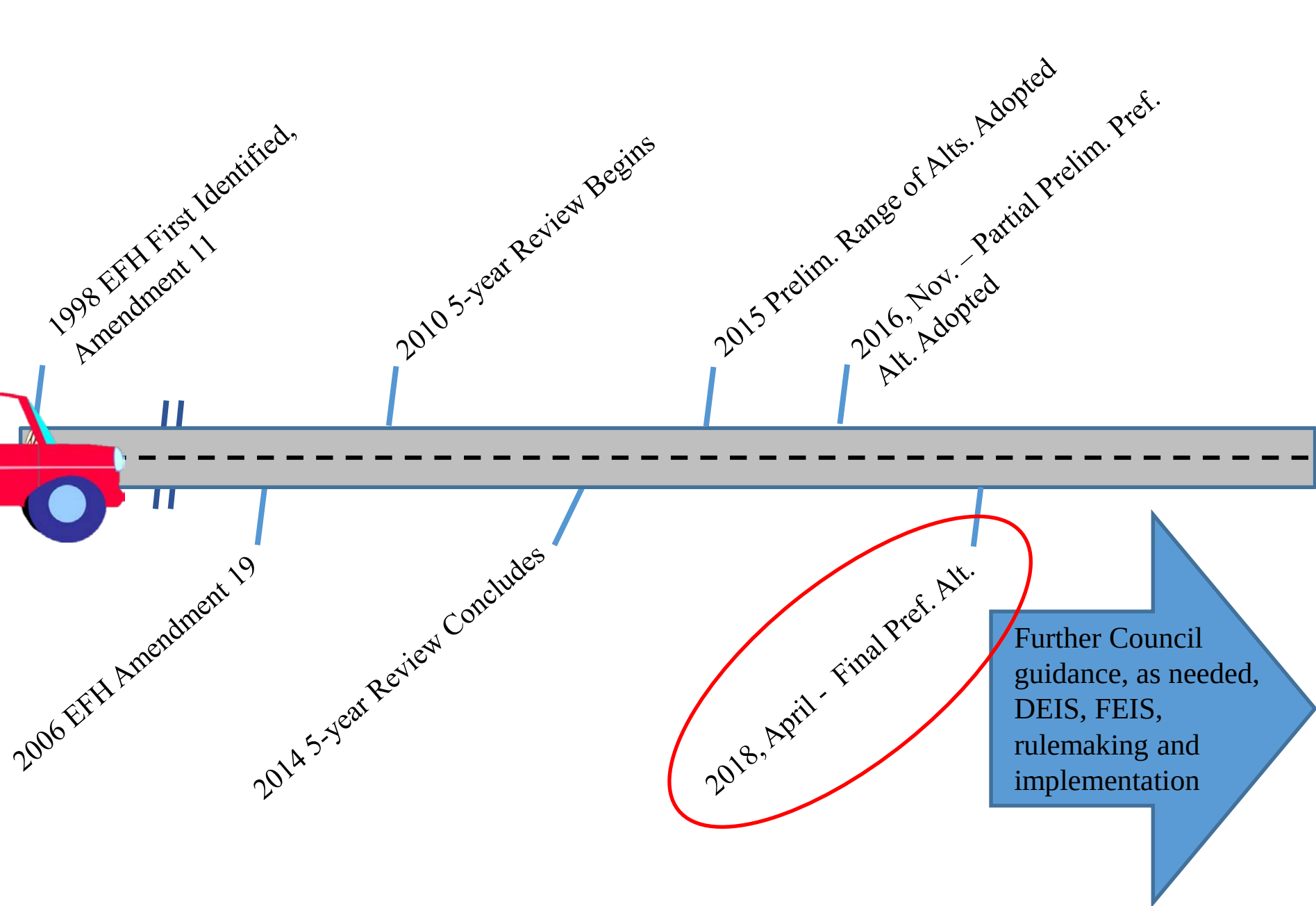


Amendment 28 to the Groundfish FMP

Revisions to Essential Fish Habitat and
Rockfish Conservation Areas

Pacific Fishery Management Council Meeting
Portland, Oregon
April 2018



Alternatives Analyzed

PPA for Washington

No-action Alternative: Keep current EFHCAs, keep trawl RCA, continue to allow bottom-contact gear in waters deeper than 3,500 m.

Subject Area	Action Alternatives						
1. EFHCA changes (re-openings and closures)	1.a Collaborative	1.b Oceana, et al.	1.c MTC/	1.d Garibaldi Reef South	1.e Rittenburg Bank	1.f Potato Bank correction	1.g New EFHCAs in WA
2. Adjustments to Trawl RCA	2.a Remove the trawl RCA		2.b Remove the trawl RCA, and, in Washington, implement discrete area closures (DACs).			2.c Remove trawl RCA, and implement block area closures (BACs)	
3. Use MSA Sec. 303(b) discretionary authorities	3.a Close waters deeper than 3,500 m to bottom contact gear					PPA for Oregon & California	

PPA

Alternative 1.a Collaborative

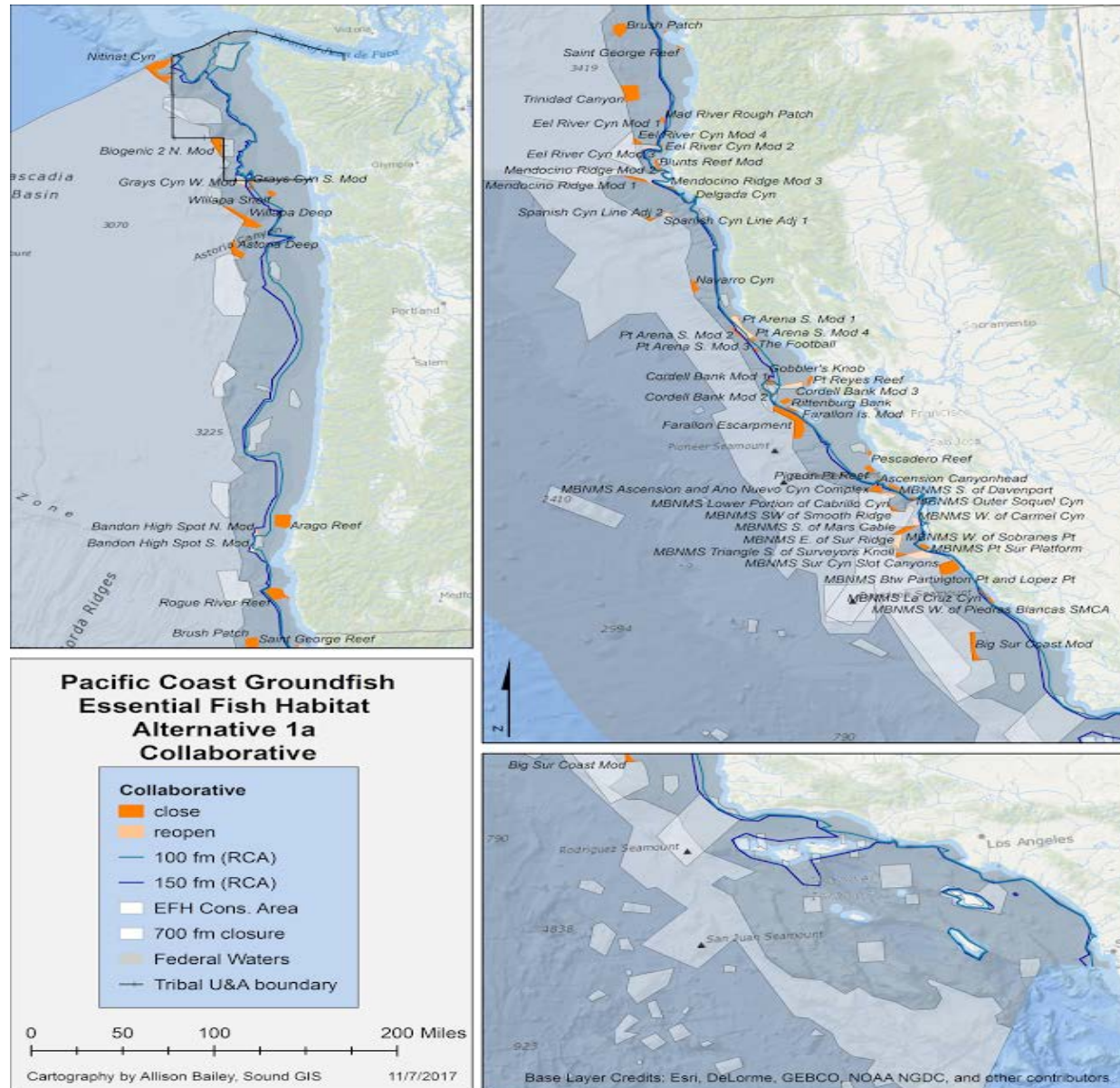


Figure 2-8, Page 2-17

Alternative 1.b Oceana et. al

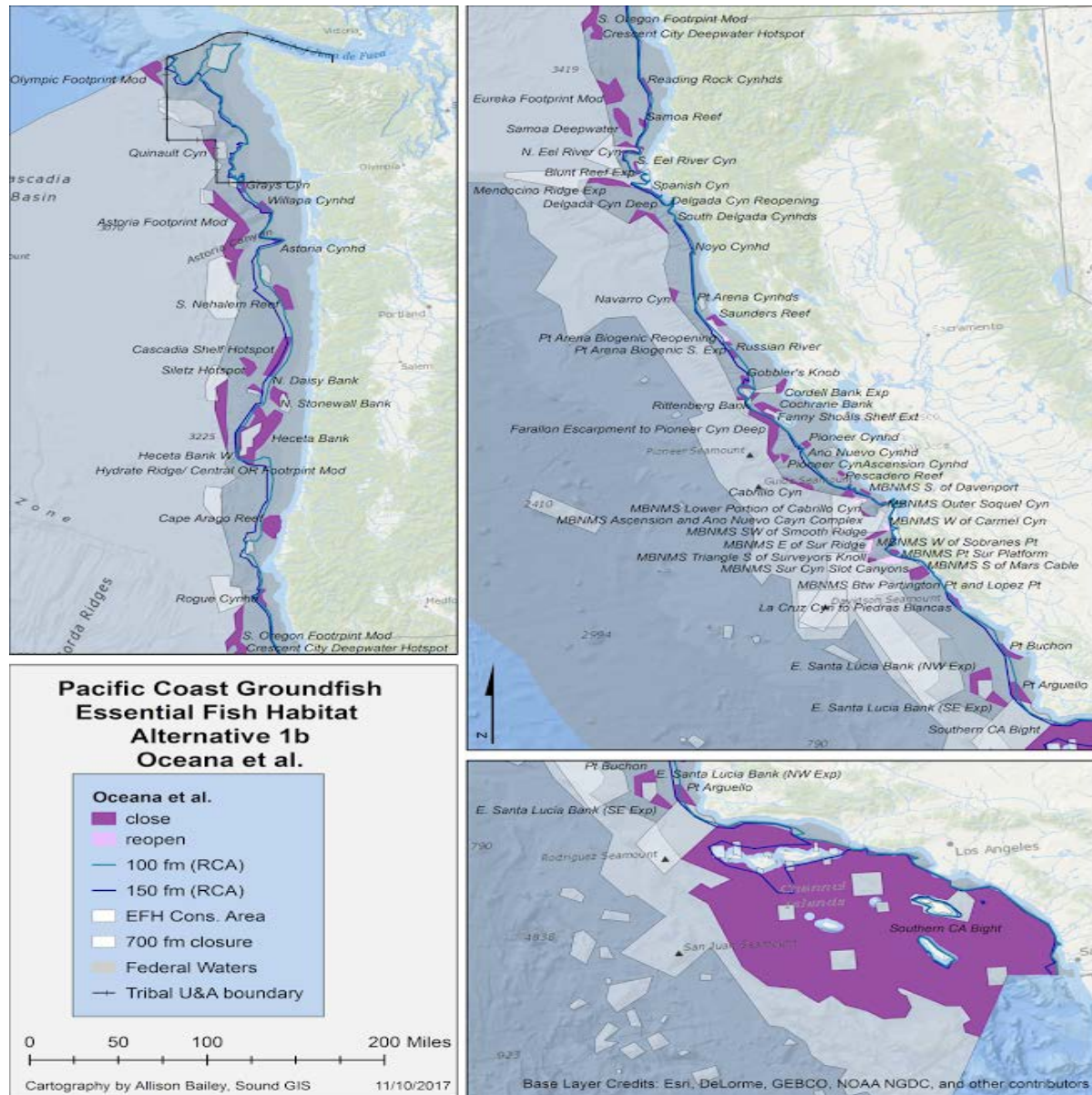


Figure 2-9, Page 2-18

Alternative 1.c Midwater Trawlers Cooperative

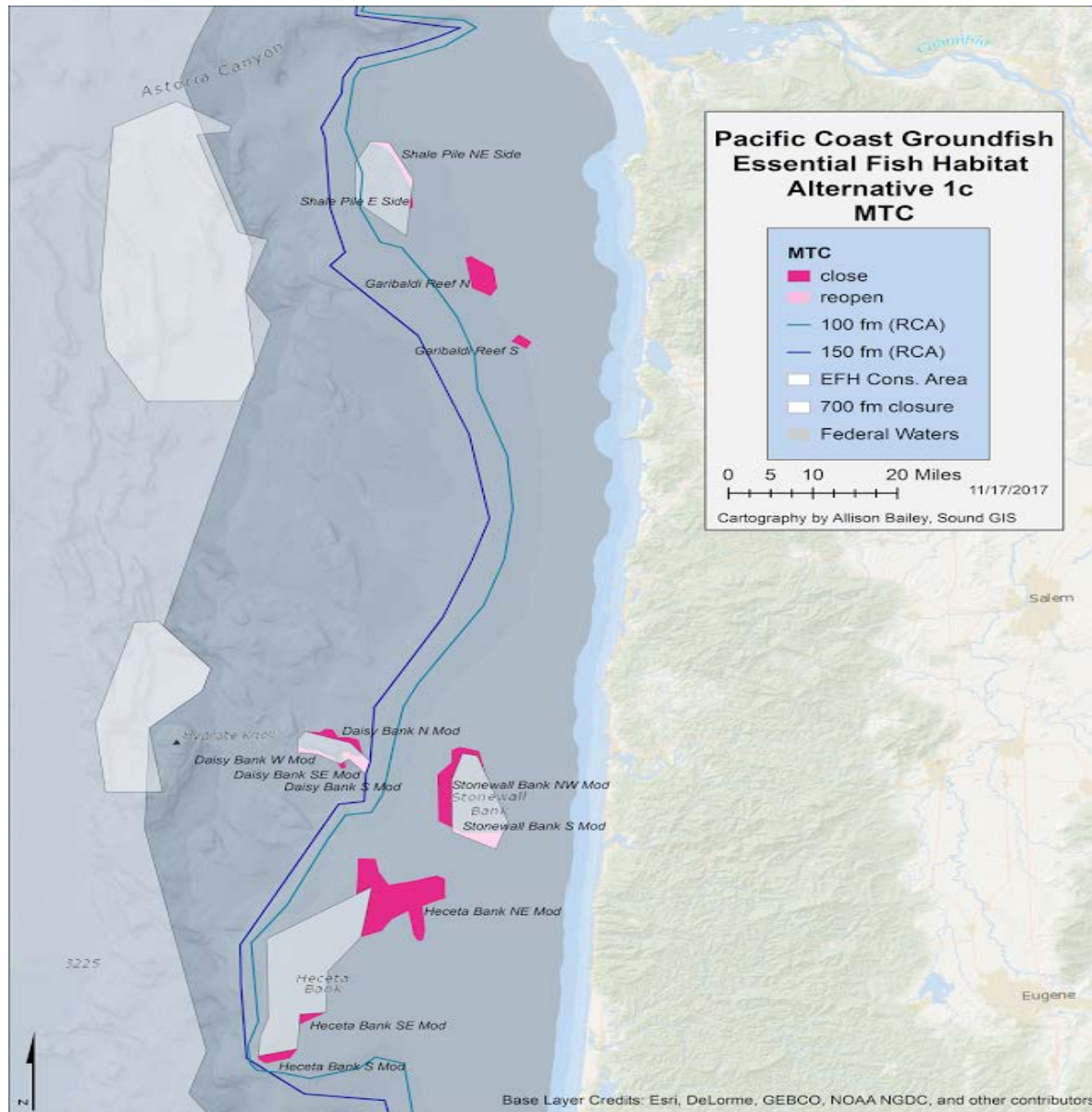


Figure 2-11, Page 2-20

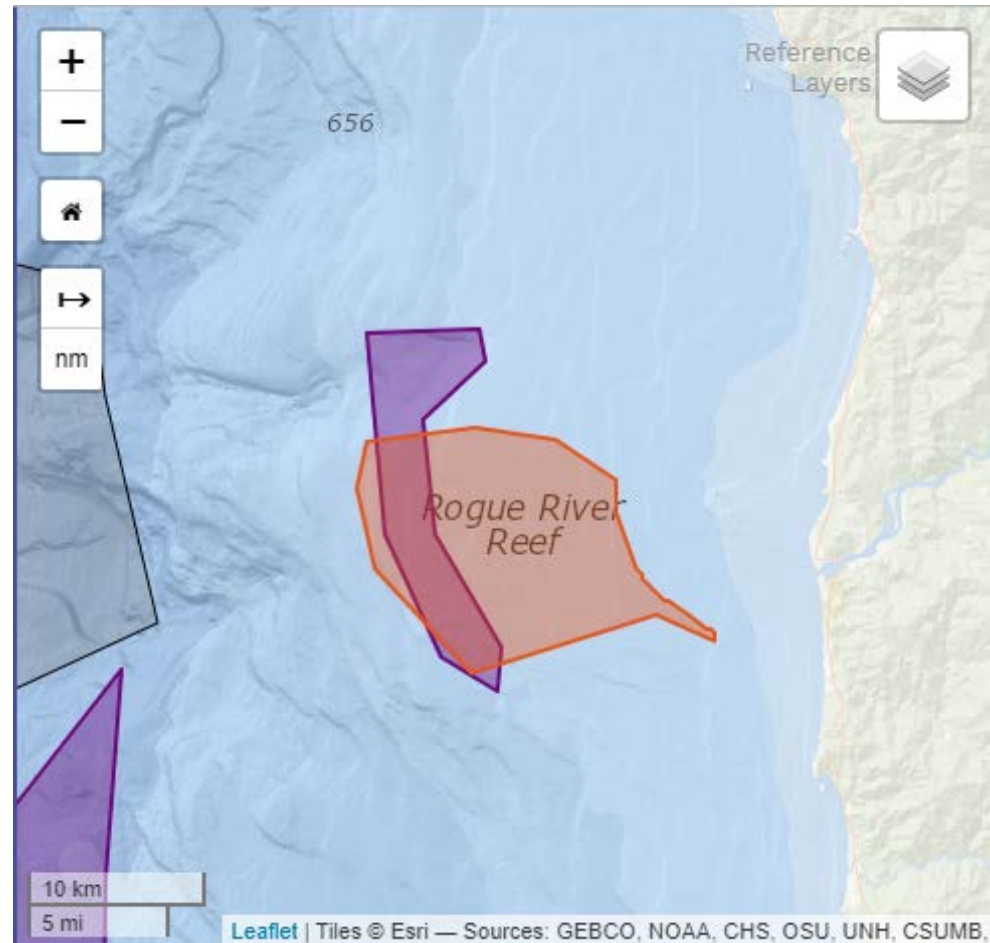
EFHCA – Overlapping Polygons

Example:

Orange – Alt 1.a, the Collaborative, “Rogue River Reef”

Purple – Alt 1.b, Oceana et al., “Rogue Canyonhead”

See list in Project Team Report 2, Table 3

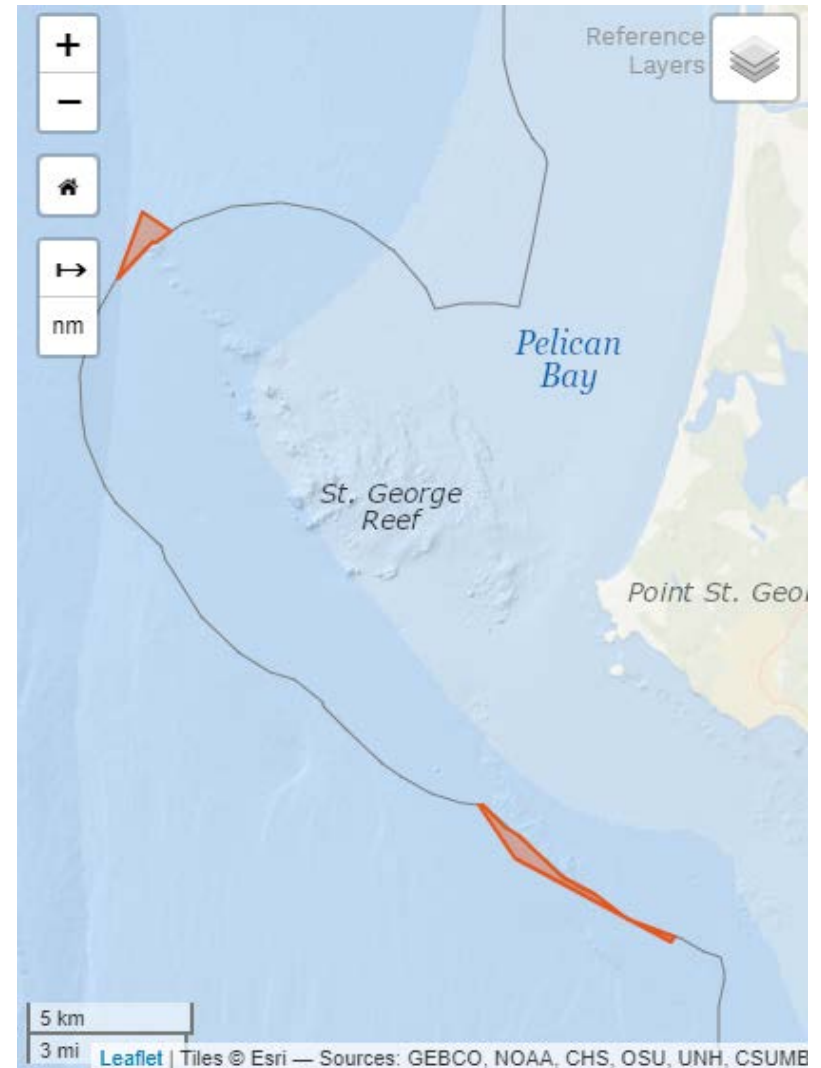


EFHCA – Clipping

Example:

Orange – Alt 1.a, the Collaborative, “Saint George Reef”;

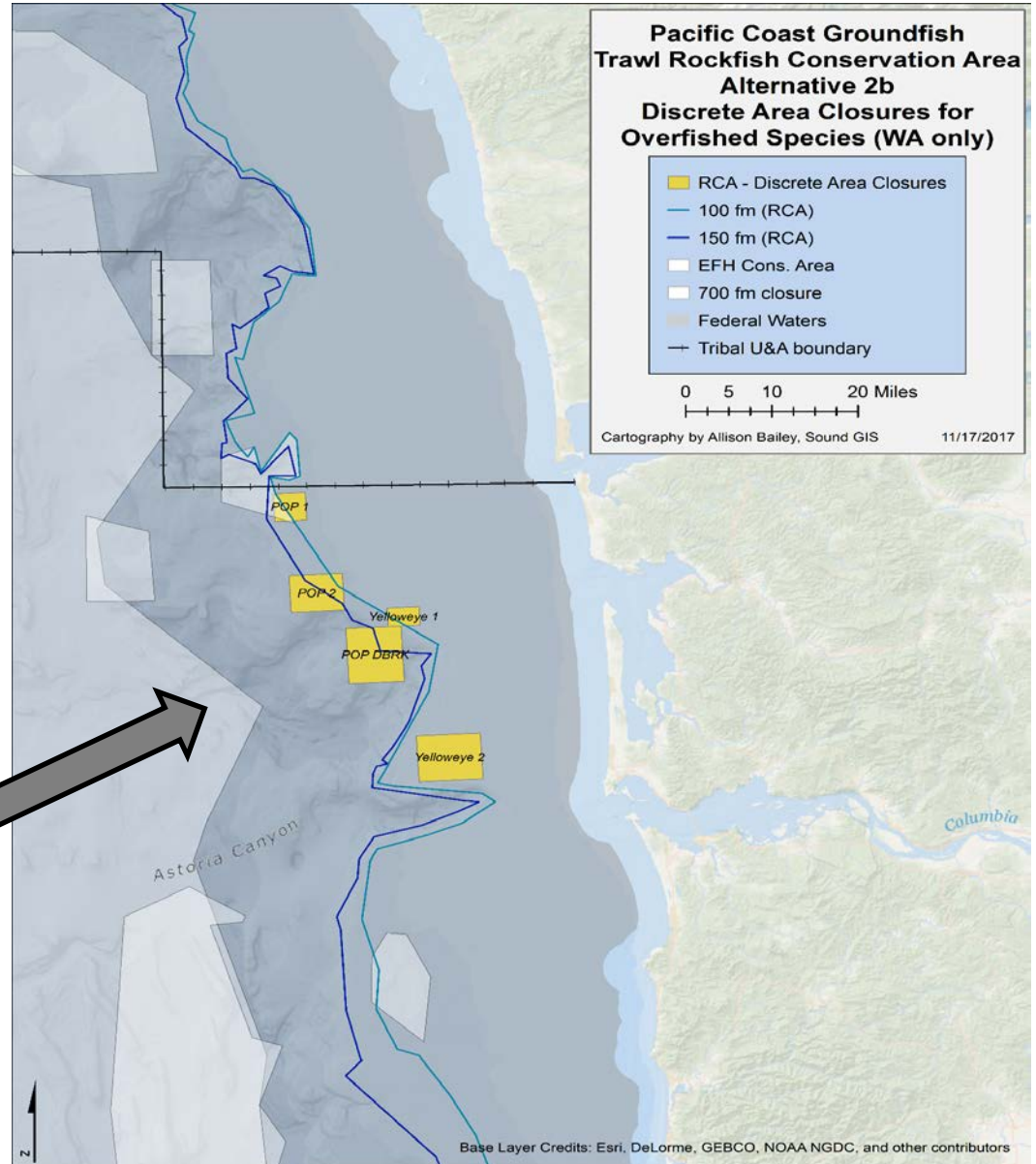
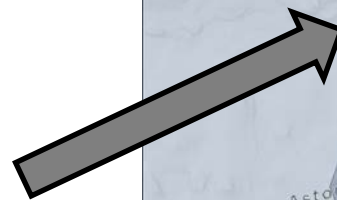
Most of original polygon is in state waters



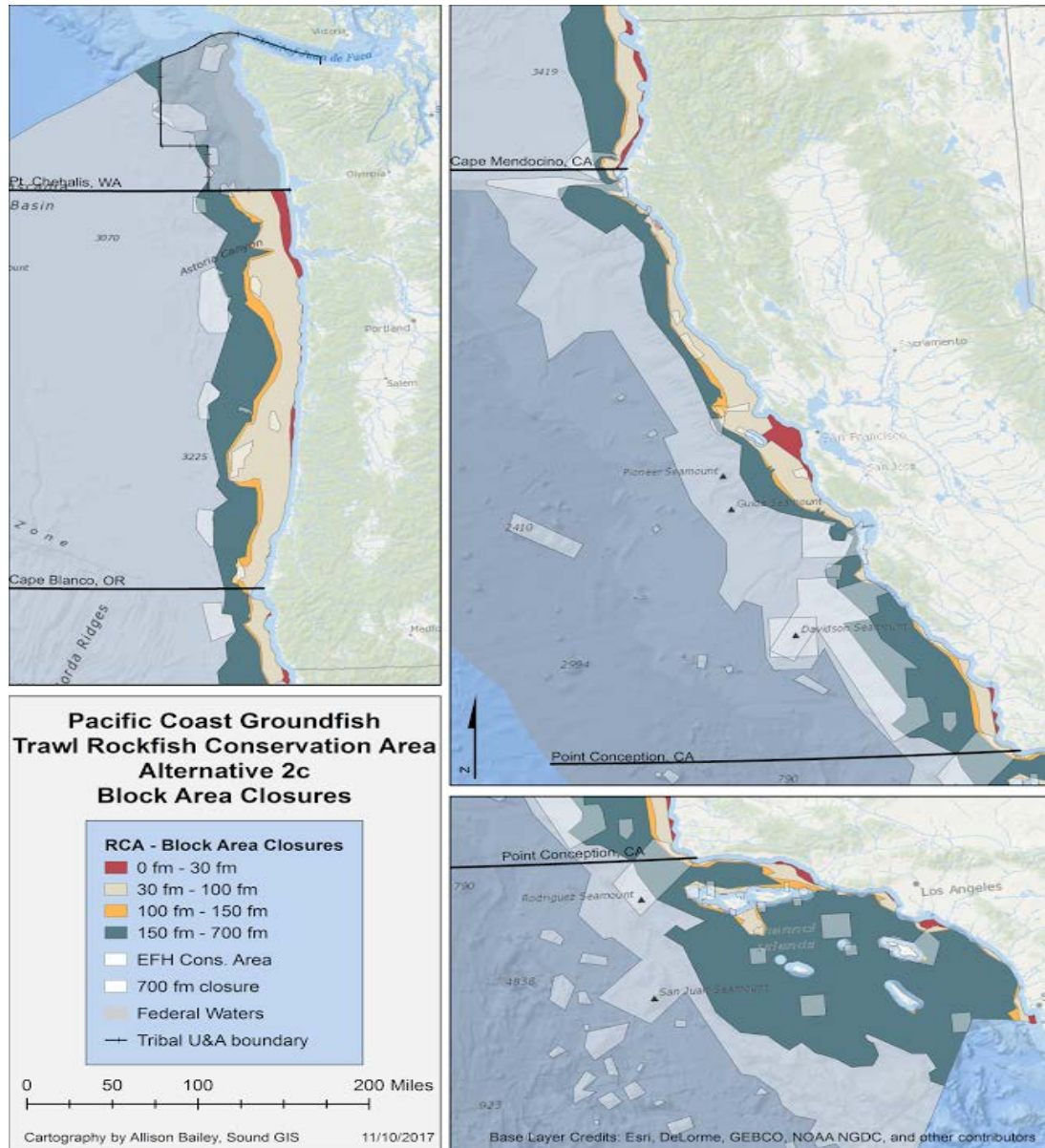
**Subject Area 2 –
Remove the trawl RCA**

Alternative 2.a
Remove RCA

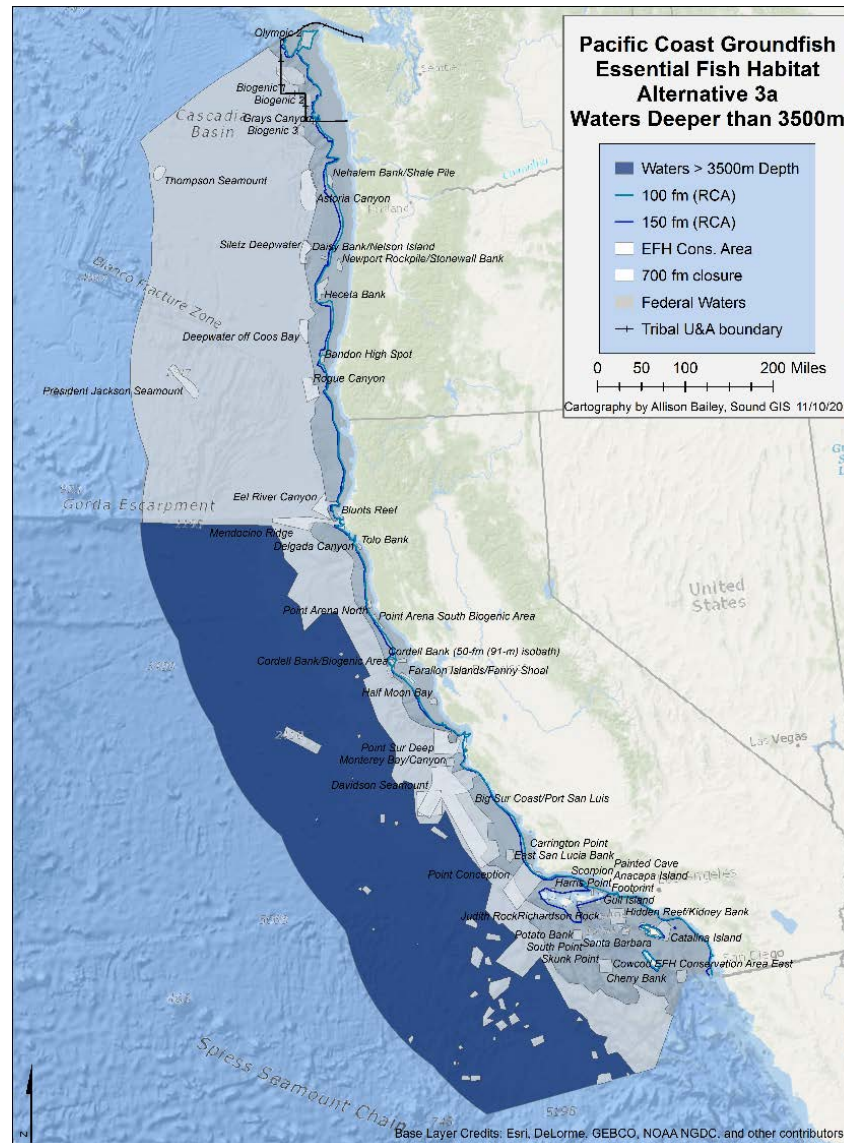
Alternative 2.b
DACs



Alternative 2.c BACs



Alternative 3.a Bottom Contact Closure in Waters >3500m



Administrative

Selected as PPAs April 2016

Administrative Alternatives	
5.b	Update/revise FMP Appendix B (life history descriptions, text descriptions of groundfish EFH, major prey items, etc (PPA)
6.b	Revise FMP Appendix C Part 2 (fishing gear effects) (PPA)
7.b	Update FMP Appendix D (non-fishing activities that may adversely affect EFH) (PPA)
8.b	Revise EFH Information and Research Needs section of the FMP and move to an appendix (PPA)
9.b	Update groundfish EFH review and revision process and describe elsewhere (e.g., COP). Include criteria prior to each review (PPA)
10.b	clarifications and correct minor errors (PPA)

Analysis and Results

Subject Area
1. EFHCA changes (re-openings and closures)
2. Adjustments to Trawl RCA
3. Use MSA Sec. 303(b) discretionary authorities

Section 4.0 Analysis of Habitat Impacts

4 ANALYSIS OF IMPACTS

This chapter contains descriptions of the analytical approach

Section 4.2 describes how the alternatives were analyzed.

Habitat Resources

- Protecting a diversity of habitat types is better than not
- Protecting more is better than protecting less

Subject Area 1 Comparison of Coastwide Alts

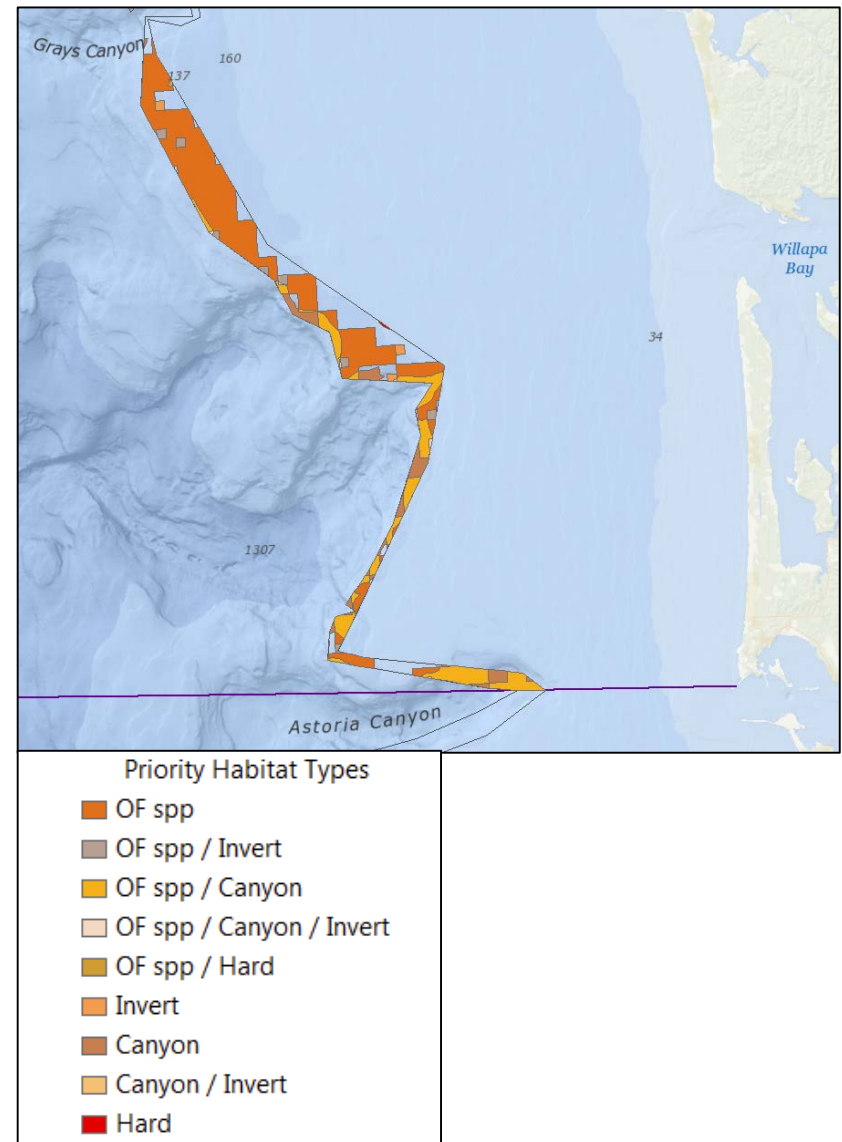
Net Change in Habitat Metrics Relative to No-Action

Habitat Metrics				Net Change by Alternative		Relative Comparison (1.b/1.a)	
				1.a Collaborative	1.b Oceana et al.		
Spatial extent			mi ²	749	14,238	19.0	
Substrate	Hard		mi ²	97	943	9.7	
	Mixed		mi ²	51	149	2.9	
	Soft		mi ²	600	13,102	21.8	
Priority Habitats	Canyon		mi ²	209	760	3.6	
	OFS		mi ²	9	61	7.0	
	Habitat-Forming Invertebrates	Presence	DSC	count	96	366	3.8
			Sponge	count	99	958	9.7
			Sea Pen	count	71	471	6.6
		Bycatch	DSC	count	867	5,430	6.3
			Sponge	count	961	4,974	5.2
			Sea Pen	count	626	3,660	5.8

Alternative 1.g, New EFHCAs in WA

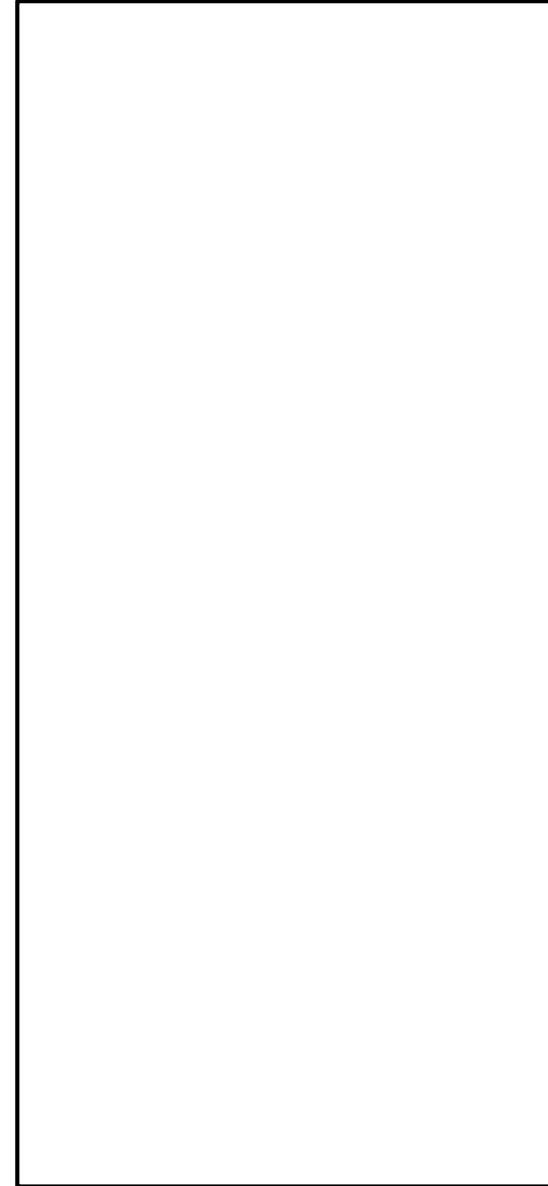
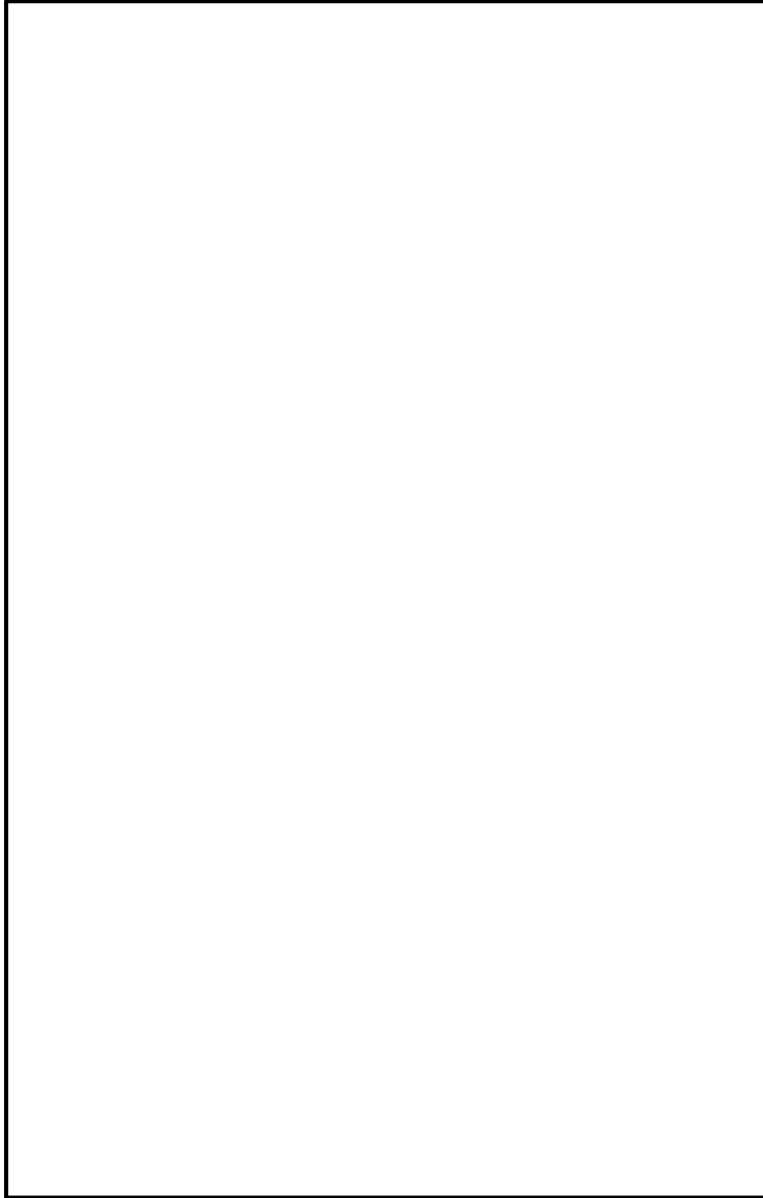
If selected, need guidance on drawing polygon

Metric			Close	
Spatial extent (mi ²)			81	
Substrate Type	Hard		mi ²	<1
	Mixed		mi ²	0
	Soft		mi ²	81
	Unknown		mi ²	0
Priority Habitats	Canyon		mi ²	24
	OFS		mi ²	73
	Habitat Forming Invertebrates	Presence	DSC	4
			Sponges	7
			Sea Pens	3
		Bycatch	DSC	214
			Sponges	203
			Sea Pens	414



Example Geographic Breaks Analysis

By Latitudinal Zones and Depth Zones



Example EFHCA Polygon Analysis (Appendix A)

Polygon Name	Spatial Extent (mi ²)	Sediment				Priority Habitats							
		Hard	Mixed	Soft	Unknown	Canyon	OFS	Habitat-Forming Invertebrates					
								Presence			Bycatch		
								DSC	Sponge	Sea Pen	DSC	Sponge	Sea Pen
Proposed Closures													
Arago Reef	67	11	50	6	-	-	-	5	6	-	-	-	-
Ascension Canyonhead	6	0	-	6	-	4	-	5	5	5	-	1	1
Astoria Deep	39	-	-	39	-	14	-	-	-	-	6	10	6
Big Sur Coast Modification	45	28	-	17	-	-	-	-	-	3	-	19	-
Biogenic 2 Northern Modification	44	-	-	44	-	23	-	-	1	-	88	96	63
Proposed Reopenings													
Bandon High Spot Northern Modification	12	1	-	10	-	-	3	3	3	2	39	7	-
Bandon High Spot Southern Modification	9	3	-	7	-	-	2	1	1	2	40	-	-
Cordell Bank Modification 3	20	-	-	20	-	-	-	-	-	23	-	-	37
Delgada Canyon	8	0	-	8	-	5	-	-	-	-	15	-	-
Eel River Canyon Modification 1	2	-	-	2	-	2	0	-	-	1	-	23	-

Alternative 2.a, Remove Trawl RCA

Net Change in Habitat Metrics Relative to No-Action

Metric					Reopened to BT	% Change to Coastwide BTCs
Spatial extent				mi ²	(2,835)	(19.6)
Substrate Type	Hard*			mi ²	(88)	(6.7)
	Mixed			mi ²	(32)	(9.3)
	Soft			mi ²	(2,713)	(21.2)
	Unknown			mi ²	(2)	(4.0)
Priority Habitats	Canyon			mi ²	(132)	(17.0)
	OFS			mi ²	(807)	(85.1)
	Habitat-Forming Invertebrates	Presence	DSC	Count	(203)	(22.9)
			Sponges	Count	(421)	(30.6)
			Sea Pens	Count	(247)	(28.0)
		Bycatch	DSC	Count	(3,034)	(61.1)
			Sponges	Count	(5,030)	(70.4)
			Sea Pens	Count	(4,341)	(75.6)

See Alternatives 2.b and 2.c in the PDEIS

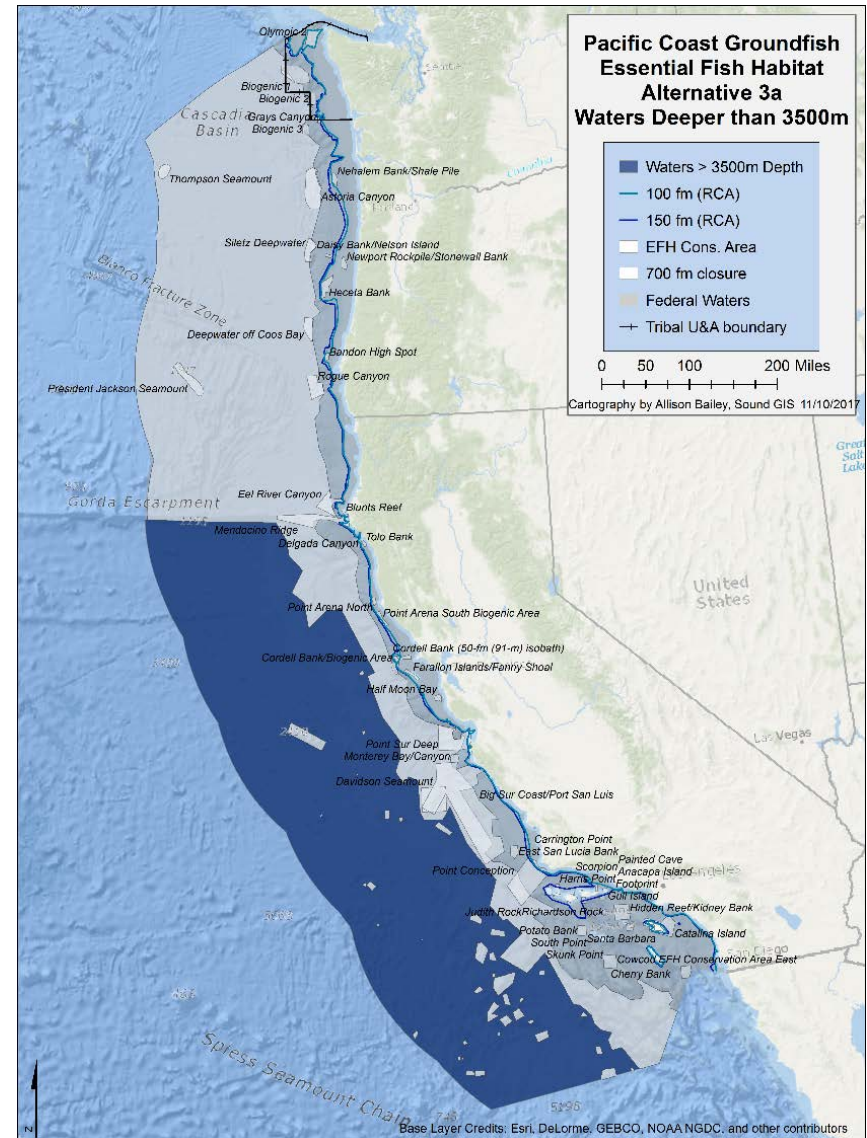
Alt 2.b, Table 4-11, page 4-45

Alt 2.c, Table 4-12, page 4-47

Alternative 3.a

Close >3,500 m to Bottom-Contact Gear

- 123,487 mi²
- Pristine
- Sensitive
- Slow to recover from disturbance
- Little studied, but...
 - DSCRTP Data Base
 - Corals 323 records
 - Sponges 5311 records
 - Sea pens 2080 records



Data Sources

Reopening

Back in Time

vs.

!

Closing

Recent Data

19

2014

Well, we're both fruit.

EQ

No over

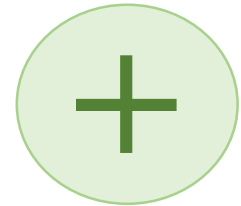
g and
stocks



Fish Resources

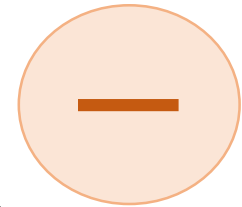
- **Subject Area 1 – EFHCAs**

- For most species, landings from within Alternative 1a-1g EFHCAs was quite small (<1% of coastwide)
- Habitat protections have positive effect on fish resources.
- Net gain in habitat protections
 - Alternative 1.b > Alternative 1.a



Fish Resources

- **Subject Area 2 – Trawl RCA**
 - Historic landings
 - Opening areas to bottom trawling = negative impact to fish resources
 - Negative impacts are mitigated
 - Overfishing would be unlikely to occur



Economic Resources

Qualitative Analysis

Ecosystem Services

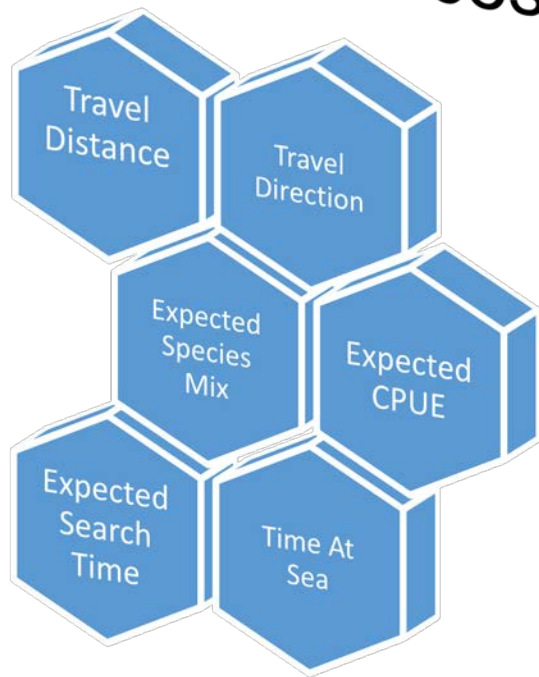
Intrinsic/Existence Values

Fleet Risk

Trip Flexibility and Choice Sets

Flexibility and Choice Sets – Change with Area Openings/Closures

Trip Choices



Outcomes



Sub Area 1 Closures (2011-2014)

Table 4-36; p. 4-122

Subject Area 1 Proposed Closures (2011 to 2014 data)			
	Collaborative (1.a)	Oceana (1.b)	MTC (1.c)
Relative Contribution* of Areas Proposed for the Following:			
Port Group	Closure	Closure	Closure
N. WA coast	No Data	No Data	No Data
Puget Sound	No Data	No Data	No Data
S. and Central WA coast	Negligible Contribution	Low Contribution	No Data
WA Total	Negligible Contribution	Negligible Contribution	No Data
Astoria	Negligible Contribution	Negligible Contribution	No Data
Newport	No Data	Low Contribution	Negligible Contribution
Coos Bay	No Data	Negligible Contribution	No Data
Brookings	Negligible Contribution	Low Contribution	No Data
OR Total	Negligible Contribution	Low Contribution	Negligible Contribution
Crescent City	Negligible Contribution	Negligible Contribution	No Data
Eureka	Negligible Contribution	High Contribution	No Data
Fort Bragg	Negligible Contribution	Low Contribution	No Data
San Francisco	Negligible Contribution	Low Contribution	No Data
Monterey	Negligible Contribution	Negligible Contribution	No Data
Morro Bay	Negligible Contribution	Low Contribution	No Data
CA Total	Negligible Contribution	Medium Contribution	No Data
Square Miles	925 mi²	14,380 mi²	109 mi²
Summary	- Loss of areas of negligible contribution offset by gains in ecosystem services and existence values for areas proposed to be closed - Some reduction in the opportunity to optimize fishing activity	- Loss of areas of low contribution offset by gains in ecosystem services and existence values for closed areas that are greater than in Alt 1a (based on mi² proposed to be closed) - Some reduction in the opportunity to optimize fishing activity. (more reduction than 1.a)	- Loss of areas of negligible contribution offset by gains in ecosystem services and existence values for closed areas that are less than in either Alt 1a or 1b (based on mi² proposed to be closed) - Some reduction in the opportunity to optimize fishing activity, likely less than 1.a or 1.b

Sub Area 1 Openings (1997-2001)

Table 4-37; p. 4-124

Subject Area 1 Reopenings (1997 to 2001 data)			
	Collaborative (1.a)	Oceana (1.b)	MTC (1.c)
Relative Historic Contribution* of Areas Proposed for the Following:			
Port Group	Reopening	Reopening	Reopening
N. WA coast	No Data	No Data	No Data
Puget Sound	No Data	No Data	No Data
S. and Cent. WA coast	Negligible Contribution	No Data	Negligible Contribution
WA Total	Negligible Contribution	No Data	Negligible Contribution
Astoria	Negligible Contribution	No Data	Negligible Contribution
Newport	No Data	No Data	Negligible Contribution
Coos Bay	Negligible Contribution	No Data	No Data
Brookings	Negligible Contribution	No Data	No Data
OR Total	Negligible Contribution	No Data	Negligible Contribution
Crescent City	Negligible Contribution	No Data	No Data
Eureka	Negligible Contribution	Negligible Contribution	No Data
Fort Bragg	Negligible Contribution	Negligible Contribution	No Data
San Francisco	Negligible Contribution	Negligible Contribution	No Data
Monterey	Medium Contribution	Medium Contribution	No Data
Morro Bay	Negligible Contribution	Negligible Contribution	No Data
CA Total	Negligible Contribution	Negligible Contribution	No Data
Square Miles	176 mi²	143 mi²	5 mi²
Summary	- Gains of areas of negligible historic contribution offset by some losses in ecosystem services and existence values for reopened areas - Some increase in the opportunity to optimize fishing activity	- Gains of areas of negligible historic contribution offset by some losses in ecosystem services and existence values for reopened areas - Some increase in the opportunity to optimize fishing activity, possibly less than Option 1.a, based on square miles	- Gains of areas of negligible historic contribution offset by some losses in ecosystem services and existence values for reopened areas - Small increase in the opportunity to optimize fishing activity, likely less than either 1.a or 1.b, based on square miles

Economic Results: Subject Area 1 Closures

- In all three alternatives,
 - loss of fishing area at least partially offset by gains in ecosystem services and possibly existence values
- Oceana (1b) closures > Collaborative (1a) closures
 - 1b closures historically contributed more landings than areas 1a closures, particularly in Eureka (2011-2014)

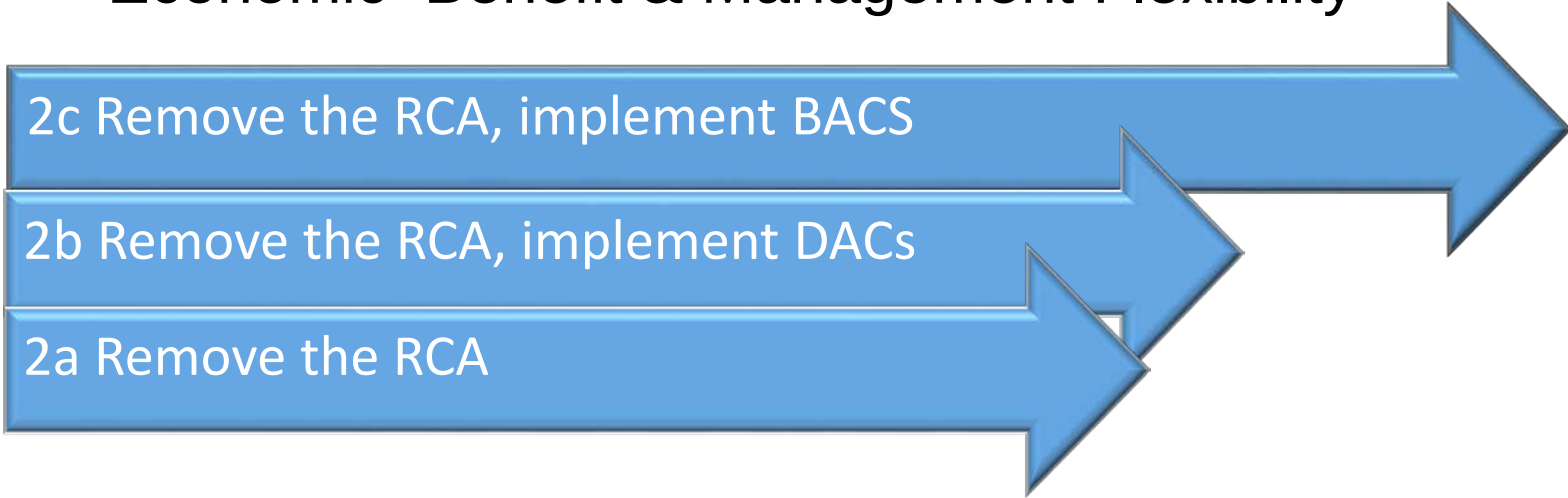
Economic Results: Subject Area 1 Openings

- Past contribution of areas were generally negligible
 - Reopened areas contribute more to Monterey landings than for other ports
 - (same reopenings under both 1a and 1b).
 - Reopenings are less than closings
 - 1a = 20% of closings (176 sq mi)
 - 1b = 1% (143 sq mi)
 - 1c = 5% (5 sq mi)
- (not taking habitat type /grounds contribution into account)

Economic Results: Subject Area 2 Alts

- Subject Area 2 alternatives reopen the trawl RCA
 - 11% of '97-'01 total non-whiting groundfish revenue
- CA and OR > WA
Proportionally greater immediate direct effects
(RCA closures in north remain)

Economic Benefit & Management Flexibility



2c Remove the RCA, implement BACS

2b Remove the RCA, implement DACs

2a Remove the RCA

Protected Resources Impacts Analysis

Subject Area 1 – EFHCAs

Do not expect impacts to increase beyond what has been observed under No Action

- Closed areas would reduce the risk of impact to all species,
- Openings could expose species, esp. eulachon and green sturgeon
- None of the alternatives would impact designated critical habitat.

Protected Resources Impacts Analysis

Subject Area 2 – Trawl RCA

- Can not quantify impacts in RCA;
- Increase the potential for interactions with protected species;
- Interactions may be similar to No-action;
- 2.b and 2.c could temporarily reduce risk of impacts but can not quantify extent.
- PPA was part of the proposed action in the 2017 salmon BiOp

Subject Area 3 – impact unlikely

Synthesis

- Chapter 5
- Combinations of different alternatives from Chapter 4

Section 5.0 Synthesis Combinations

5 SYNTHESIS COMBINATIONS

This chapter describes and compares the net effects of (EFHCAs) and Subject Area 2 (Trawl RCA) alternatives on fish resources, protected resources, and economics. It is limited to alternatives under Subject Areas 1 and 2. Trawl gear (less than 3,500 m to all bottom contact gear) was not included.

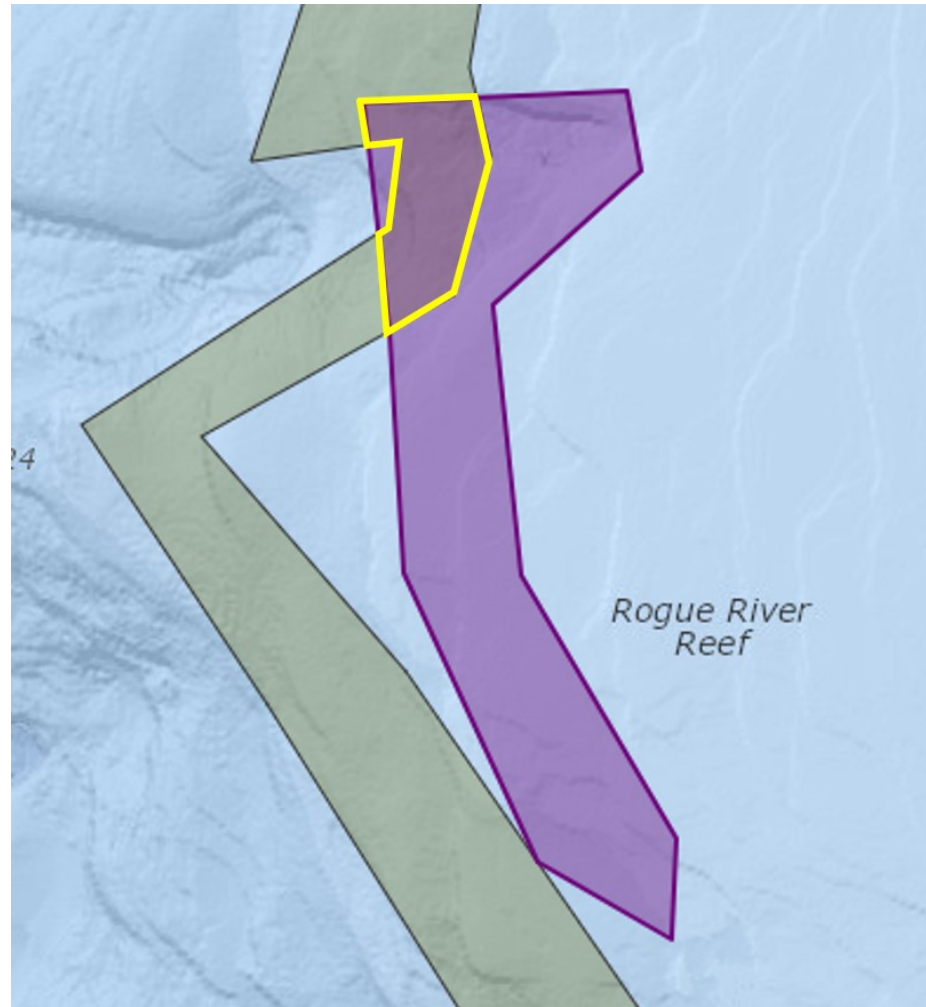


Overlap Across Subject Areas

Example:

Green – 2015 trawl
RCA

Purple – Alt 1.b,
Oceana et al., “Rogue
Canyonhead”



Chapter 5: Synthesis of Combinations

Alternative		Combination of Alternatives			
	No-action	Combo 1	Combo 2	Combo 3	Combo 4
No-action	X				
Retain trawl RCA (No-action Subject Area 2)				X	
1.a, Collaborative		X	X		
1.b, Oceana, et al.				X	X
1.c, MTC			X		
1.d, Garibaldi Reef So.			X		
1.e, Rittenburg Bank			X		
1.f, Potato Bank			X		
2.a, Eliminate RCA		X	X		X

Synthesis: Habitat

Net Change in Habitat Metrics Relative to No-Action

Metric			No-action Alternative	Net Changes to area closed to bottom trawling				
				Combination 3	Combination 4	Combination 2	Combination 1	
Spatial extent (mi ²)			14,484	14,238 (+98%)	12,462 (+86%)	-2,021(-14%)	-2,094 (-14%)	
Substrate Type	Hard (mi ²)		1,315	943 (+72%)	936 (+71%)	78 (+6%)	11 (+1%)	
	Mixed (mi ²)		345	149(+43%)	137 (+40%)	28 (+8%)	21 (+6%)	
	Soft (mi ²)		12,770	13,102 (+103%)	11,346 (+89%)	-2,125(-17%)	-2,124 (-17%)	
	Unknown (mi ²)		54	44 (+80%)	44(+80%)	-2(-4%)	-2 (-4%)	
Priority Habitats	Canyons (mi ²)		775	760 (+98%)	686 (+88%)	78 (+10%)	78 (+10%)	
	OFS (mi ²)		948	61 (+6%)	-636 (-67%)	-799 (-84%)	-799 (-84%)	
	Habitat-Forming Invertebrates	Grid Cell Count						
		Presence	DSC	885	365 (+41%)	317 (+36%)	-69 (-8%)	-84 (-9%)
			Sponges	1,377	957 (+69%)	814 (+59%)	-275 (-20%)	-300 (-22%)
			Sea Pens	881	471 (+53%)	362 (+41%)	-148 (-17%)	-161 (-18%)
		Bycatch	DSC	4,966	5,430 (+109%)	3,089 (+62%)	-2,174 (-44%)	-2,174 (-44%)
			Sponges	7,140	4,974 (+70%)	1,472 (+21%)	-4,017 (-56%)	-4,050 (-57%)
			Sea Pens	5,745	3,660 (+64%)	383 (+7%)	-3,673 (-64%)	-3,694 (-64%)

Table 5-2, page 5-8

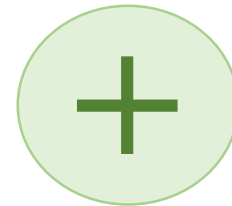
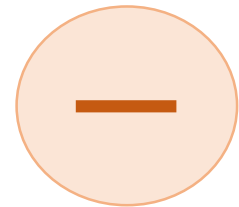
Synthesis: Habitat

Rank of Habitat Metrics by Combination

Metric			Combo 3	Combo 4	No-action	Combo 2	Combo 1	
Spatial extent		mi ²	1	2	3	4	5	
Substrate Type	Hard	mi ²	1	2	5	3	4	
	Mixed	mi ²	1	2	5	3	4	
	Soft	mi ²	1	2	3	5	4	
	Unknown	mi ²	1	2	3	5	5	
Priority Habitats	Canyons		mi ²	1	2	5	3	4
	OFS		mi ²	1	3	2	5	4
	Habitat-Forming Invertebrates	Grid Cell Count						
		Presence	DSC	1	2	3	4	5
			Sponges	1	2	3	4	5
			Sea Pens	1	2	3	4	5
		Bycatch	DSC	1	2	3	5	5
			Sponges	1	2	3	4	5
			Sea Pens	1	2	3	4	5

Synthesis: Fish Resources

- Combos 1, 2 & 4 – Potential for localized negative impacts in areas reopened, but mitigated by other factors (habitat closures, IFQ, etc.)
- Combo 3 – Likely net positive effects



Synthesis: Economic Analysis

Combination	Proposed Closures			Proposed Reopenings		
	As a percent of 2011 to 2014 values		Square Miles	As a percent of 1997 to 2001 values		Square Miles
	Landings (1000s lbs)	Revenues (2015 dollars, 1000s \$)		Landings (1000s lbs)	Revenues (2015 dollars, 1000s \$)	
Comb #1 (Alt 1.a + Alt 2.a)	0.20%	0.20%	959	12.10%	11.30%	3,053
Comb #2 (Alt 1.a + 1.c-f) + 2.a	0.00%	0.00%	1,125	11.70%	10.80%	3,146
Comb #3 Alt 1.b + No Action for RCA	2.80%	3.40%	14,380	0.30%	0.30%	143
Comb #4 (Alt 1.b + Alt 2.a)	2.80%	3.40%	14,380	11.90%	11.10%	1,918

Synthesis: Protected Resources

Synthesis of EFHCA and RCA Alternatives

We do not expect a change to the number of observed interactions beyond what has been observed under the No Action Alternative

Council Guidance

Project Team Report 2 – Table 1

Table 1. Action Item Checklist

Subject		Considerations and Guidance
	NEPA Alternative 1.a, Project Team Report 1)	
1	Subject Area 1 (EFHCAs)	If Alt 1.g is selected, provide guidance on boundaries
2	Subject Area 2 (trawl RCA)	
3	Subject Area 3 (Deep water bottom contact gear closure)	• Guidance on determining when (and what mechanism) to turn on/off DACs and BACs. • Guidance on spatial scale for BACs, e.g. more latitudes available for BAC definition than just those called out specifically in the analysis.

Helpful Web Tools and Live Demos

- EFH Metrics 2018
 - <http://www.soundgis.com/efh/efh2018-metrics/>
- NWFSC FRAM Data Warehouse
 - <https://www.nwfsc.noaa.gov/data/map>

Questions?

List of acronyms from this presentation

RCA	trawl Rockfish Conservation Area
EFHCA	EFH Conservation Area
OFS	overfished species (habitat metric)
HFI	habitat-forming invertebrates
DSC	deep sea corals
BTC	bottom-trawl closure
DAC	discrete area closures
BAC	block area closures