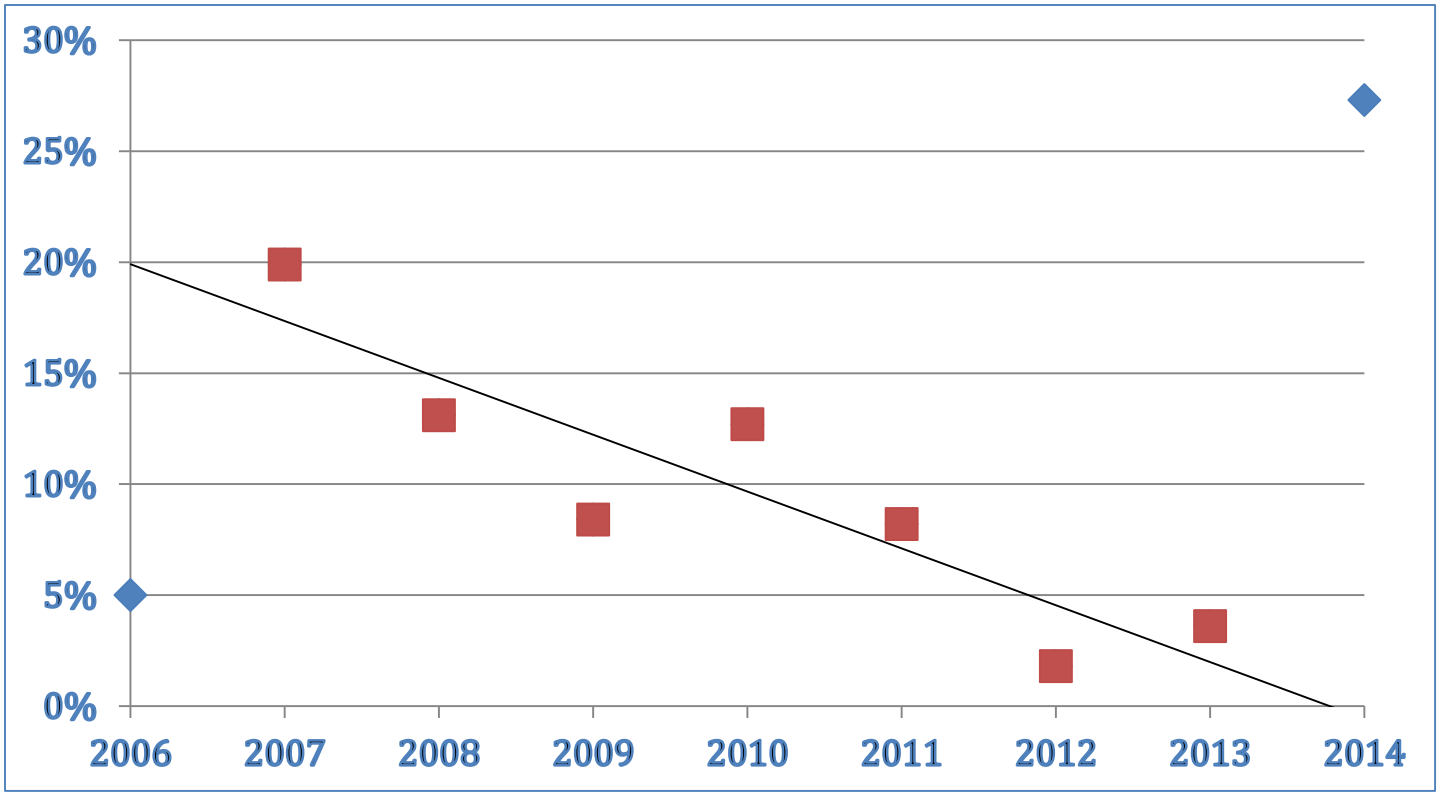

Figure 2

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Likelihood that midwater trawlers participating in hake fisheries contact the seafloor during fishing.

Index -- benthic taxa in hauls

- ASHOP data, 2006-2014
- Rockfishes, flatfishes, sessile invertebrates, thornyheads, skate, ‘other’
  - (53 of 194 taxa recorded in hauls)
- Straight line tow assumed

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Context

- Underestimation
  - Escape from net, associated gear contact
- Overestimate
  - Between tow contamination
- Sensitive to:
  - Animal behavior and habits
  - True tow and touchdown location
  - Thresholds for inclusion

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Hauls with Benthic Taxa

Hauls	Benthic 1		
22,823	4,311		
100%	18.9%		
Inside EFHCA			
2,711	422		
	15.6%		

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Sensitive to Animal Habits

Hauls	Benthic 1	Benthic 1+2	Benthic 1+2+3
22,823	4,311	4,412	5,246
100%	18.9%	19.3%	23.0%
Inside EFHCA			
2,711	422	440	522
	15.6%	16.2%	19.3%

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Sensitive to Threshold for Tow Inclusion

Straight connection b/w start and stop assumed

Range for towline model = 3.7 – 11.9%

Towline Length Proportion	# Hauls	% Total
(outside) =0%	20,112	88.1%
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Table 4

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Sensitive to Thresholds for Inclusion

Total Hauls in EFHCA	Any Benthic Taxa	Threshold of 10 kg/ 5 individuals
2271	422	177
(Benthic rating of 1, only)		

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What can we say about the biological significance of seafloor contact?

- Distribution across habitat types
- Differential ‘positives’ by specific conservation area

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Differential indication of contact across CAs

EFHCA	# Hauls Inside	# Hauls w/ Benthic Taxa	%	# Hauls w/ >10 kg Benthic Taxa	%
Olympic 2	577	112	19.4%	40	6.9%
Biogenic 1	424	7	1.7%	2	0.5%
Biogenic 2	98	9	9.2%	5	5.1%
Grays Canyon	167	29	17.4%	4	2.4%
Biogenic 3	1	0	0.0%	0	0.0%
Nehalem Bank/Shale Pile	3	2	66.7%	2	66.7%
Astoria Canyon	5	0	0.0%	0	0.0%
Siletz Deepwater	34	1	2.9%	0	0.0%
Daisy Bank/Nelson Island	29	9	31.0%	1	3.4%
Newport Rockpile/Stonewall Bank	1	0	0.0%	0	0.0%
Heceta Bank	8	2	25.0%	0	0.0%
Deepwater off Coos Bay	1	0	0.0%	0	0.0%
Bandon High Spot	725	338	46.6%	97	13.4%
Rogue Canyon	137	2	1.5%	0	0.0%
Seaward of the 700-fm contour	501	11	2.2%	1	0.2%
ALL EFHCAs Combined	**2,711**	**522**	**19.3%**	**152**	**5.6%**

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Science Update

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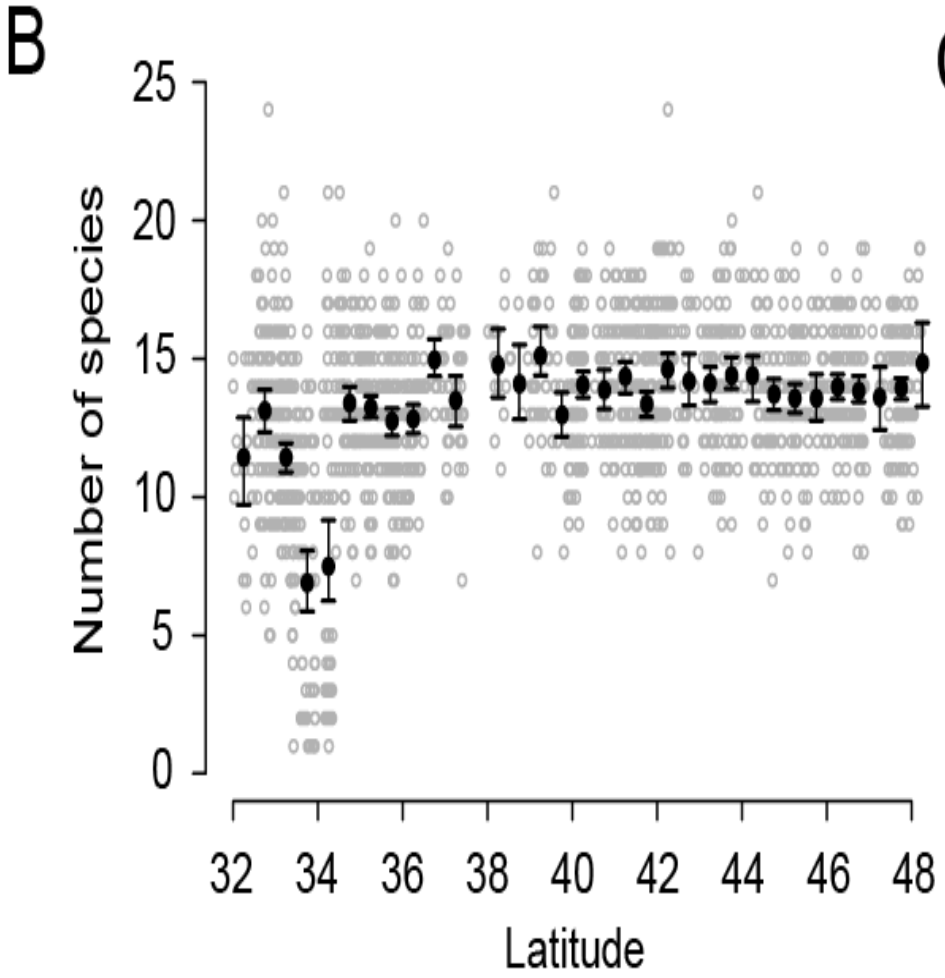
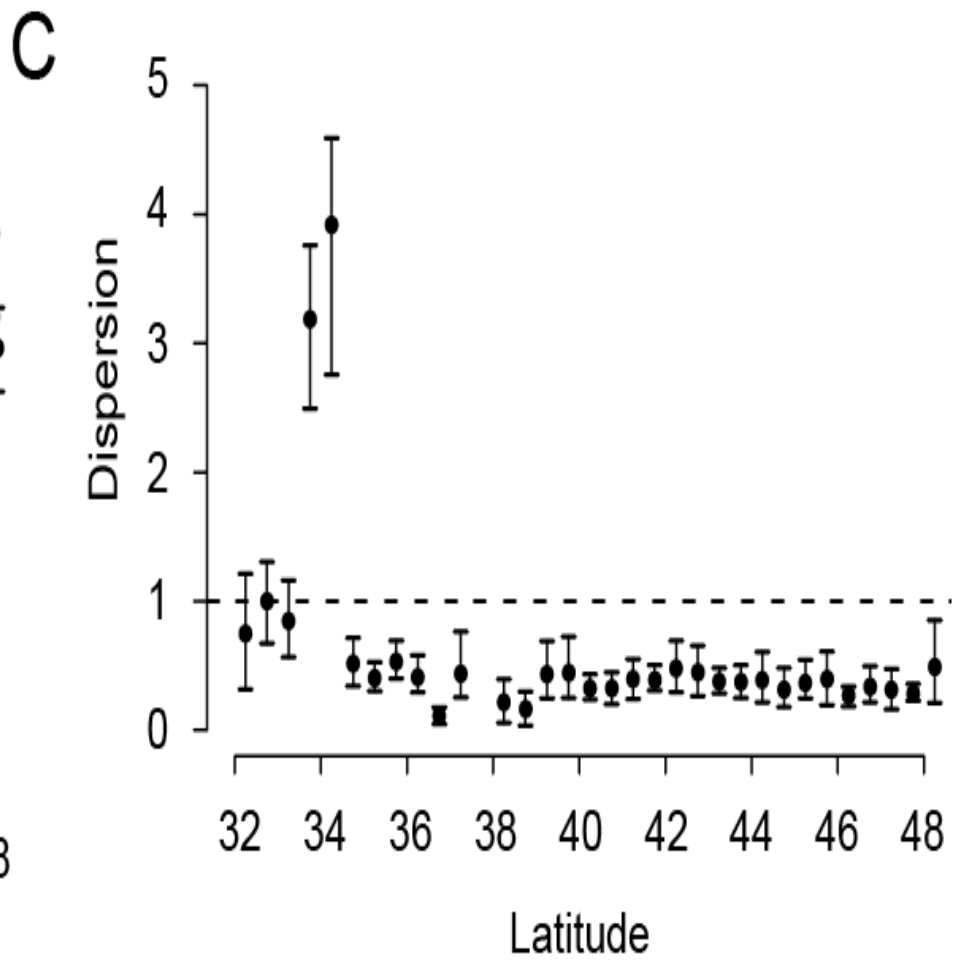
Dealing with under- and over-dispersed count data in life history, spatial, and community ecology

Heather Lynch [1], James Thorson [2], Andrew Shelton [2]

[1] SUNY, Stony Brook
[2] NWFSC/NMFS

Ecology, 95 (11): 3173-3180, 2014.


B
Number of species
0
5
10
15
20
25
32
34
36
38
40
42
44
46
48
Latitude


C
Dispersion
0
1
2
3
4
5
32
34
36
38
40
42
44
46
48
Latitude

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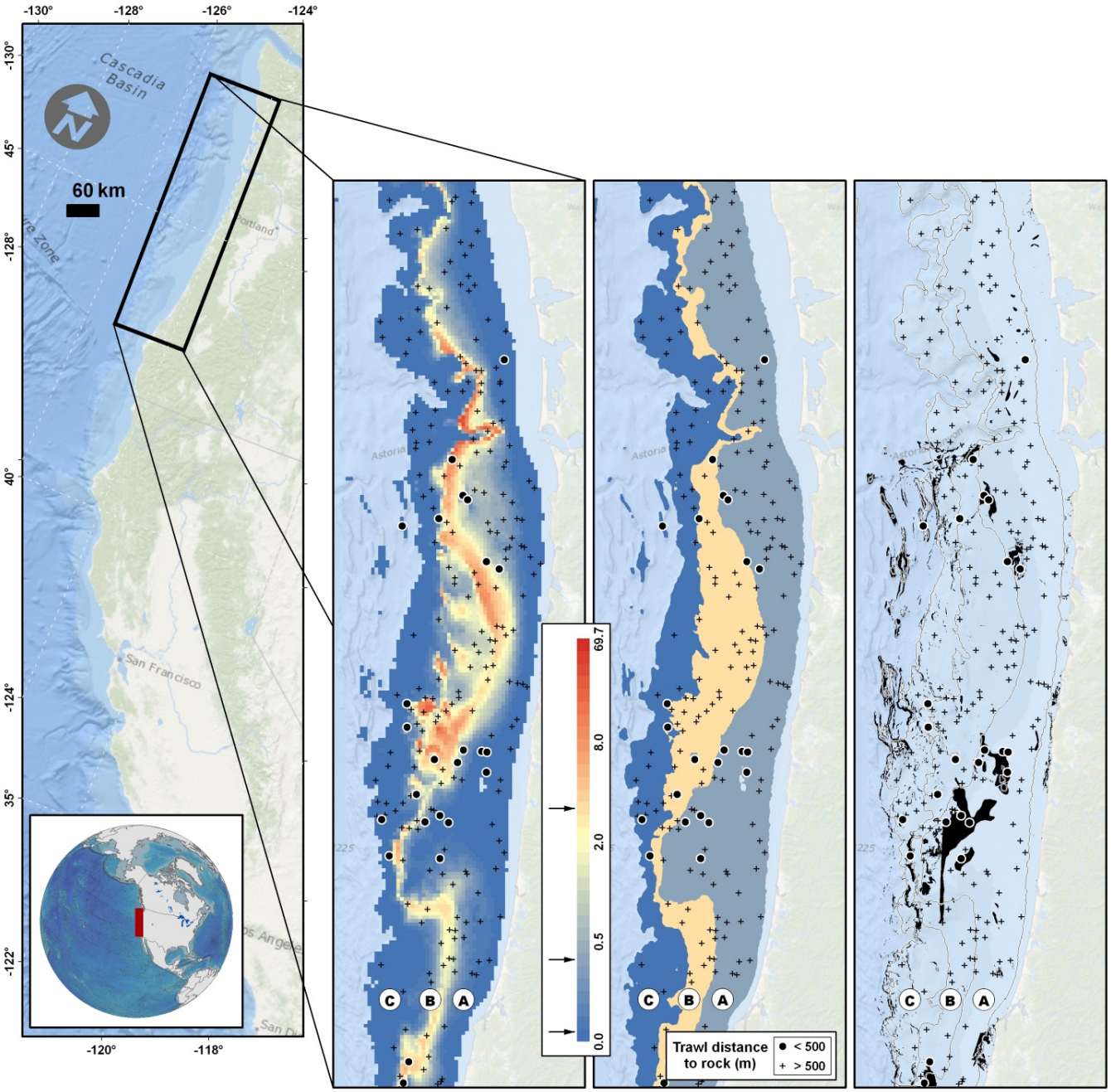
Spatial, semi-parametric models improve estimates of species abundance and distribution

Andrew Shelton[1], James Thorson[2], Eric Ward[1], Blake Feist[1]

[1] Conservation Biology Division, NWFSC/NMFS
[2] Fishery Resource Analysis and Monitoring Division, NWFSC/NMFS

Canadian Journal of Fisheries and Aquatic Sciences, 71(11):1655-1666, 2014.


-130°
-128°
-126°
-124°
-122°
-120°
-118°
45°
40°
35°
Cascadia Basin
60 km
San Francisco
Astoria
69.7
8.0
2.0
0.5
0.0
C
B
A
Trawl distance to rock (m)
< 500
> 500

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QUESTIONS?