

Pacific Coast Groundfish Essential Fish Habitat and Rockfish Conservation Area Modifications - Amendment 28 to the Groundfish FMP

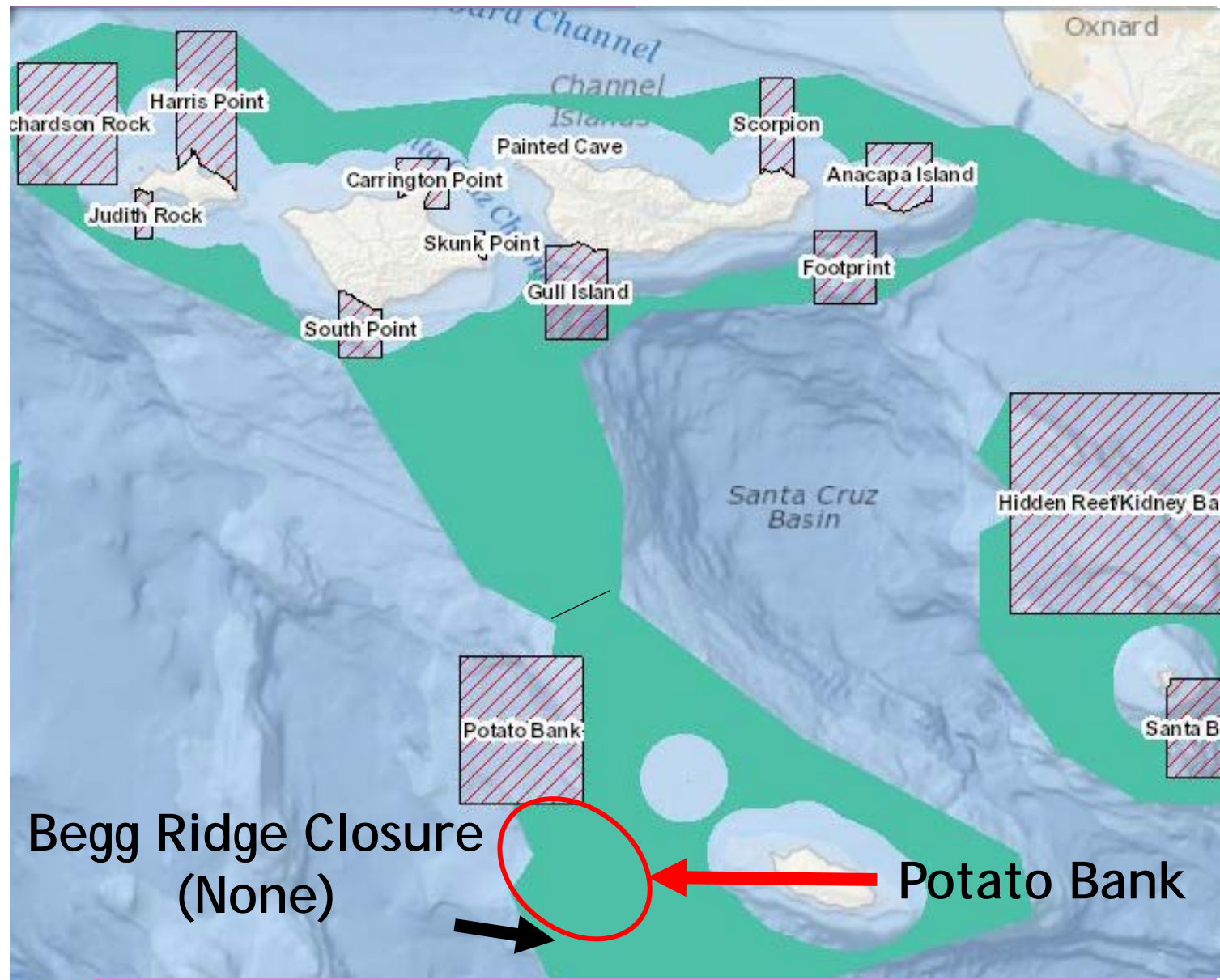
Subject Areas & Alternatives - Fishery Mgt.

Subject Area	Alternatives			
1. EFHCA changes in public proposals	1.a No Action	1.b Collaborative	1.c Oceana, et al.	
2. New EFHCAs in current RCAs	2.a No Action	2.b Add new EFHCAs within the trawl RCA based on presence of priority habitats		
3. Adjustments to Trawl RCA	3.a No Action	3.b Remove the trawl RCA	3.c Discrete area closures (DAC) for overfished species (OFS)	3.d Block area closures (BAC) for OFS and non-OFS
4. Use MSA Sec. 303(b) discretionary authorities	4.a No Action	4.b Use MSA Sec. 303(b)(2)(A), 303(b)(2)(B), or 303(b)(12) to close waters deeper than 3,500 m to bottom contact gear, consistent with September 2015 Agenda Item H.8.a, Supplemental NMFS Report. (Preliminary Preferred)		

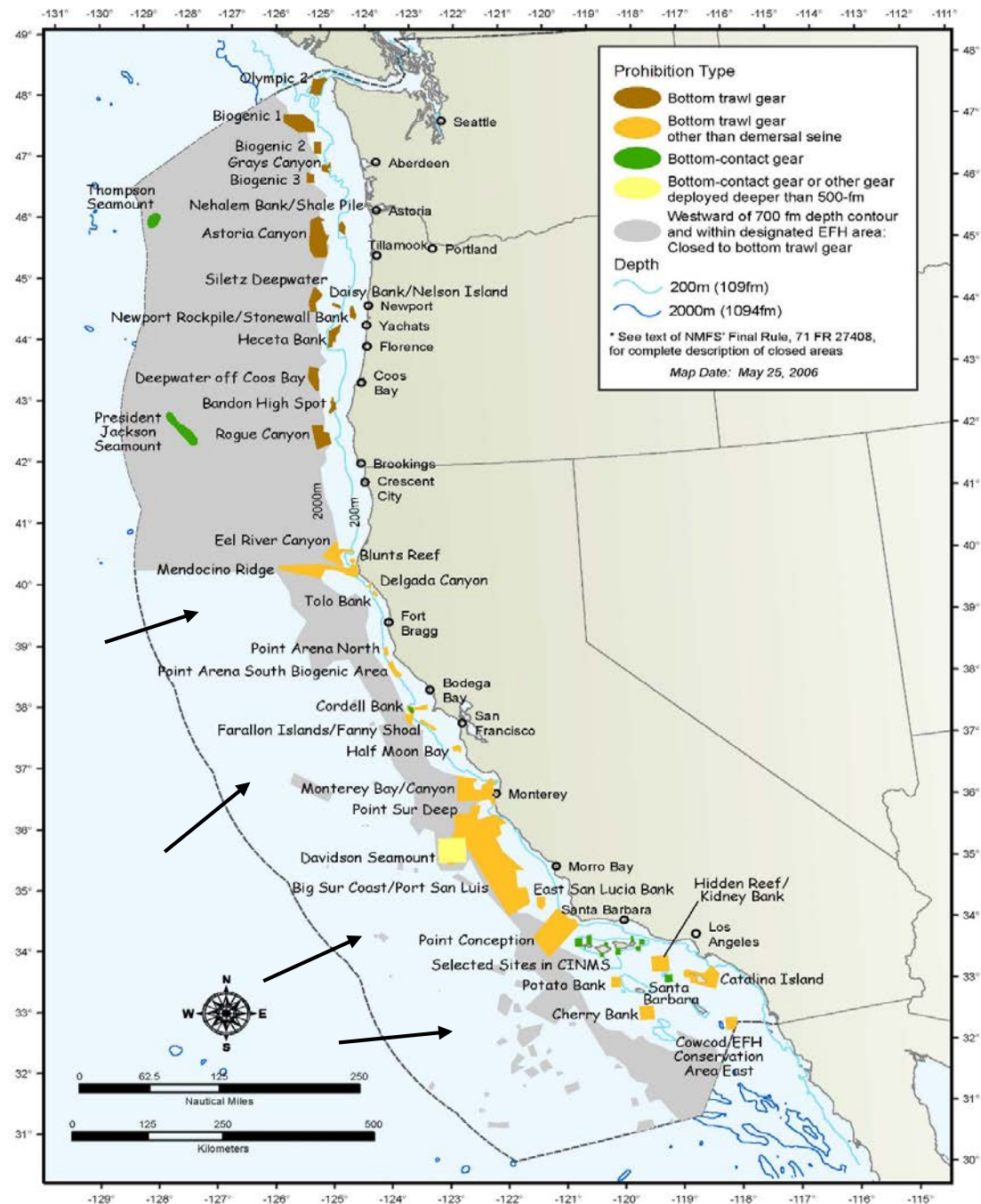
Subject Areas & Alternatives - Administrative

Subject Area	Alternative	
5. Groundfish FMP Appendix B	5.a No Action	5.b - Update & revise Appendix B (life history descriptions, text descriptions of groundfish EFH, and major prey items. (PPA))
6. Groundfish FMP Appendix C Part 2	6.a No Action	6.b - Update & revise Appendix C Part 2 (fishing gear effects). (PPA)
7. Groundfish FMP Appendix D	7.a No Action	7.b - Update & revise Appendix D (conservation measures for new non-fishing activities that may adversely affect EFH). (PPA)
8. Groundfish FMP EFH Information and Research Needs	8.a No Action	8.b - Update & revise Information and Research Needs move to an appendix. (PPA)
9. Groundfish FMP EFH Review and Revision Process	9.a No Action	9.b - Develop new review and revision process and describe elsewhere (e.g., COP). Include criteria prior to each review. (PPA)
10. Clarifications and Corrections	10.a No Action	10.b - Provide clarifications and correct minor errors from Amendment 19. (PPA)

Potato Bank EFHCA



Current EFH Closures (Fig. 1, pg. 10)



Subject Area 1: EFHCA Changes in Public Proposals

1a. No Action - Retain the current configuration of EFHCAs

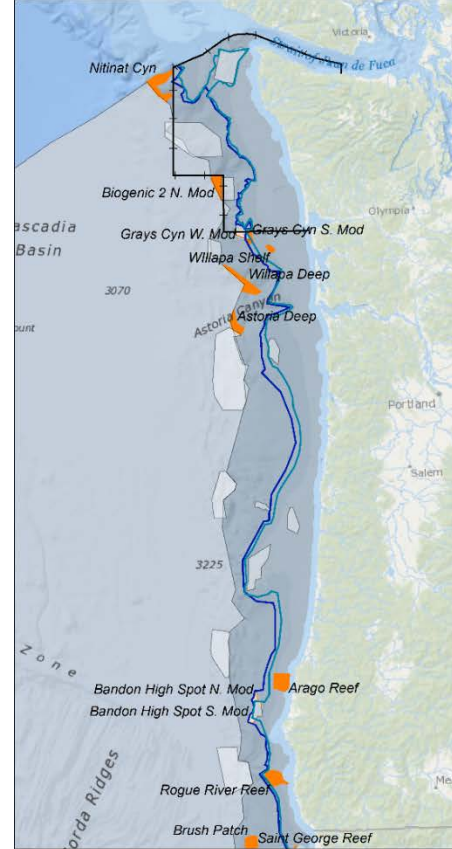
1b. Collaborative Group Proposal

- Includes new closed areas and reopenings

1c. Oceana et al. Proposal

- Includes new closed areas and reopenings

1b. Collaborative Group (Fig 2., pg.e 12)



Pacific Coast Groundfish Essential Fish Habitat Alternative 1b Collaborative Proposal

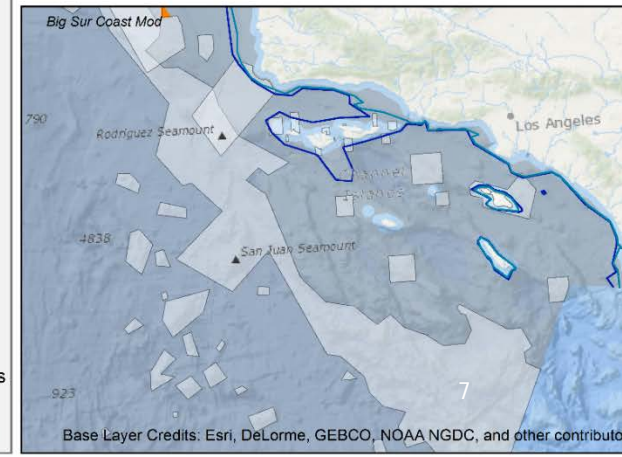
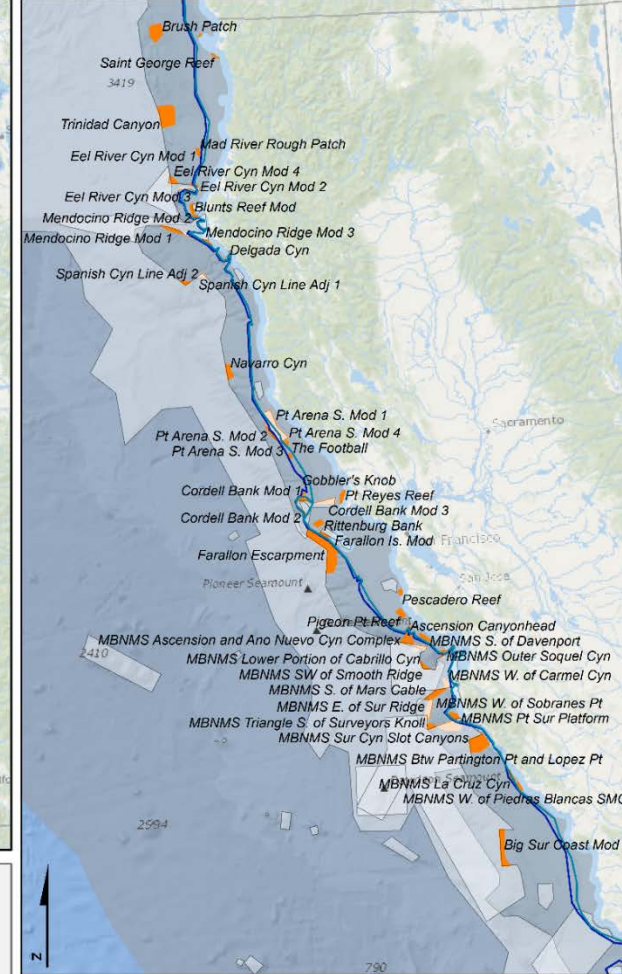
Collaborative proposal

- close
- reopen
- 100 fm (RCA)
- 150 fm (RCA)
- EFH Cons. Area
- 700 fm closure
- Federal Waters
- Tribal U&A boundary

0 50 100 200 Miles

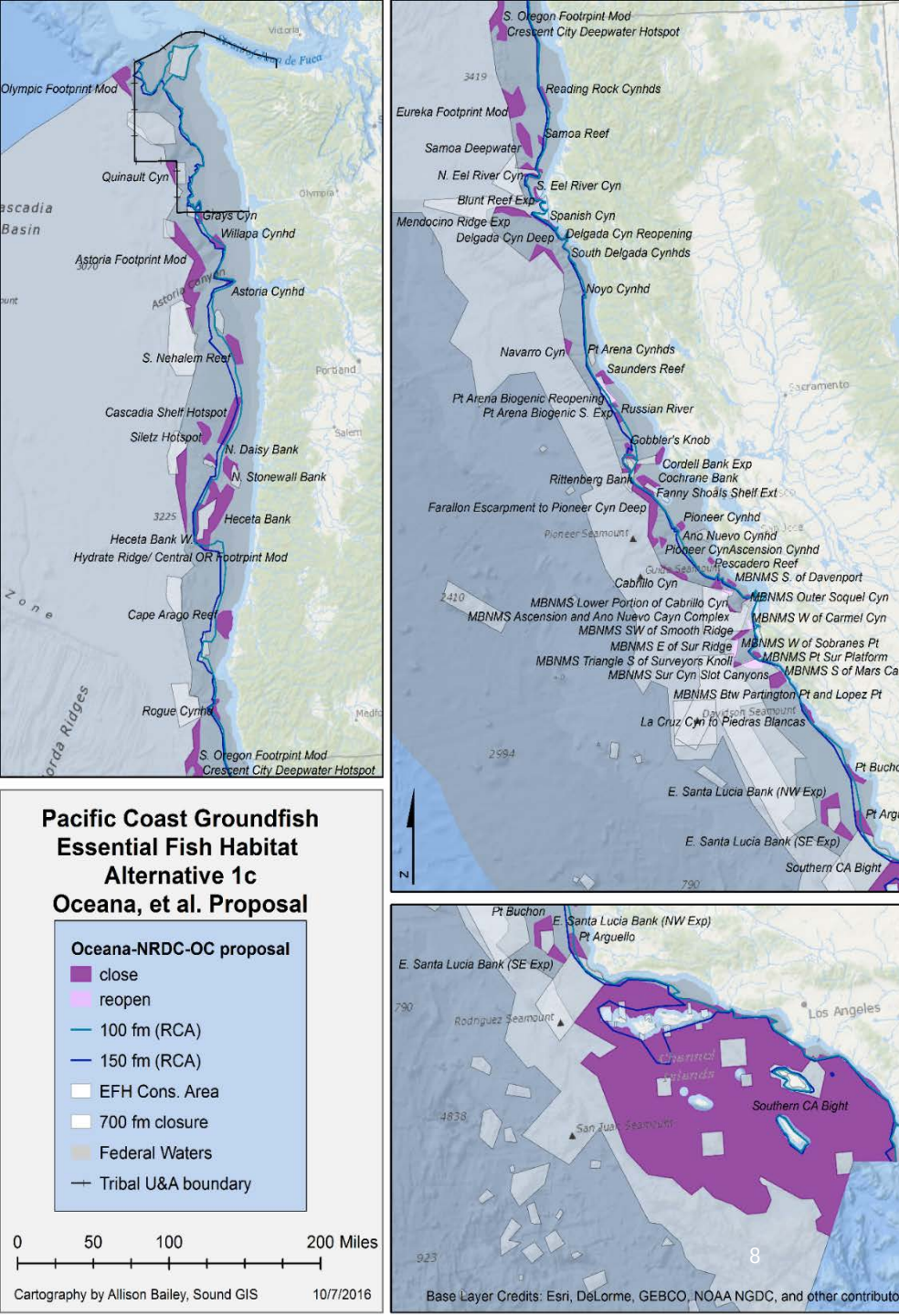
Cartography by Allison Bailey, Sound GIS

10/7/2016



Base Layer Credits: Esri, DeLorme, GEBCO, NOAA NGDC, and other contributors

1c. Oceana, et al. (Fig. 3, pg. 15)



Analytical Approach - 4 Levels

1. Individual polygons

- Detailed look

2. Alternative-wide

- "Big Picture"

3. By geographic/depth zones

- How effects are distributed along coast

4. By port groups

- Socioeconomics only
- How effects are distributed among coastal communities



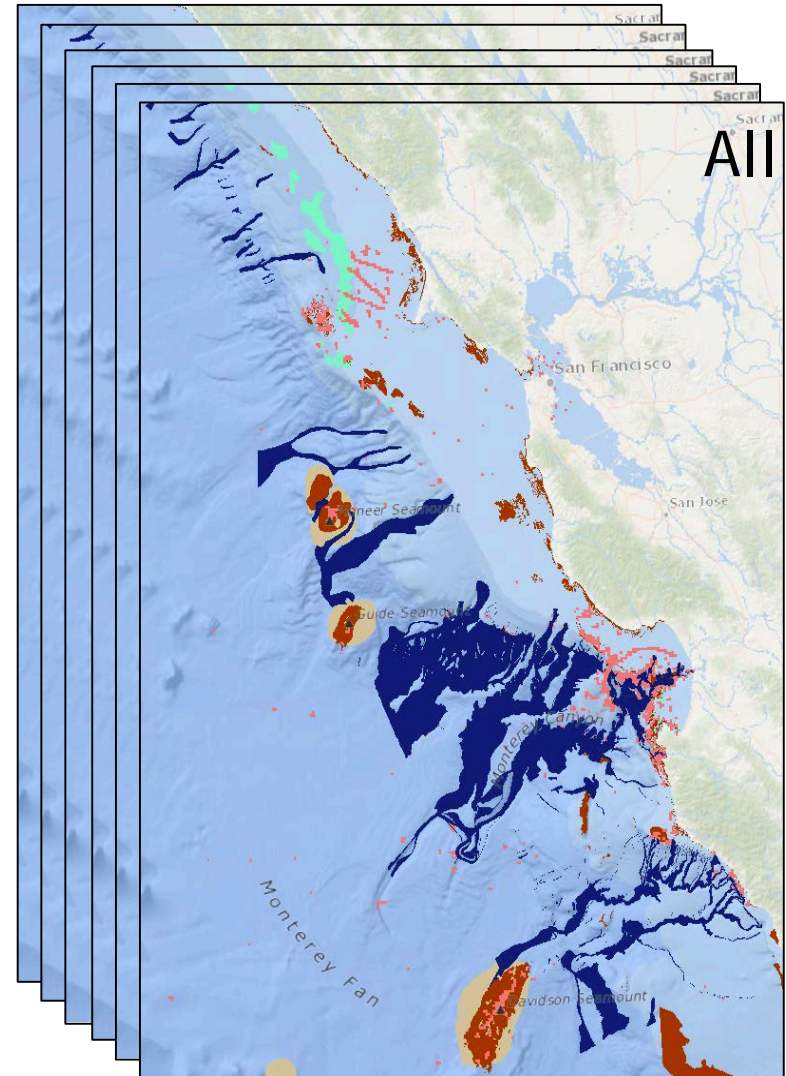
Analytical Approach – Metrics

- Spatial extent
- Substrate composition
- Priority habitats
- Conservation value
- Protected resources
- *Effort*
- *Landings*
- *Value*

Priority Habitats

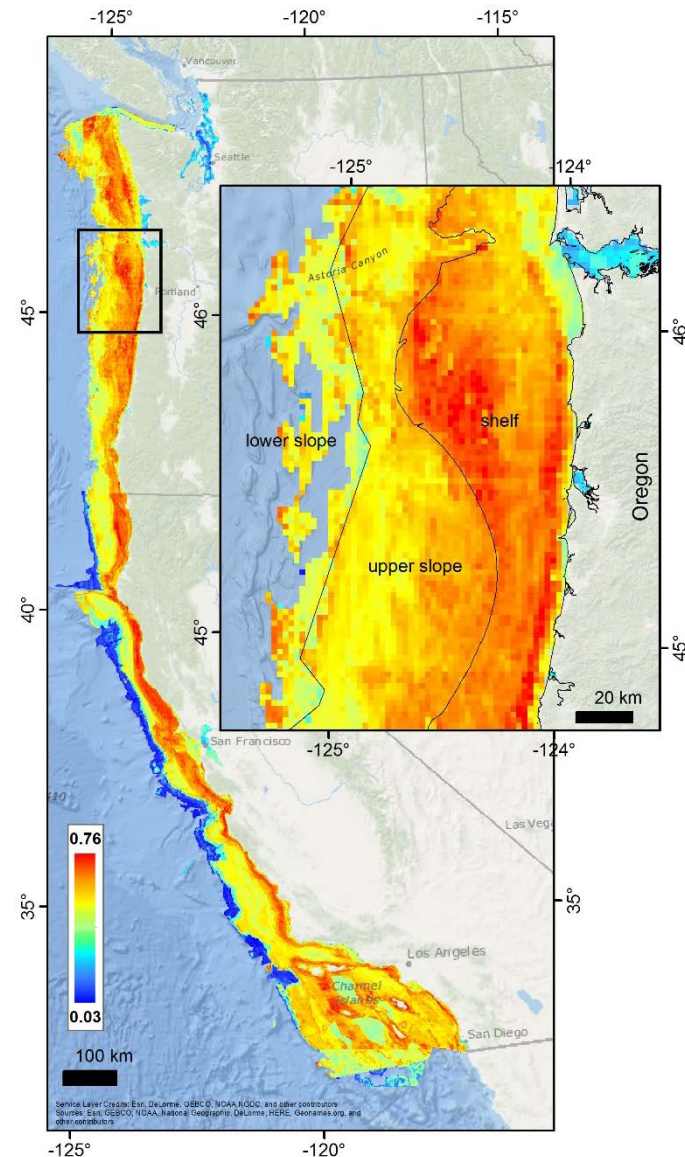
"Complex and Sensitive Habitats" - Amendment 19

- Hard substrate
- Submarine canyons and gullies
- Seamounts
- Habitat-forming invertebrates
 - NOAA Deep Sea Coral Database
- Habitat suitability probability (HSP) for overfished species
 - Yelloweye rockfish
 - Pacific Ocean perch
 - Dark-blotched rockfish



Conservation Value (CValue)

- Developed by NOAA NWFSC
- 8 Datasets
 - 4 for fishes
 - HSP adult and juvenile
 - Species density and biomass
 - 2 models for habitat-forming invertebrates
 - Predicted habitat suitability
 - Predicted occurrence from trawl survey
 - Fishing activity
 - Non-fishing activities
- 2km x 2km grid cells
- Normalized score for dataset 0-1
- Grids cell ≥ 4 datasets
- CValue = Mean of normalized scores



Subject Area 1 Metrics – Spatial Extent (Table 21)

Alternative	Close (mi²)	Reopen (mi²)	Net (mi²)	% Change
1.a No Action	13,463	-	-	-
1.b Collaborative	+994	-246	+748	+5.6%
1.c Oceana, et al.	+19,696	-143	+19554	+146.3%

Subject Area 1 Metrics – Substrate Type

(Table 22, page 63)

Alternative		Close (mi ²)				Reopen (mi ²)				Net (mi ²)			
		Hard	Mixed	Soft	Unkn	Hard	Mixed	Soft	Unkn	Hard	Mixed	Soft	Unkn
1.a No Action	mi ²	1911	241	9615	1,696	-	-	-	-	-	-	-	-
	%	14.2%	1.8%	71.4%	12.6%	-	-	-	-	-	-	-	-
1.b Collaborative	mi ²	105	53	836	0	5	0	241	0	100	53	595	0
	%	10.5%	5.3%	84.2%	0%	1.8%	0.0%	98.2%	0.0%	5.2%	22.0%	6.2%	0.0%
1.c Oceana, et al.	mi ²	1271	207	18172	46	0	0	142	0	1271	207	18030	46
	%	6.5%	1.1%	92.3%	0.2%	0.3%	0.0%	99.7%	0.0%	66.5%	85.9%	188%	2.7%

Subject Area 1 Metrics – Priority Habitats

(Table 23, page 64)

Alternatives	Hard (mi ²)			Submarine Canyons and Gullies (mi ²)			OFS Highest 20%HSP (mi ²)			Habitat-Forming Inverts (1 km grid cells)*		
	Close	Re- open	Net	Close	Re- open	Net	Close	Re- open	Net	Close	Re- open	Net
1.a No Action	1911	-	-	1719	-	-	222	-	-	830	-	-
1.b Collaborative	105	5	100	255	45	210	41	36	5	95	5	90
1.c Oceana, et al.	1271	0	1271	899	24	876	370	11	358	411	2	409

Subject Area 1 Metrics – Conservation Value

(Table 24, page 65)

Alternative	Close		Reopen	
	Mean ± 1 s.d.	Spatial extent (mi ²)	Mean ± 1 s.d.	Spatial extent (mi ²)
1.a No Action	-	-	-	-
1.b Collaborative	0.46 ± 0.09	994	0.52 ± 0.07	246
1.c Oceana, et al.	0.44 ± 0.08	19,696	0.52 ± 0.06	143

Subject Area 1 Metrics – Protected Resources

(Table 25, page 65)

Proposal	Eulachon (count/weight)	King (Chinook) Salmon (count/weight)	Silver (Coho) Salmon (count/weight)
1.b Collaborative	0.12 / 0.006 lb	2.3 / 7.8 lb	0
1.C Oceana, et al.	4.1 / 0.59 lb	31.8 / 165 lb	0.3 / 1.7 lb

- Note: this only includes areas to be closed, i.e., where bottom trawling has occurred*

Subject Area 1 Metrics – Trawl Effort

(Table 26, page 66)

Alternative	Close (Years: 2011-2014)	Reopen (Years: 2002-2006)	Net change % of coastwide effort
	% of coastwide effort	% of coastwide effort	
1b Collaborative	0.3%	0.2%	trace negative
1c Oceana, et al.	2.6%	<0.1%	-2.5%

Impacts - Subject Area 1 (EFHCA changes in public proposals

- Fish resources – Possible impacts to target GF species, incidental catch, and state-managed species
 - May depend on effort shift and attainment of ACLs
- Protected Species – Possible decrease in impacts to PR
 - May depend on effort shift, differential concentrations of PR, etc
- Socioeconomics – Possible effects on socioeconomic resources
 - Additional transit time, fuel, etc.
 - Port groups potentially affected differently
 - GF catch constrained by catch share system

Subject Area 2: New EFHCAs within Trawl RCA, Based on Presence of Priority Habitats

2a. No Action - No changes to EFHCAs inside the trawl RCA

2b. Add new EFHCAs within the trawl RCA, based on presence of priority habitats

- Council could select any combination of the areas identified with PHs

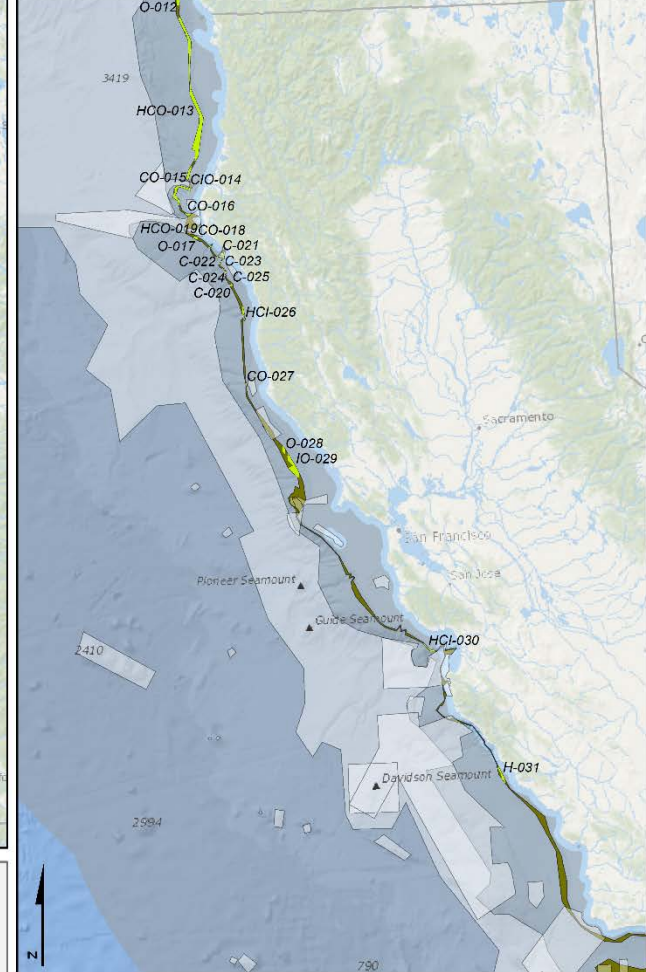
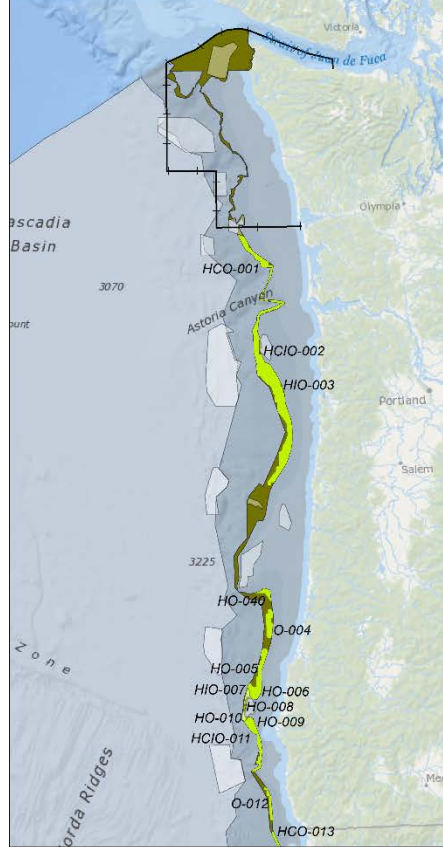
Subject Area 2: New EFHCAs within Trawl RCA, Based on Presence of Priority Habitats

Priority Habitats include (from 2006 EIS):

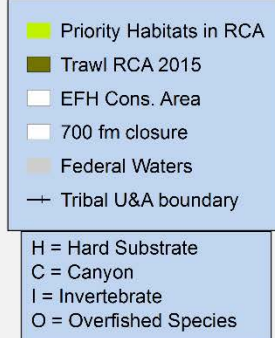
- Hard substrate, including rocky ridges and rocky slopes
- Habitat-forming invertebrates
- Submarine canyons and gullies
- Highest 20% habitat suitability for overfished groundfish species as defined by NOAA

2b. EFHCAs in Trawl RCA

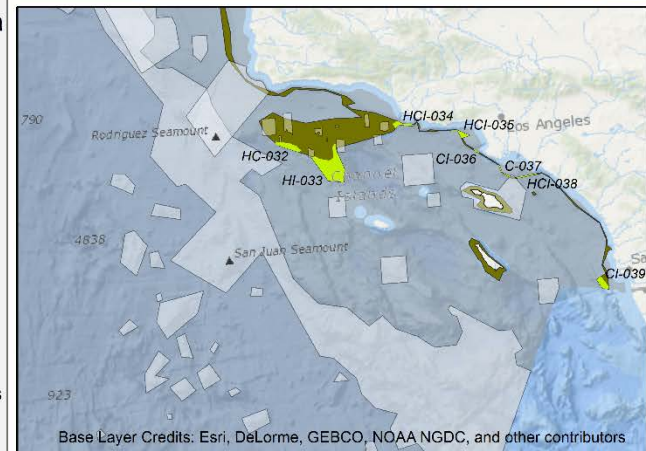
(Fig. 4, pg. 17)



Pacific Coast Groundfish Essential Fish Habitat Alternative 2 Priority Habitats within current Trawl Rockfish Conservation Area



0 50 100 200 Miles
Cartography by Allison Bailey, Sound GIS 10/7/2016



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Impacts of 2b. New EFHCAs in Trawl RCA, Based on Presence of Priority Habitats

- Overall spatial extent - Includes 1329 mi² of potential new EFHCAs inside trawl RCA, with 36 individual areas of PH.
- Habitat (substrate type):
 - Hard = +67mi²; mixed = +0mi²; soft = +1260mi² (Table 28 in Project Team Report)
- Fish resources - No impacts to groundfish bottom trawl species, but state-managed species could be impacted.

Impacts of 2b. New EFHCAs in Trawl RCA, Based on Presence of Priority Habitats

- Protected Species - No change in impacts to PR.
- Socioeconomics - No change with respect the groundfish bottom trawling. Potential impacts to state-managed bottom trawl fisheries (pink shrimp, California halibut, etc)

Subject Area 3 - Adjustments to the Trawl RCA

3a. No Action - Retain the trawl RCA

3b. Remove the trawl RCA

3c. Remove the trawl RCA, but implement discrete areas closures (DAC) to reduce catch of overfished groundfish species, as needed

3d. Remove the trawl RCA, but establish block area closures (BAC) to reduce catch of any groundfish stock or complex, as needed

Subject Area 3

Preliminary Impacts Analysis

[Agenda Item F.4.a, Project Team Report](#)

Analyses are focused on four topics:

1. Habitat
2. Groundfish resources - to be provided in the DEIS
3. Protected resources
4. Socioeconomics - to be provided in the DEIS

3a. No Action – Retain the Trawl RCA

- Trawl RCA configuration would remain as it was in 2015
- Primary catch controls would remain
 - Routine inseason adjustments of the trawl RCA
 - IFQ/IBQ for 30 species/species groups
 - Trip limits for non-IFQ species
 - Regional administrator has authority to make area restrictions and season closures to prevent allocations or OFL/ABC/ACL from being exceeded

Impacts of 3a. No Action Retain the Existing Trawl RCA

- Habitat - No expected changes from previous RCA analysis
- Groundfish resources - No expected changes, similar to recent years
- Protected Species - No expected to ESA species and critical habitat, beyond current biological opinion
- Socioeconomics - Status quo however some ongoing negative impact as access to shelf species remains limited

3b. Remove the Trawl RCA

- Eliminate trawl RCA and increase the total area open to groundfish bottom trawling, providing greater access to target species
- No change to other closed areas within the current trawl RCA
 - EFHCA changes proposed under Subject Areas 1 and 2 are not incorporated in Subject Area 3, but are analyzed in Chapter 5 (page 100)
- Primary catch controls remain

3b. Remove the Trawl RCA Habitat Impacts

Low, negative impacts expected from opening the RCA
(page 71, Table 29)

- RCA closed area is 4,071 mi²; however 602 mi² remains closed as EFHCA and 618 mi² is in CA state waters closed to bottom trawling; net increase of fishing grounds 2,851 mi²
- 974 mi² contain the highest 20% HSP for overfished species (DRK, POP, YE)
- 96% soft, 1% mixed, 3% hard, <1% unknown
- Less than 2.2% habitat forming invertebrates

3b. Remove the Trawl RCA Groundfish Resource Impacts

Not expected to have significant impacts on groundfish resources

- Primary catch controls are expected to keep catch within ACLs
- Expect greater attainment of some species
- Uncertainty with regard to “lightning strikes”
 - Challenge for species with low quota or highly attained trawl allocations or ACLs

3b. Remove the Trawl RCA Protected Species Impacts

- Impacts to many protected species are rare, making it difficult to predict spatial impacts with high confidence
- Preliminary analysis indicates greatest uncertainty with regard to future salmon impacts (page 29, Table 7)
 - Limited information about historical bottom trawl salmon interactions within the current RCA (only 1 year, 2002)
 - Historical salmon data confounded with changes to groundfish regulations
 - RCA (2003), higher slope rockfish trip limits (2003), trawl buyback program and fleet reduction (2003), SFFT (2005), etc.
- Large changes in salmon abundance and environmental conditions over the time period

3b. Remove the Trawl RCA Socioeconomic Impacts

- Could result in more efficient fishing and lower transiting costs
- May allow for more landings and revenue
- Communities could see an increased economic benefit

3c. Remove the Trawl RCA, but Close Discrete areas (DACs)

- Eliminate trawl RCA
- Implement DACs to reduce catch of overfished species either preseason or inseason, as needed
- “Hot-spots” identified using fishery dependent data (2011-2014 WCGOP) and trawl survey data (2011-2015) for bocaccio, cowcod, darkblotched, Pacific ocean perch, and yelloweye

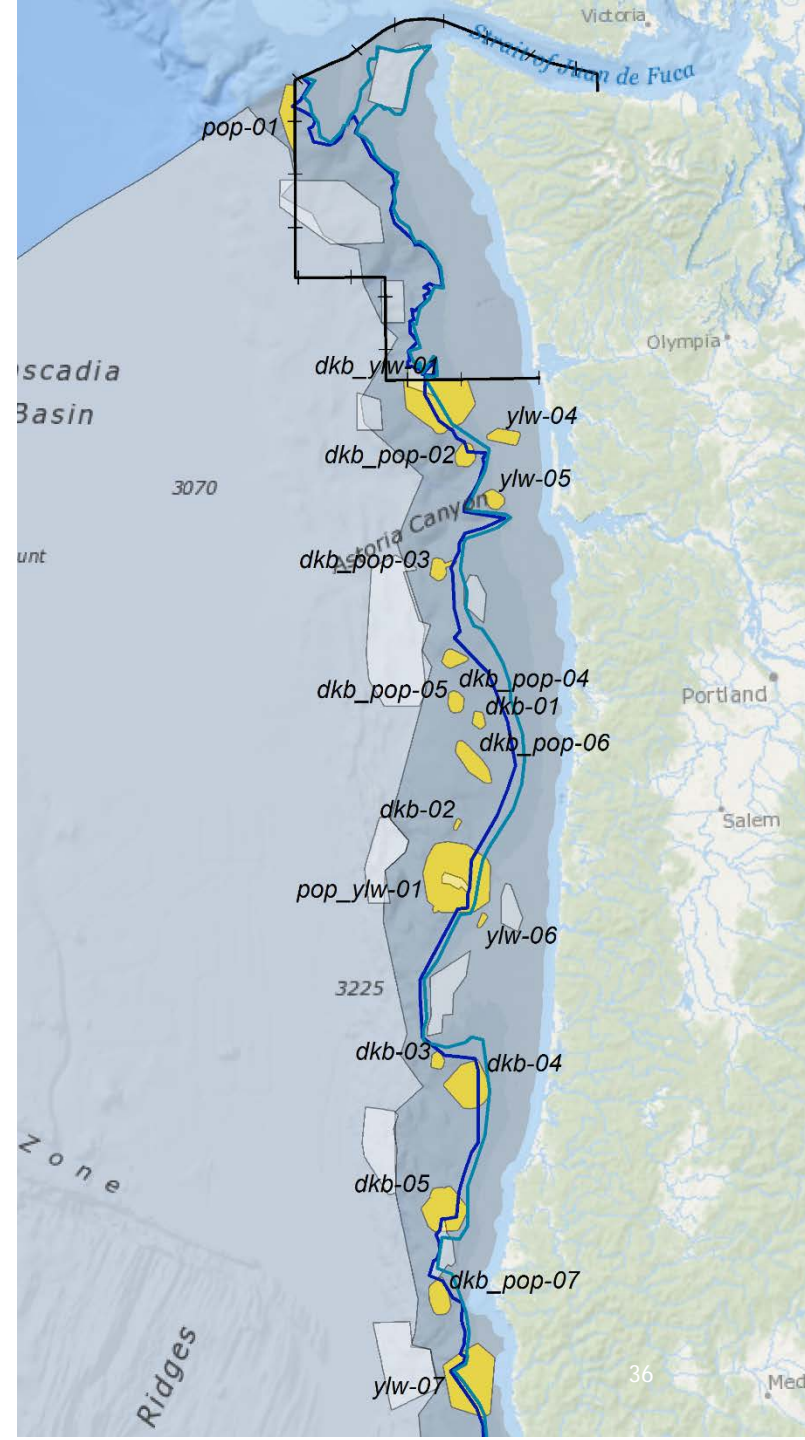
3c. Remove the Trawl RCA, but Close Discrete areas (DACs)

Page 81, Table 34

Species	# of DAC	Total Area (mi ²)
Bocaccio	6	309
Cowcod	8	269
Darkblotched	5	331
POP	1	69
Yelloweye	4	340
Bocaccio/Cowcod	1	323
Bocaccio/Darkblotched	2	143
Bocaccio/Yelloweye	1	69
Cowcod/Yelloweye	1	34
Darkblotched/POP	6	255
Darkblotched/Yelloweye	1	279
POP/Yelloweye	1	385
Total	37	2,807

3c. DACs

Page 22, Figure 5



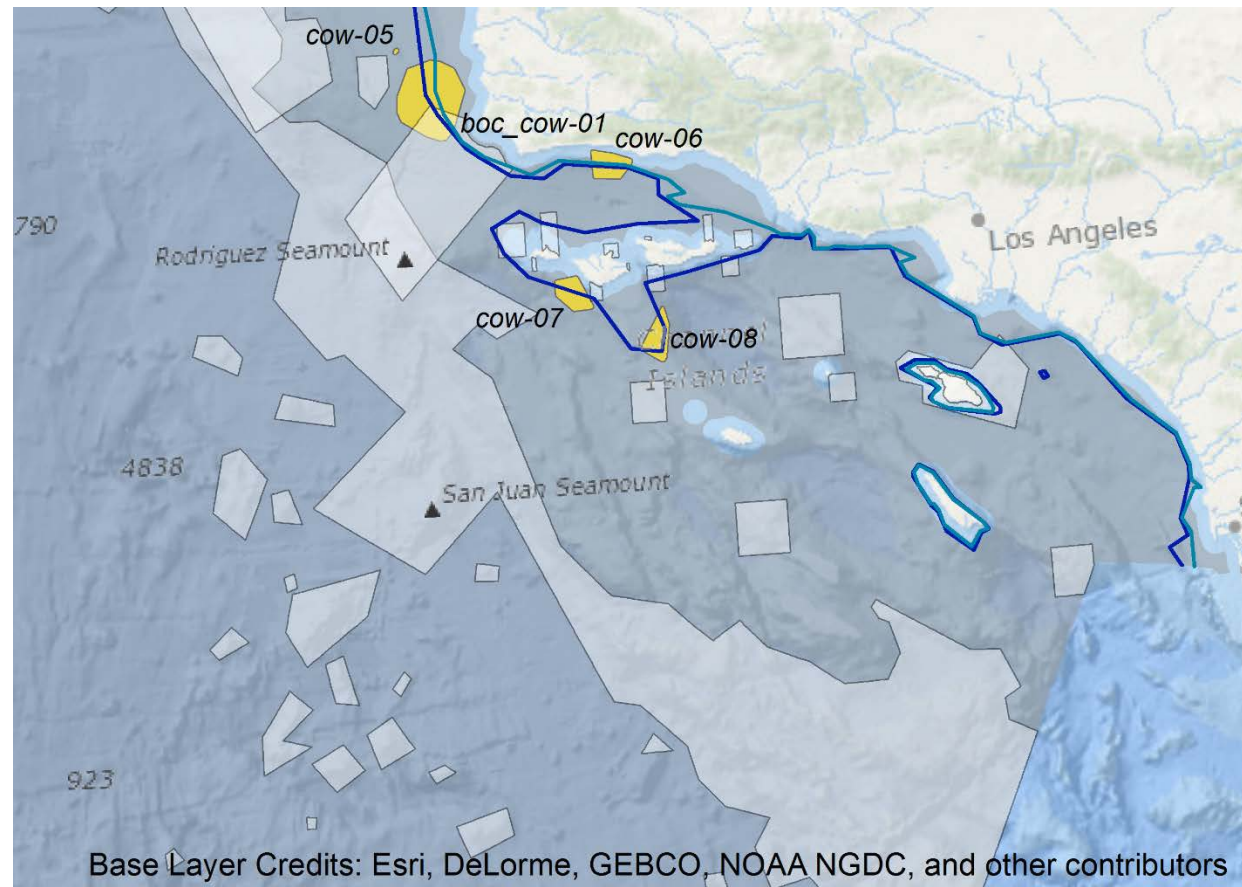
3c. DACs

Page 22, Figure 5



3c. DACs

Page 22, Figure 5



3c. Remove the Trawl RCA, DAC Habitat Impacts

Pages 80-81, Tables 33 and 34

- Low, negative impacts expected when RCA is removed (same as Alt. 3b); no change to existing EFHCAs
- Net change in open areas is 44 mi² , if RCA is removed (2,851 mi²) and all DACs implemented (2,807 mi²)
- No habitat benefits unless DAC closed for long periods of time
- Description of the DAC physical and biological metrics
 - Total area 2,807 mi² ; 448 mi² is the highest 20% HSP for overfished species (DRK, POP, YE)
 - 94% soft, 4% mixed, 3% hard
 - Less 1% habitat forming invertebrates

3c. Remove the Trawl RCA, DAC Groundfish Resources

Same as Alternative 3b, not expected to have significant impacts on groundfish resources

- Primary catch controls are expected to keep catch within ACLs
- Expect further attainment of some species
- DACs may mitigate the effects of “lightning strike” events

3c. Remove the Trawl RCA, DAC Protected Species

- Impacts to protected species are primarily associated with the removal of the RCA
- No changes expected with implementation of DAC
- Some protected species were caught in DAC (pages 84-86; Tables 35-38); however the efficacy of DAC to reduce protected species catch was not analyzed

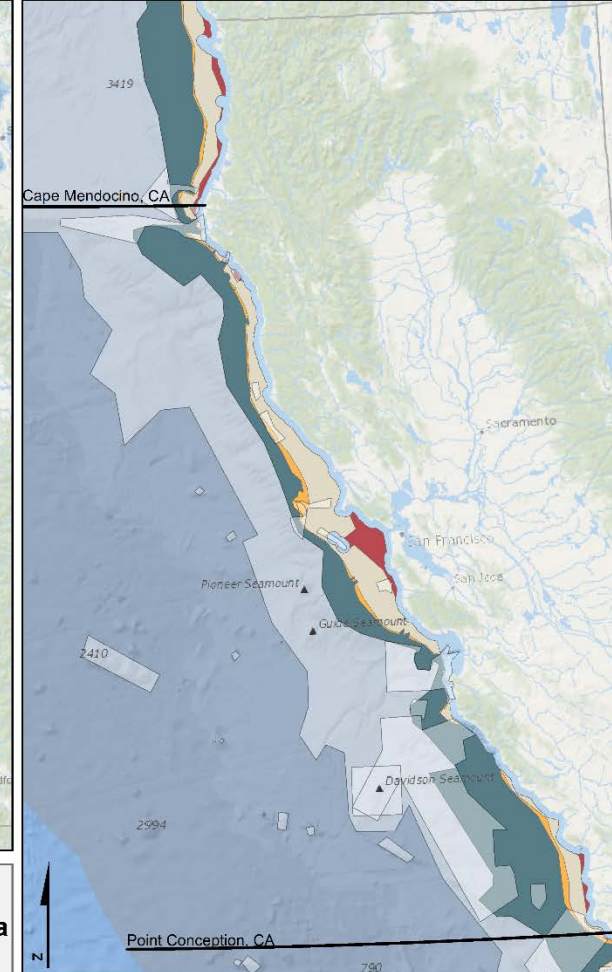
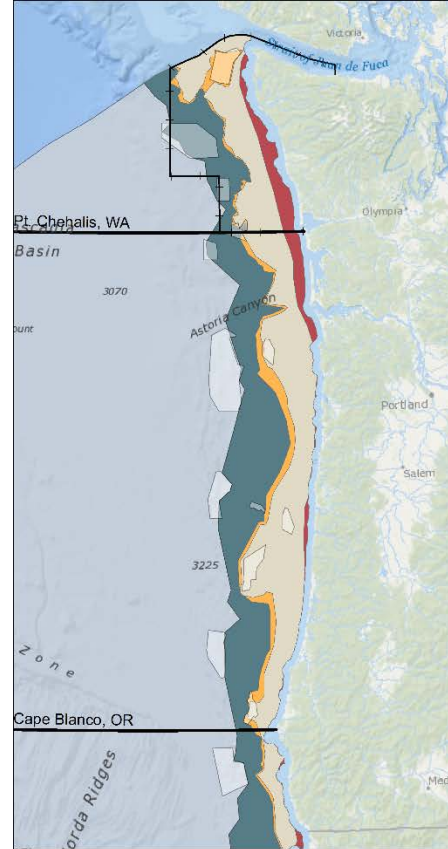
3c. Remove the Trawl RCA, DAC Socioeconomics

- Same benefits as described under Alternative 3b.
Removing the RCA; however displacement would result from implementing DACs
- Analysis to be completed over winter

3d. Remove the Trawl RCA, but Establish Block Area Closures (BACs)

- Eliminate trawl RCA
- Implement BAC pre-season or in-season to reduce catch of a particular species or species complex, as needed
- BACs can be implemented using any of the existing 7 geographic landmarks (latitude) and 5 depth contours (longitude) in regulation
- A range of possible outcomes was analyzed by focusing on 20 larger blocks
 - Necessary to support existing authorities, taking into account the RCA removal

3d. BACs Page 25, Fig 6



Pacific Coast Groundfish Trawl Rockfish Conservation Area Alternative 3 Block Area Closures

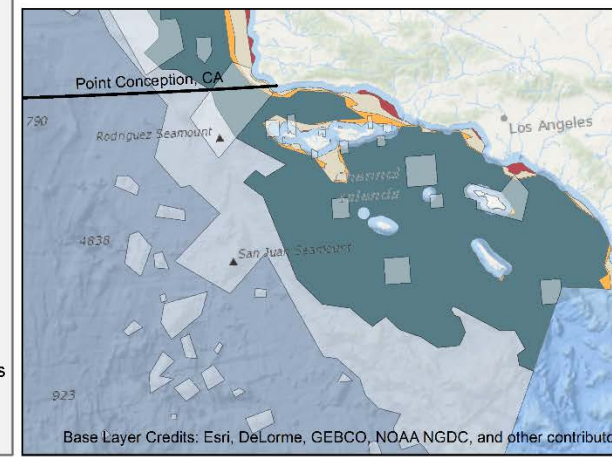
RCA - Block Area Closures

- 0 fm - 30 fm
- 30 fm - 100 fm
- 100 fm - 150 fm
- 150 fm - 700 fm
- EFH Cons. Area
- 700 fm closure
- Federal Waters
- Tribal U&A boundary

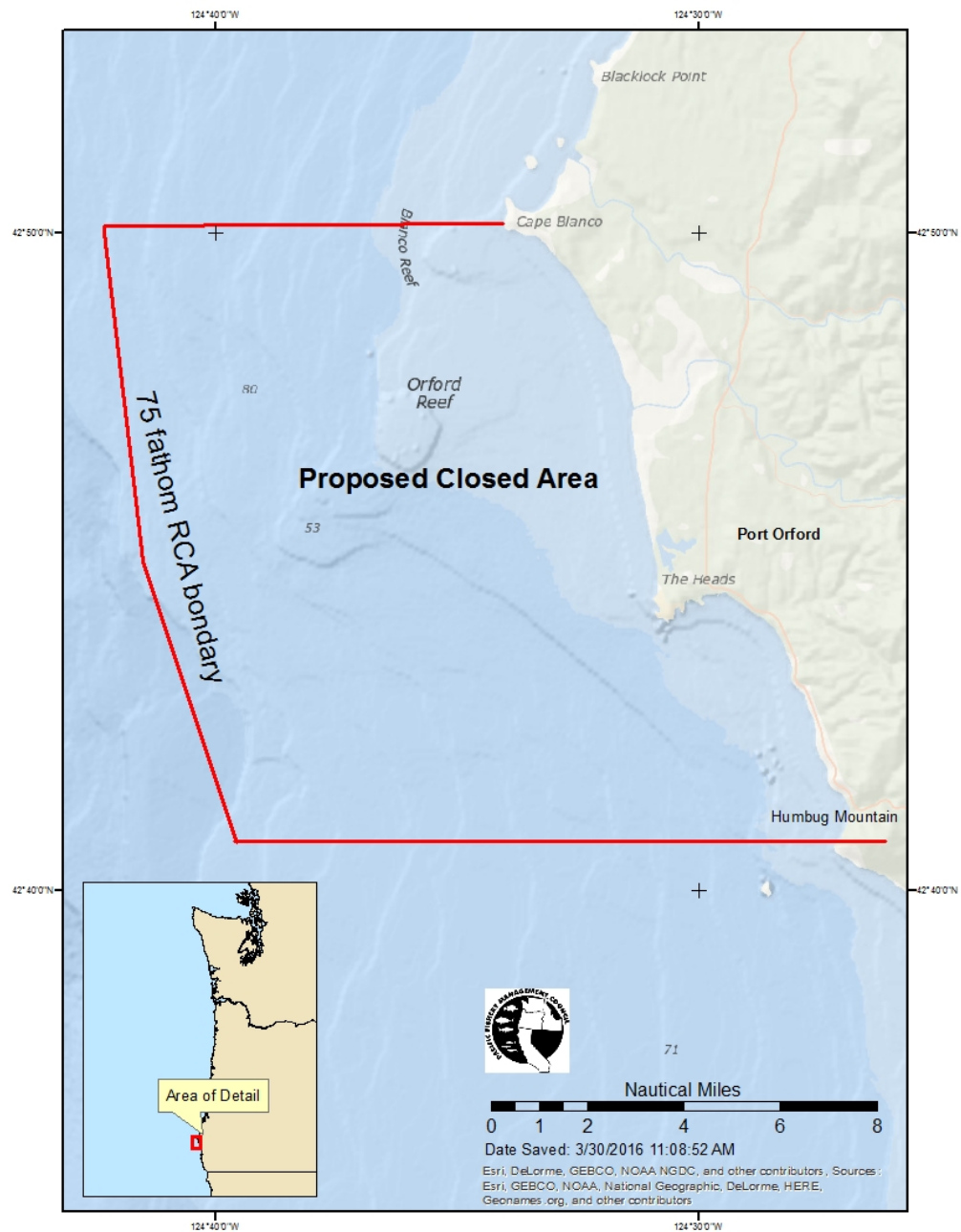
0 50 100 200 Miles

Cartography by Allison Bailey, Sound GIS

10/7/2016



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3d. Remove the Trawl RCA, BAC Habitat Impacts

Pages 90-91, Table 40

- Low, negative impacts expected from the RCA opening (same as Alt. 3b, 3c); no impacts to existing EFHCAs (remain closed)
- No habitat benefits unless BAC closed for long periods of time

3c. Remove the Trawl RCA, BAC Groundfish Resources

Not expected to have significant impacts on the biological resources

- Primary catch controls are expected to keep catch within ACLs
- Expect further attainment of some species
- BAC may mitigate the effects of lightning strike events

3c. Remove the Trawl RCA, BAC Protected Species

- Impacts to protected species are primarily associated with the removal of the RCA
- No changes expected with implementation of BAC
- Some protected species were caught in BAC (pages 95-96; Tables 41-43); however the efficacy of BAC to reduce protected species catch was not analyzed

3c. Remove the Trawl RCA, BAC Socioeconomics

- Same benefits as described under Alternative 3b. Removing the RCA; however displacement would result from implementing BACs
- Analysis to be completed over winter

Synthesis Analysis of EFH and RCA Alternatives

			ALT 3.b Eliminate RCA**	ALT 1.b Collaborative		ALT 1.c Oceana, et al.	
METRIC				Retain RCA	Eliminate RCA	Retain RCA	Eliminate RCA
Spatial extent (mi2)			-2851	748	-2103	19554	16,703
Substrate Type (mi2)		Hard	-89	100	11	1271	1,182
		Mixed	-32	53	21	207	175
		Soft	-2728	595	-2133	18030	15,302
		Unknown	-2	0	-2	46	44
Priority Habitats	Canyon/Gullies (mi²)		-132	210	78	876	744
	OFS 20% HSP (mi²)		-974	5	-969	358	-616
	Habitat-Forming Invertebrates (# grid cells)	DSC	-93	80	-13	322	229
		Sponges	-72	58	-14	320	248
		sea pens	-63	45	-18	197	134
		DSC&S	-109	90	-19	409	300
		Percent of Coastwide Trawl Effort		13.1%	Trace negative	13.0%	-2.5%

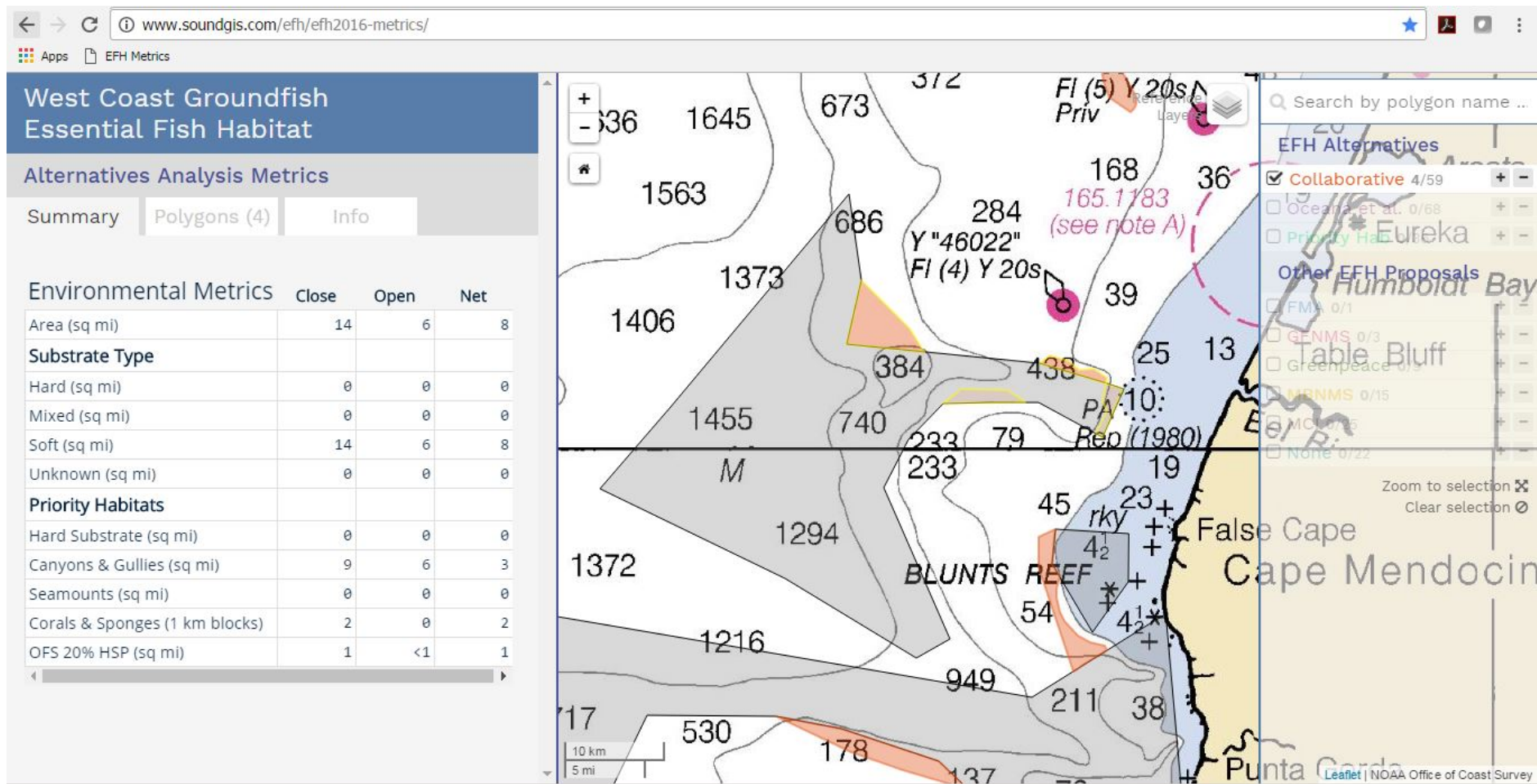
**Excludes EFHCAs and CA State waters where bottom trawling would still be prohibited.

Synthesis Analysis of EFH and RCA Alternatives

METRIC		ALT 3.b Eliminate RCA**	ALT 1.b Collaborative		ALT 1.c Oceana, et al.	
			Retain RCA	Eliminate RCA	Retain RCA	Eliminate RCA
Spatial extent (mi2)		-2851	748	-2103	19554	16,703
Substrate Type (mi2)	Hard	-89	100	11	1271	1,182
	Mixed	-32	53	21	207	175
	Soft	-2728	595	-2133	18030	15,302
	Unkn	-2	0	-2	46	44

**Excludes EFHCAs and CA State waters where bottom trawling would still be prohibited.

EFH Metrics Interactive Tool



<http://www.soundgis.com/efh/efh2016-metrics/>

5-minute tutorial

<https://www.youtube.com/watch?v=pglUTca-tVw&feature=youtu.be>

Acknowledgements

EFH/RCA Project Team

- NMFS: Dr. John Stadler, Bonnie Shorin, Karen Palmigiano, Benjamin Mann, Abigail Harley, Dr. Kayleigh Somers, Galeeb Kachra, Mariam McCall, Dr. Waldo Wakefield
- PFMC: Kelly Ames, Brett Weidoff, Dr. Kit Dahl, Kerry Griffin
- Sound GIS: Allison Bailey

Additional Support

- Dr. Correigh Greene, Lacey Malarky, Curt Whitmire

Questions??