

SEO Demersal Shelf Rockfish Stock Assessment for 2019

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Stock Assessment

DSR Complex:



Yelloweye
(*S. ruberrimus*)

Quillback
(*S. maliger*)

Tiger
(*S. nigrocinctus*)

China
(*S. nebulosus*)



Canary
(*S. pinniger*)

Copper
(*S. caurinus*)

Rosethorn
(*S. helvomaculatus*)

Stock Assessment

EYKT
1995, 1997, 1999,
2003, 2009, 2015,
2017

NSEO
1994, 2016,
2018

CSEO
1994, 1995, 1997, 2003,
2007, 2012, 2016, **2018**

SSEO
1994, 1999, 2005,
2013, **2018**

Juneau

Alexander Archipelago

tt Guyot

65 Durgin Guyot

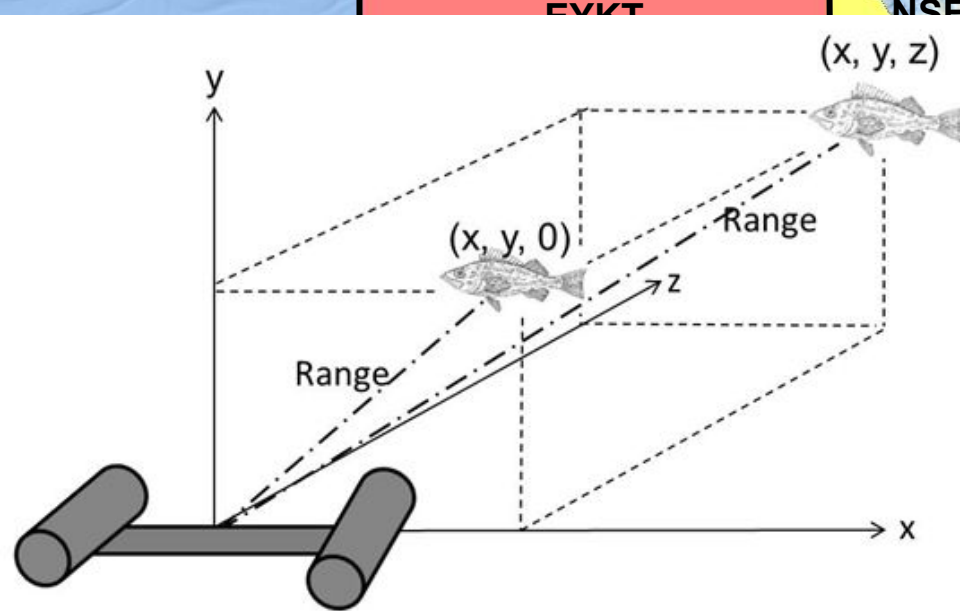
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Walk

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Stock Assessment



Stock Assessment

Tier 4 Stock Assessment—based on the total of biomass of yelloweye rockfish:

- Density of yelloweye by mgmt area
- Avg. weight of yelloweye by mgmt area
- Area of rocky habitat by mgmt area

$$YE\ Biomass_{a,y_1} = Avg\ Wt_{y_1} * Habitat(km^2)_a * Density\ YE(n/km^2)_{a,y_2}$$

where $a = area(EYKT, NSEO, CSEO, SSEO)$, $y_1 = current\ year$, and $y_2 = year\ of\ last\ ROV\ survey$

$$Total\ YE\ Biomass = \sum_{a_i}^4 YE\ Biomass_i$$

Stock Assessment

Tier 6 Stock Assessment—Other DSR (Quillback, Tiger, China, Canary, Copper, & Rosethorn):

- Derive OFL & ABC from estimates from commercial, sport, and subsistence (2010–2014)

Quantity (Other DSR only)	As estimated or <i>specified last year for:</i> 2018	As estimated or <i>recommended this year for:</i> 2019
ABC (t) Tier 6	20	20
OFL (t) Tier 6	26	26

Area	Year	# transects	# YE ^b	Meters surveyed	Encounter rate (YE/m)	Density (YE/km ²)	Lower CI (YE/km ²)	Upper CI (YE/km ²)	CV
<u>EYKT^a</u>	1995	17	330	22,896	0.014	2,711	1,776	4,141	0.20
	1997	20	350	19,240	0.018	2,576	1,459	4,549	0.28
	1999	20	236	25,198	0.009	1,584	1,092	2,298	0.18
	2003	20	335	17,878	0.019	3,825	2,702	5,415	0.17
	2009	37	215	29,890	0.007	1,930	1,389	2,682	0.17
	2015	33	251	22,896	0.008	1,755	1,065	2,891	0.25
	2017	35	134	33,960	0.004	1,072	703	1,635	0.21
CSEO	1994 ^c					1,683			0.10
	1995	24	235	39,368	0.006	2,929			0.19
	1997	32	260	29,273	0.009	1,631	1,224	2,173	0.14
	2003	101	726	91,285	0.008	1,853	1,516	2,264	0.10
	2007	60	301	55,640	0.005	1,050	830	1,327	0.12
	2012	46	118	38,590	0.003	752	586	966	0.13
	2016	32	160	30,726	0.005	1,101	833	1,454	0.14
NSEO	1994 ^c	13	62	17,622	0.004	765	383	1,527	0.33
	2016	36	125	34,435	0.004	701	476	1,033	0.20
SSEO	1994 ^c	13	99	18,991	0.005	1,173			0.29
	1999	41	360	41,333	0.009	2,376	1,615	3,494	0.20
	2005	32	276	28,931	0.010	2,357	1,634	3,401	0.18
	2013	31	118	30,439	0.004	986	641	1,517	0.22

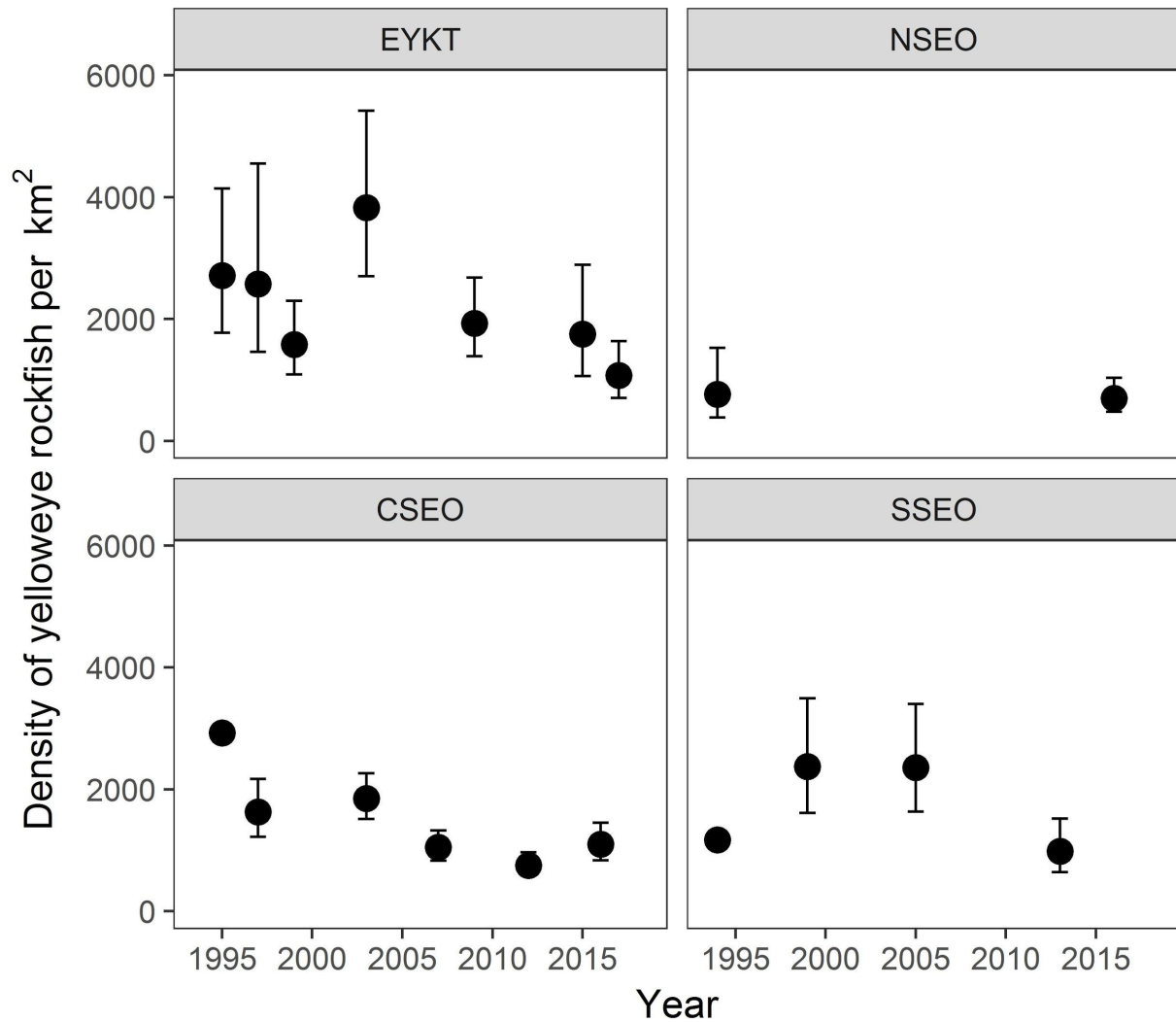
Updates to Model Input Data and Methods

Input Data: new avg wts
from port sampling

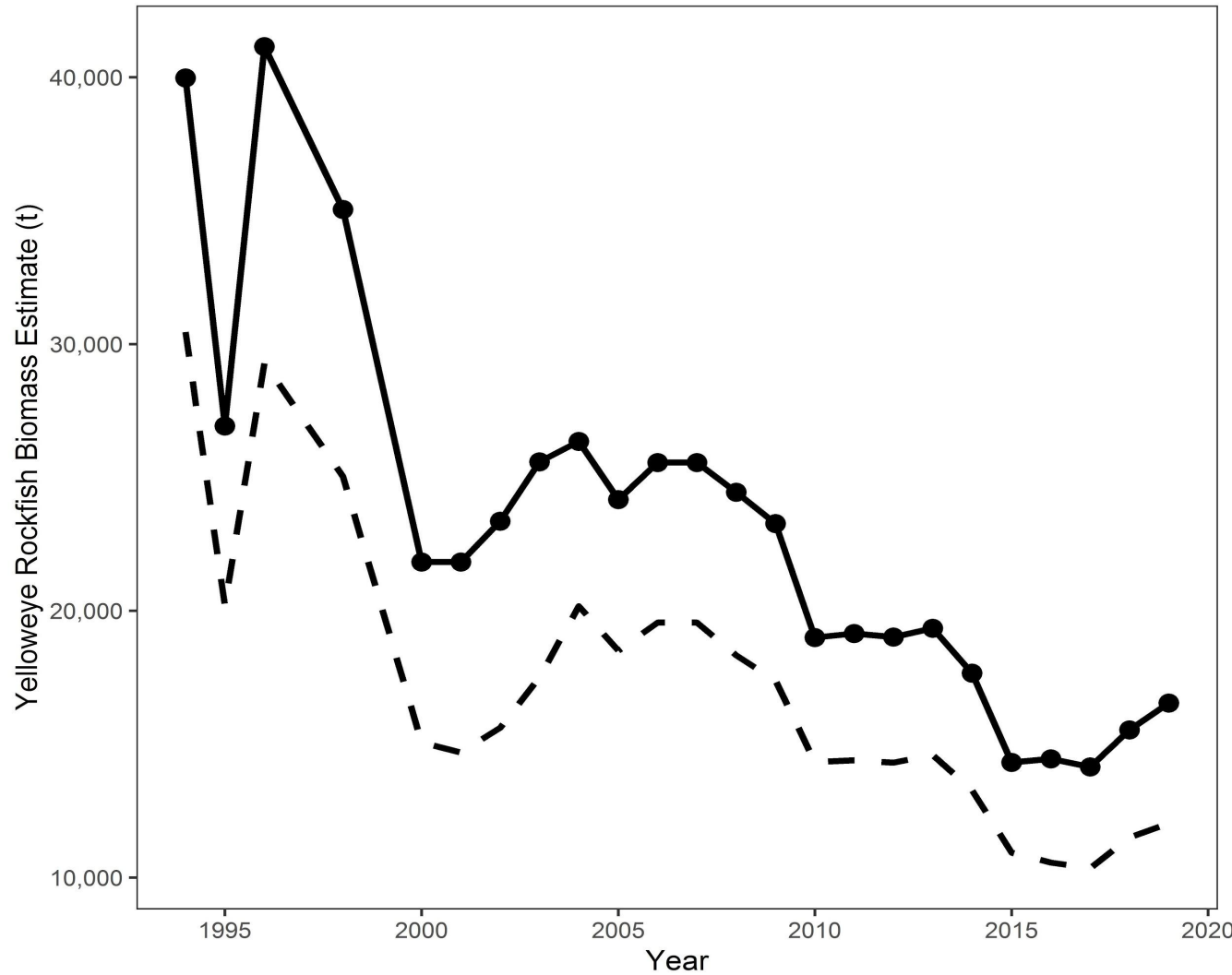
Methodology: Tier 4
Yelloweye + Tier 6
calculations for other DSR

Quantity	As estimated or <i>specified last year for:</i>		As estimated or <i>recommended this year for:</i>	
	2018	2019	2019	2020
M (natural mortality rate)	0.02	0.02	0.02	0.02
Tier	4	4	4	4
Yelloweye Biomass (t)	11,508		12,029	
$F_{OFL} = F_{35\%}$	0.032	0.032	0.032	0.032
$\text{max}F_{ABC}$	0.026	0.026	0.026	0.026
F_{ABC}	0.020	0.020	0.020	0.020
DSR OFL (t)	394	394	411	411
DSR max ABC (t)	319	319	333	333
ABC (t)	250	250	261	261
Status	As determined last year for:		As determined this year for:	
	2016	2017	2017	2018
Overfishing	No	n/a	No	n/a

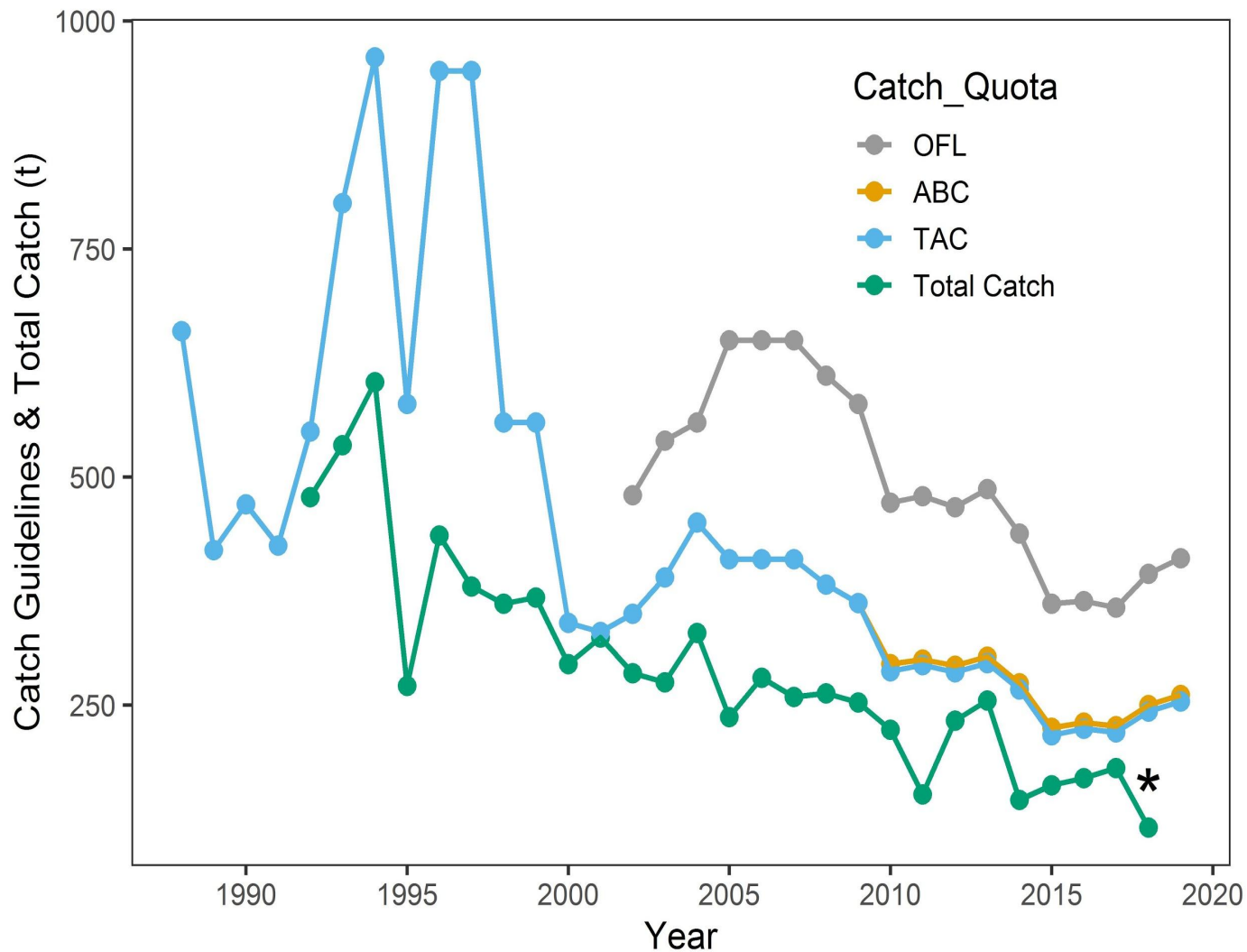
Sub & ROV Density Estimates (95% CI)



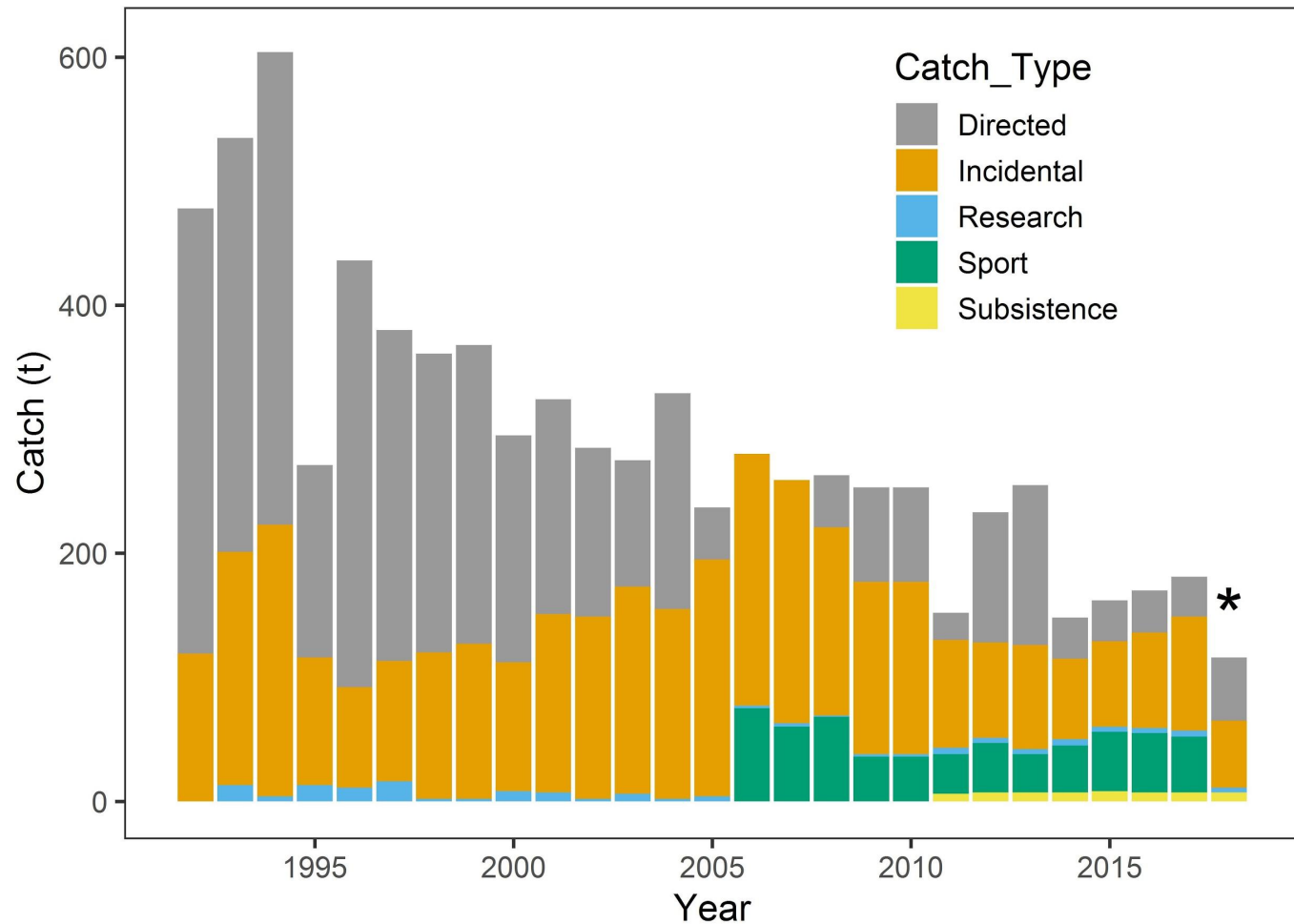
YE Biomass w/ Lower 90% CI



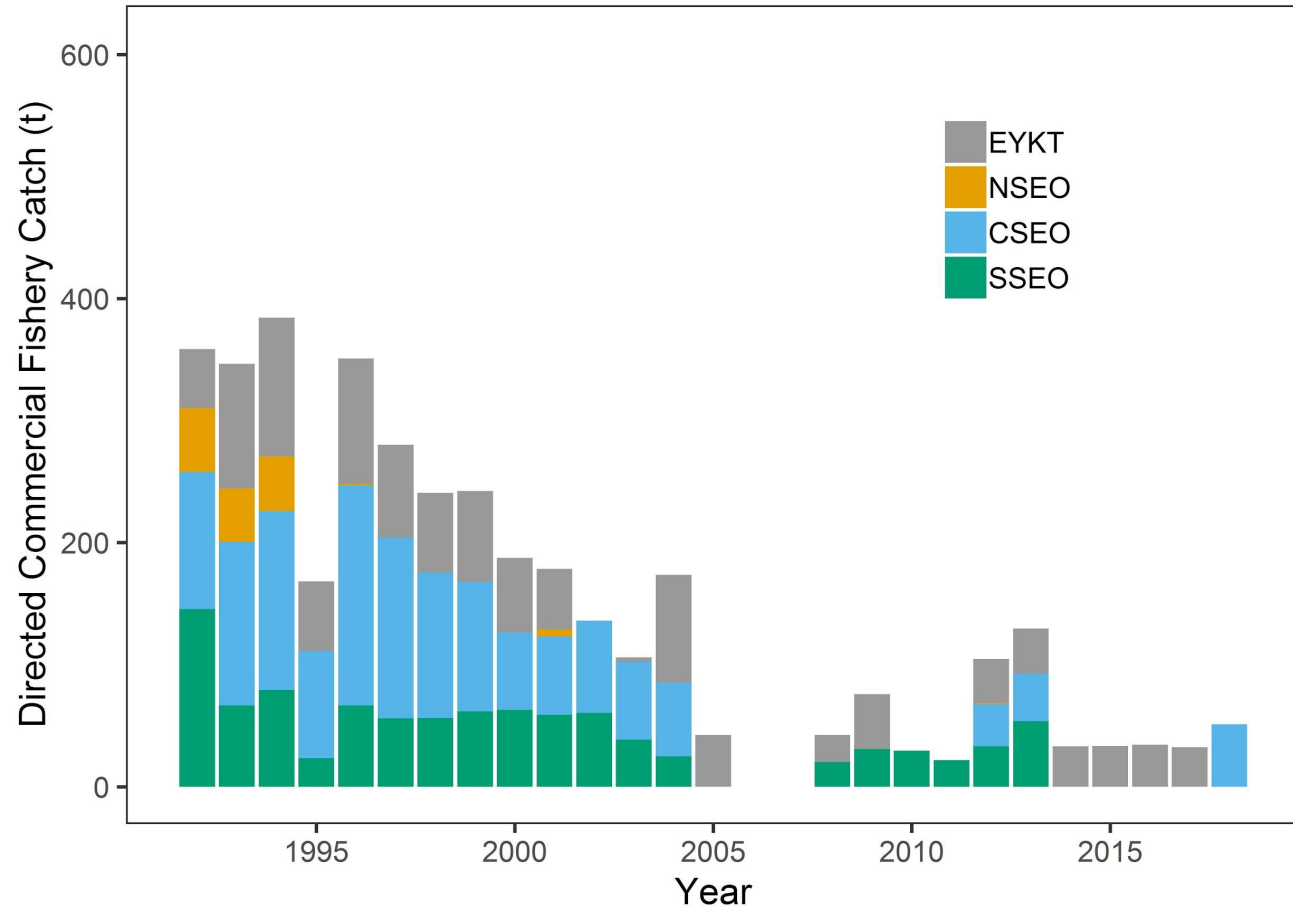
Catch Guidelines vs Total Catch



SEO DSR Catch by Sector

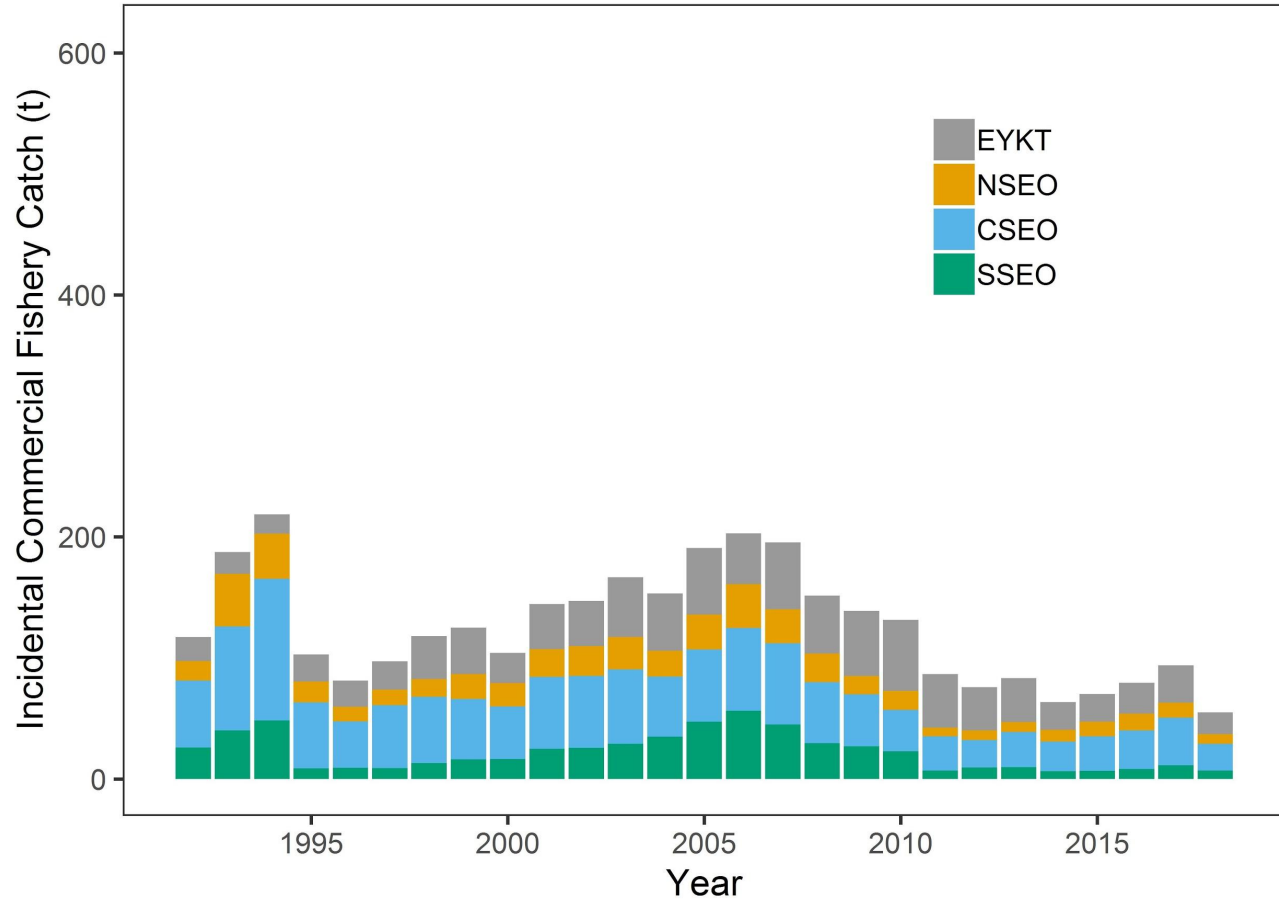


Directed Commercial DSR Catch



Incidental Commercial DSR Catch

(halibut, lingcod, sablefish, P.
cod, &
salmon troll (2015-present))



Recommended Allocation

2019 recommended ABC = 261 mt

261 t – 7 t (subsistence catch) = 254 t

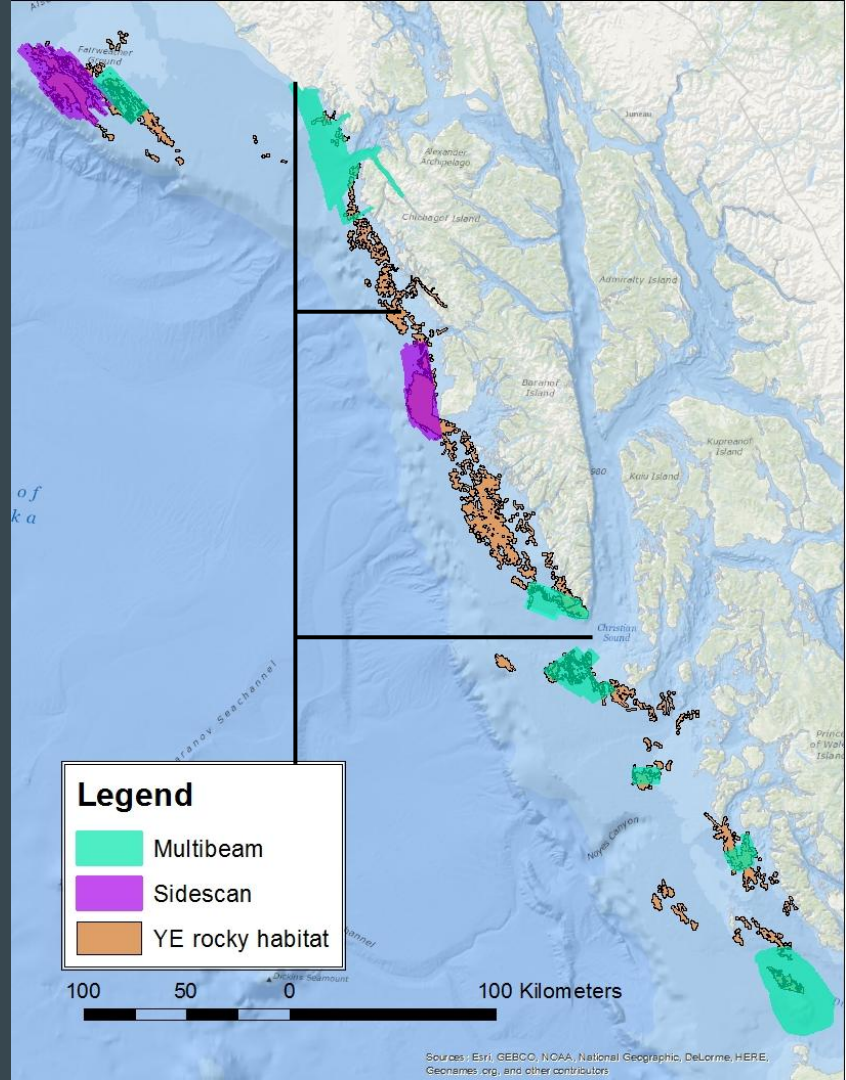
Allocation: 84% Commercial / 16% Sport

213 t to Commercial / 41 t to Sport



Future Research

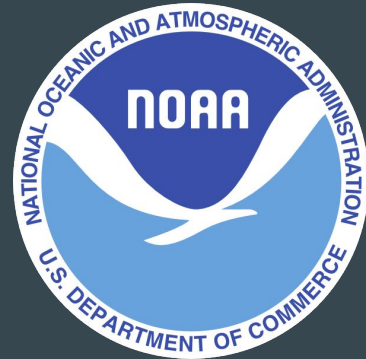
- Age Structured Assessment in 2020
- Increase survey consistency for mgt areas
- Density estimates in 2019
 - SSEO, NSEO, & CSEO
- Survey EYKT in 2019
- Updating habitat maps using available information from NOAA, USGS, and Alaska Longliners Fisheries Association (ALFA)
- New rockfish/lingcod biologist in March 2018



Sources: Esri, GEBCO, NOAA, National Geographic, DeLorme, HERE, Geonames.org, and other contributors

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Questions?

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