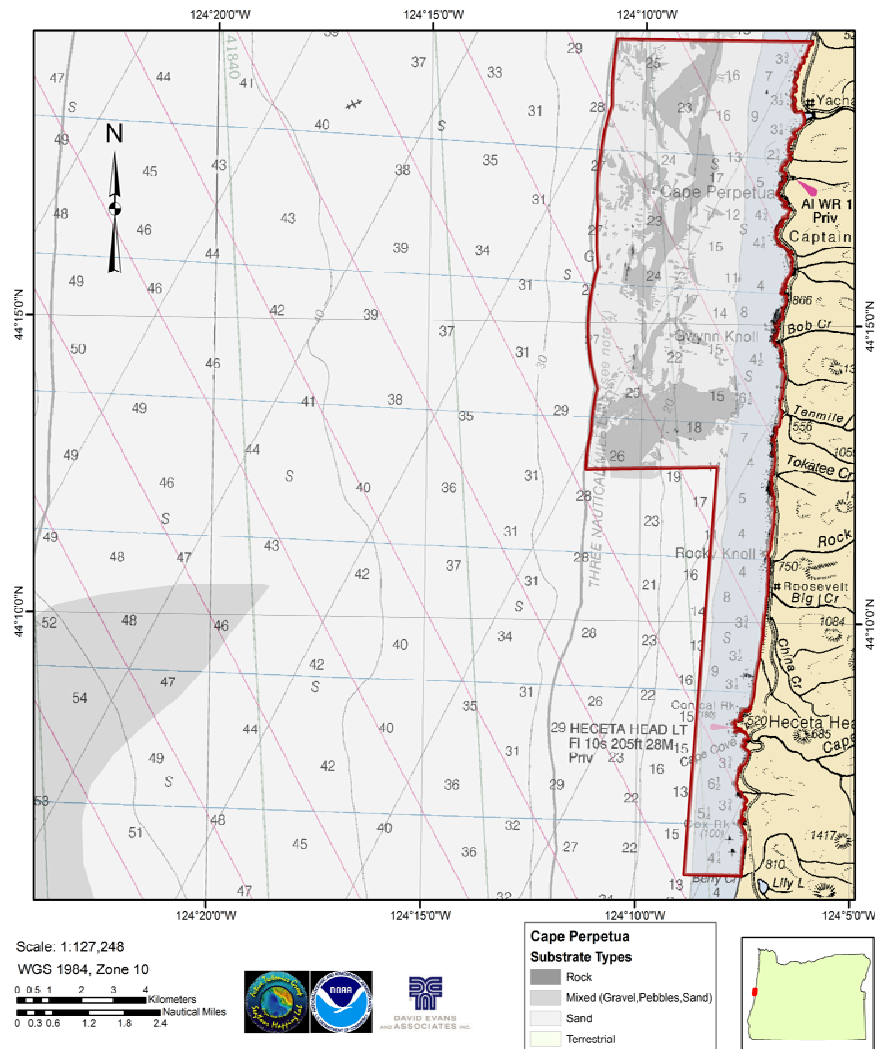


Section 1:

Cape Perpetua Analysis of ODFW Recommendation
December 3, 2010

Marine Reserve Site as Modified By OPAC

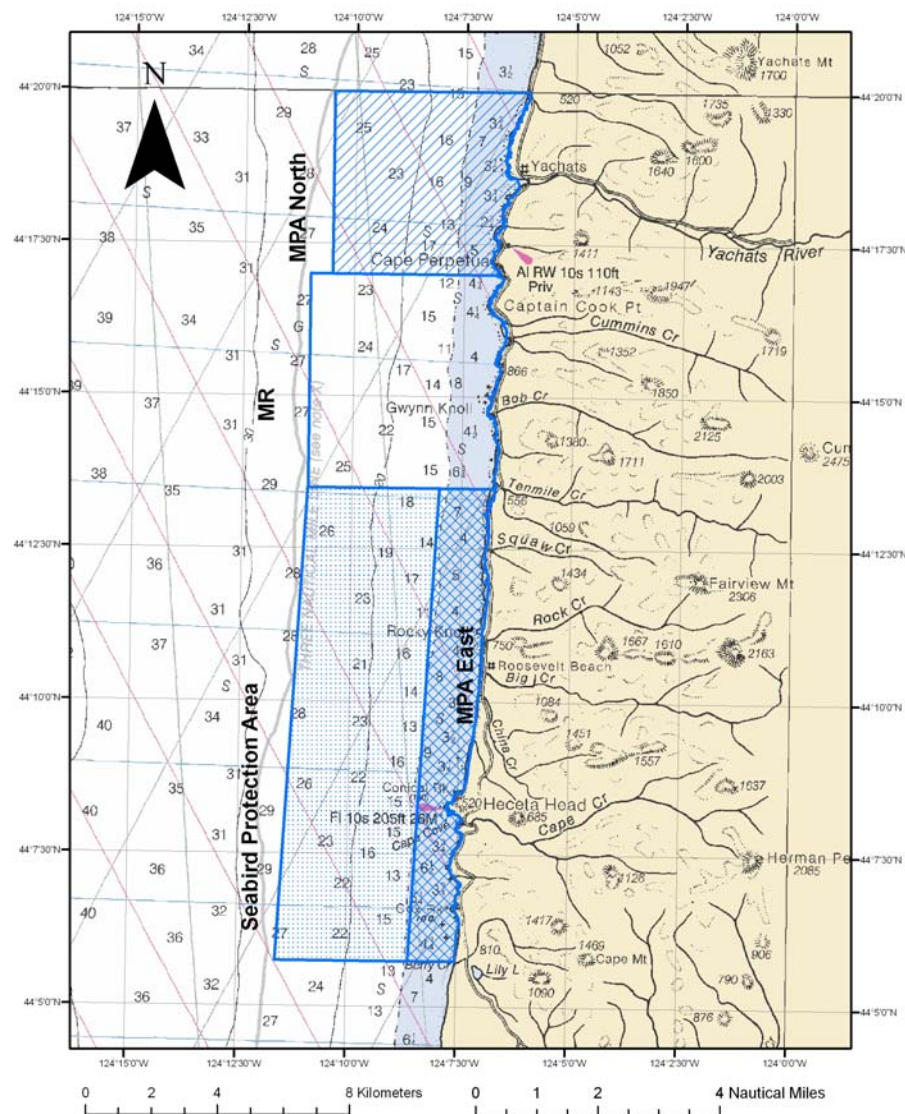


Area: 99.3 km²

Alongshore length: 13.2 – 26 km

Offshore length: 2.0 – 5.6 km

Cape Perpetua ODFW Recommendation



Marine Reserve:

Area: 36.8 km²

Alongshore length: 6.5 km

Offshore length: 5.6 km

North MPA:

Area: 29.4 km²

Alongshore length: 5.5 km

Offshore length: 5.3 km

Allowances: Commercial and sport crab and salmon, and shoreside recreational fishing. All other extractive activities (including new ocean development) prohibited.

East MPA:

Area: 21.1 km²

Alongshore length: 14.5 km

Offshore length: 1.6 km

Allowances: All activities allowed in current regulations except: trawl, all forage fish fisheries, and new ocean development.

Other: Management plan developed to minimize bird disturbance.

Seabird Protection Area (SPA):

Area: 57.49 km²

Alongshore length: 14.5 km

Offshore length: 4.0 km

Allowances: All activities allowed in current regulations except: forage fin fish fisheries, new ocean development

OPAC Attributes:

Seafloor area:

Subtidal (km²):

Depth	Rock	Mixed	Sand	Total
0-25 m	0.8	0.5	42.9	44.1
25-55 m	0.1	18.2	36.9	55.2
> 55 m				
Total:	0.9	18.7	79.8	99.3

Subtidal (% of site):

Depth	Rock	Mixed	Sand	Total
0-25 m	0.8%	0.5%	43.2%	44.4%
25-55 m	0.1%	18.3%	37.2%	55.6%
> 55 m				
Total:	0.9%	18.8%	80.3%	100.0%

Intertidal: rocky 23.1 km, total shoreline 40.1 km

Consumptive users shown or assumed to use the area:

Commercial:

- crab
- salmon²
- halibut²
- squid²
- trawl¹

Recreational²:

- crab
- groundfish
- salmon
- surfperch

Charter (Newport)¹:

- groundfish, salmon
- halibut

Shoreside Activities³:

- groundfish
- salmon
- surfperch
- intertidal harvest

1. Logbook analysis shows limited to extremely low use of this scenario area.

2. No spatial catch data available.

3. Experiential knowledge.

Cape Perpetua Final Recommendation Attributes:

Marine Reserve Seafloor area:

Subtidal (km²):

Depth	Rock	Mixed	Sand	Total
0-25 m	0.3	0.4	10.3	11.0
25-55 m	0.1	7.2	18.5	25.8
> 55 m				
Total:	0.4	7.6	28.8	36.8

Subtidal (% of site):

Depth	Rock	Mixed	Sand	Total
0-25 m	0.8%	1.0%	28.0%	29.9%
25-55 m	0.2%	19.7%	50.2%	70.1%
> 55 m				
Total:	1.1%	20.7%	78.2%	100.0%

North MPA Seafloor area:

Subtidal (km²):

Depth	Rock	Mixed	Sand	Total
0-25 m	0.1	0.0	8.9	9.0
25-55 m		6.8	13.6	20.4
> 55 m				
Total:	0.1	6.8	22.4	29.4

Subtidal (% of site):

Depth	Rock	Mixed	Sand	Total
0-25 m	0.4%	0.0%	30.2%	30.6%
25-55 m		23.3%	46.2%	69.4%
> 55 m				
Total:	0.4%	23.3%	76.3%	100.0%

Consumptive users shown or assumed to use the area:

Commercial: <ul style="list-style-type: none"> • crab • salmon² • halibut² • trawl¹ 	Recreational²: <ul style="list-style-type: none"> • crab • groundfish • salmon • surfperch
Charter (Newport)¹: <ul style="list-style-type: none"> • groundfish, salmon • halibut 	Shoreside Activities³: <ul style="list-style-type: none"> • groundfish • surfperch • intertidal harvest

1. Logbook analysis shows limited to extremely low use of this scenario area.

2. No spatial catch data available.

3. Experiential knowledge.

Consumptive users shown or assumed to use the area:

Commercial: <ul style="list-style-type: none"> • crab • salmon² • squid² • trawl¹ 	Recreational²: <ul style="list-style-type: none"> • crab • groundfish • salmon • surfperch
Charter (Newport)¹: <ul style="list-style-type: none"> • groundfish, salmon 	Shoreside Activities³: <ul style="list-style-type: none"> • salmon • groundfish • surfperch • intertidal harvest

1. Logbook analysis shows limited to extremely low use of this scenario area.

2. No spatial catch data available.

3. Experiential knowledge.

Cape Perpetua Final Recommendation Attributes continued:

East MPA Seafloor area:

Subtidal (km²):

Depth	Rock	Mixed	Sand	Total
0-25 m	0.3	0.0	20.8	21.1
25-55 m				
>55 m				
Total:	0.3	0.0	20.8	21.1

Subtidal (% of site):

Depth	Rock	Mixed	Sand	Total
0-25 m	1.5%	0.2%	98.3%	100.0%
25-55 m				
>55 m				
Total:	1.5%	0.2%	98.3%	100.0%

Seabird Protection Area (SPA) Seafloor area:

Subtidal (km²):

Depth	Rock	Mixed	Sand	Total
0-25 m		0.1	4.2	4.3
25-55 m		4.6	48.6	53.2
>55 m				
Total:		4.6	52.8	57.5

Subtidal (% of site):

Depth	Rock	Mixed	Sand	Total
0-25 m		0.1%	7.3%	7.4%
25-55 m		8.0%	84.6%	92.6%
>55 m				
Total:		8.1%	91.9%	100.0%

Consumptive users shown or assumed to use the area:

Commercial: <ul style="list-style-type: none"> • crab • salmon² • halibut² • squid² • trawl¹ 	Recreational²: <ul style="list-style-type: none"> • crab • groundfish • salmon • surfperch
Charter: <ul style="list-style-type: none"> • no or minimal use 	Shoreside Activities³: <ul style="list-style-type: none"> • groundfish • surfperch

1. Logbook analysis shows limited to extremely low use of this scenario area.

2. No spatial catch data available.

3. Experiential knowledge.

Consumptive users shown or assumed to use the area:

Commercial: <ul style="list-style-type: none"> • crab • salmon² • halibut² • squid² • trawl¹ 	Recreational²: <ul style="list-style-type: none"> • crab • groundfish • salmon
Charter: <ul style="list-style-type: none"> • halibut² 	Shoreside Activities³: <ul style="list-style-type: none"> • N/A

1. Logbook analysis shows limited to extremely low use of this scenario area.

2. No spatial catch data available.

3. Experiential knowledge.

Cape Perpetua Analysis Narrative

Decision Point 1: Are there issues with the OPAC recommended boundaries relative to the sideboards?

Socio-economic Sideboard:

The OPAC site presents some socio-economic concerns for consumptive stakeholders. The relevant effects to the commercial, recreational, charter, and shoreside fisheries as well as the identified communities of place would be:

- A loss of 3.5% of the total fleet wide catch for commercial crab which equates to approximately 298,000 Lbs. This would be considered a substantive loss to the fishermen that use this area if this area consistently and annually provided this opportunity.
- A loss of specific “hot spots” used by commercial salmon fishermen.
- A loss of some recreational fishing grounds, primarily crab and salmon, to personal watercraft users. Due to the distance from other ports and the opportunity within those ports for salmon, crab, and groundfish recreational fishing it is assumed that recreational fishing from a personal watercraft is minimal in this area.
- A loss of some opportunity to the charter fishing fleet out of Newport however, the available data shows very little use of this area by the Newport charter fleet and no use by any charters out of Florence. These data are gathered on a voluntary basis and could underestimate the use but due to the distance from other ports, the existing opportunity closer to these ports and the extent of the data sample time period, it is assumed that the charter use is minimal in this area.
- A substantive loss of traditional shoreside fishing opportunity to recreational fishermen near the Yachats River and a moderate loss along the accessible shore areas along the boundary of the reserve. This also may cause a socio-cultural impact to certain families or user groups from the loss of traditional activities and opportunity for subsistence fishing.
- A possible economic loss to the community of Yachats from the restriction on shoreside fishing which could displace current recreational shoreside fishermen to other areas of the coast or inland.

Ecological Sideboard:

The OPAC site is consistent with marine reserve size and configuration guidelines presented in the STAC Size and Spacing report.

- Overall size of the site: The site’s alongshore length is 26 km at the widest and 13.2 km at the narrowest point, meeting the 10-20 km preferred alongshore length guideline. The northern half of the site extends from the rocky intertidal to the outer edge of the territorial sea, covering the entire depth range within the Cape Perpetua area and meeting the east-west extend guideline. With an alongshore length of 13.3 km, the northern half of the site (without the dogleg) would still be within the 10-20 km preferred guideline. The southern half of the site extends from the rocky intertidal to about 22 m water depth.
- Seafloor types and depth ranges: The site has a variety of seafloor types, including rocky intertidal, and subtidal sand, rock, and other unconsolidated mixed bottom types, primarily gravel. All depth ranges present in the area are represented in the site. Much of the site consists of sandy substrate across the site’s depth range and gravel substrate concentrated in the mid depths. Subtidal rocky habitat consists of scattered patch reefs. While the total rocky area is relatively low (0.9 km²), the size and distribution of the reefs is representative of the immediate region of the territorial sea. The mid-depth rocky area consists of about 60 separate patches of rock ranging in size from a few square meters to 1.6 ha (4 acres). ODFW has surveyed these reef patches for the past 10 years using underwater video (ROV) and has found that they have unusually high rockfish species richness and density compared with rocky reefs that have been studied in other parts of the territorial sea.
- Representation of seafloor types and depth ranges: With the exception of deep offshore (>55m) areas, the site contains all seafloor types and depth ranges found in that segment of the coast. Deeper habitat over 55 m comprises only 0.2% of the area within 10 km north and south of the site. The overall proportional distribution of seafloor types and depth ranges is generally representative of the area within 10 km north and south of the site.

- Species representation: Given the variety of seafloor types and depth ranges, species inhabiting rocky reef, mixed and sandy bottom habitats should be well represented. The depth range of this site allows for both shallow water and mid-deep water species. The overall size in both the alongshore, east-west extent and depth allows for the protection of attached algae, sessile and habitat forming invertebrates and certain mobile benthic invertebrates. This configuration provides an ecological corridor for some fish species to move to offshore waters and habitats for growth or seasonal use. The configuration will provide an ecological footprint for fish species with relatively small home ranges and sand or gravel habitat species with moderate home ranges.
- Special features and other considerations: The site contains 33 emergent rocks, which are potential sites of high biodiversity, 15 seabird nesting colonies, and 5 pinniped haulouts. Cape Perpetua is the only marine reserve evaluation site within the unique, and highly productive oceanographic area shoreward of Heceta Banks. Heceta Banks and other nearby banks deflect the strong north-south summertime flow offshore creating an area of slowed or reversed currents in the Cape Perpetua area. As a result, the area retains nutrient-rich upwelled water, leading to higher production and often hypoxic water conditions.

Decision Point 1 Finding

The OPAC site meets the ecological sideboard; however, concerns about socio-economic impacts justify the need to explore site modifications designed to reduce negative socio-economic effects while maintaining the site's ecological significance.

Decision Point 2: If so, what modifications do you recommend to fix the issue?

The recommendation described below makes efforts to address the socio-economic and/or ecological issues described above for the OPAC site. This section describes the modifications made to the site, and the effect of those modifications on socio-economic and ecological sideboards.

ODFW Recommendation: ODFW recommends accepting the final Cape Perpetua community team site recommendation developed and voted on at their November 8, 2010, meeting. The recommendation provides for a marine reserve, reduced in size from the OPAC site, along with two MPAs and an area described as a Seabird Protection Area (SPA), extending north and south of the marine reserve. The marine reserve component is smaller than the OPAC site (36.83 km² compared to 99.3 km²). The northern MPA would allow commercial and sport crab and salmon fisheries as well as shoreside recreational fishing. For purposes of this analysis, the northern MPA is considered complementary to the marine reserve because it reduces socio-economic impacts compared with the OPAC site, while maintaining ecological benefits with the protections to groundfish species likely to respond to area closure. The northern MPA would add 29.39 km² giving a total area for the site of 66.22 km². The east MPA would allow all forms of fishing except forage fish fisheries and trawl fisheries, and require that the management plan developed for the site address minimizing disturbance to seabirds. The Seabird Protection Area, seaward of the east MPA, would allow all forms of fishing except commercial forage finfish fisheries. The ecological benefit to seabirds obtained from restricting harvest of forage fish (typically very migratory species) in small geographic areas is heavily debated among scientific experts. All of the MPAs and the Seabird Protection Area prohibit new ocean development. Due to the extractive uses allowed in the east MPA and the seabird protection area, neither would add protections for most of the species likely to respond to area closure; therefore, this analysis does not include their potential ecological benefits in developing conclusions regarding the ecological sideboard.

Socio-economic Sideboard:

Overall, the final recommendation reduces the effect of the OPAC site (or has a similar minimal effect) to users because it has a much smaller marine reserve and includes MPAs and a Seabird Protection Area that restore much of the commercial crab and salmon opportunity and allow crab, salmon, and

shoreside recreational fishing to continue. Charter fishing experiences no change in the minimal effect of the OPAC site and all communities of place experience a reduction in effect due to the MPA allowances. The relevant effects to the commercial, recreational, charter, and shoreside fisheries as well as the identified communities of place would be:

- Greatly reduces the effect to commercial crab fishery by returning 76% of the opportunity.
- Expect a reduced effect to commercial salmon through the regain of additional area and important “hot spots” used by commercial fishermen.
- There was minimal to no commercial groundfish activity recorded for this area and therefore the effect is assumed to be minimal.
- Overall a greatly reduced effect in the opportunity lost for personal watercraft recreational fishing for crab, salmon due to the allowances in the northern MPA and crab, salmon, and groundfish due to the allowances in the southern areas. We assumed minimal use of the area by these fishers to start with.
- No change in the minimal opportunity loss from OPAC to the charter fleet out of Newport. Data shows very limited usage of the site over the last decade.
- Greatly reduces the effect to the shoreside recreational consumptive user by implementing the northern and eastern MPAs that allow those fisheries.
- Overall reduces the effect to the communities of place by restoring shoreside fishing and implementing MPAs that allow continued commercial and sport fishing activities.

Ecological Sideboard:

The recommended marine reserve, combined with the complementary northern MPA, is consistent with size and configuration guidelines presented in the STAC Size and Spacing report.

- Overall size of the site: The marine reserve component of the site has an alongshore length of 6.5 km, a reduction from the OPAC site but still consistent with the 5-10 km minimum alongshore length guideline. The marine reserve component extends from the rocky intertidal out to nearly the limit of the territorial sea (western boundary straightened for enforcement purposes), covering the entire depth range within the Cape Perpetua area, meeting the east-west extent guideline. The complementary northern MPA has an alongshore length of 5.5 km. Combining the recommended marine reserve and northern MPA, the total alongshore length amounts to 12 km. This would be consistent with the 10-20 km preferred alongshore length guideline. The northern MPA would add areas of protection for groundfish species across all depth ranges except the immediate shoreline, which would increase the overall protection to these species within the combined marine reserve and MPA.
- Seafloor types and depth ranges: The marine reserve component of the site has a variety of seafloor types, including rocky intertidal, and subtidal sand, rock, and other unconsolidated mixed bottom types, primarily gravel. All depth ranges present in the area are represented in the site. The variety of seafloor types and depth ranges in the marine reserve component of the recommendation is similar to the OPAC site; however, intertidal and subtidal areas are somewhat reduced in size. Most notably, the marine reserve component reduces the size of mid-depth gravel areas from 18.7 km² to 7.6 km² compared to the OPAC site. The marine reserve component retains the important offshore reef complex contained in the OPAC site, but reduces some of the very shallow rocky reef area. The northern MPA adds habitat areas to the overall site. Fishing allowed from shore in the northern MPA would diminish the ecological value of rocky intertidal and immediately adjacent subtidal habitats to some groundfish species that would otherwise be likely to benefit from area closure, but does retain protections to these species across the remainder of the site. The northern MPA adds back most of the mid-depth gravel seafloor type, increasing the overall gravel area from 7.6 km² to 14.4 km². In addition the northern MPA adds back some subtidal rocky reef areas off Yachats. The allowance of salmon and crab fishing in the MPA may have some minimal, but unknown, effect on species diversity and trophic dynamics; however species likely to benefit from a marine reserve are still protected.

- Representation of seafloor types and depth ranges: The overall proportions of seafloor types and depths in the marine reserve component is generally representative of the area within 10 km north and south of the site, and is similar to the OPAC site. The northern MPA component of the recommendation would add habitat area and maintain proportional representation of seafloor types and depth ranges compared with the OPAC site.
- Species representation: Given the variety of seafloor types and depth ranges in the marine reserve and northern MPA species inhabiting rocky reef, mixed and sandy bottom habitats should be well represented. The allowance of salmon and crab fishing in the MPA may have some minimal, but unknown, effect on species diversity and trophic dynamics; however species likely to benefit from a marine reserve are still protected. The depth range of this site allows for both shallow water and mid-depth water species. The overall size in both the alongshore, east-west extent and depth allows for the protection of attached algae, sessile and habitat forming invertebrates and certain mobile benthic invertebrates. This configuration also provides an ecological corridor for some fish species to move to offshore waters and habitats and a footprint for fish species with relatively small home ranges and sand or gravel habitat species with moderate home ranges. While not included in determining conformance with the ecological sideboard, provisions in the management plan developed for the eastern MPA and Seabird Protection Area should benefit seabird species utilizing those areas.
- Special features and other considerations: The marine reserve component of the scenario reduces the representation of special features compared to the OPAC site (pinniped haulouts: 1 vs. 5; emergent rocks: 10 vs. 33; seabird colonies: 2 vs. 15). Combining the northern MPA restores most of the emergent rocks (adds 20) and one additional pinniped haulout and two additional seabird colonies. While not included in determining conformance with the ecological sideboard, provisions for minimizing disturbance to seabird colonies in the management plan of the eastern MPA will likely add protective benefits to the remaining seabird colonies. Cape Perpetua is the only marine reserve evaluation site within the unique and highly productive oceanographic area shoreward of Heceta Bank. Heceta Bank and other nearby banks deflect the strong north-south summertime flow offshore creating an area of slowed or reversed currents in the Cape Perpetua area. As a result, the area retains nutrient-rich upwelled water, leading to higher production and often hypoxic water conditions.

Decision Points 3 and 4: What is the justification for the recommended changes to the OPAC recommended marine reserve boundaries? Reassessment: what are the socioeconomic impacts and the individual and collective ecological benefits of the scenario?

The OPAC site did not meet the socio-economic sideboard (see decision point 1). The community team worked to decrease the socio-economic effects where possible, and maintain an adequate ecological footprint of the site to strike a better balance between the sideboards. The support of the community team for this compromise recommendation is very strong (15 yes, 1 no among voting representatives). The final recommended site addressed deficiencies in meeting the sideboard as follows:

Socio-economic: This proposal greatly reduces affects to commercial crab by 76% and reduces the effects to salmon fisheries compared with the OPAC site. It has a greatly reduced effect on the recreational fisheries in the area and greatly reduces the effects to the community of Yachats by restoring shoreside fishing. Charter user in the area will experience minimal effects. It should be noted that these effects were not applied at the individual vessel level and that the consensus of all reviewers and analysts is that the commercial crabbing and salmon effect shown do not represent the true opportunity loss to the fleet. Because crab and salmon are considered a migratory and mobile species it is expected that those potential opportunity losses to the fleets from a proposed marine reserve would be accounted for and the effects balanced over the season as the fleets continue to fish at the same or similar level along the coast.

Ecological: The marine reserve component and complementary northern MPA provide an area of suitable size, variety of seafloor types and depth ranges, and species representation to meet the ecological sideboard. While not included in determining conformance with the ecological sideboard, the eastern MPA and Seabird Protection Area provide additional protection to seabirds and forage fin fish, and avert future disturbances which could have resulted from potential future ocean development.

ODFW concludes that the final Cape Perpetua community team recommendation meets the ecological and socioeconomic sideboards, and strikes a better overall balance within the sideboards than the OPAC site. ODFW presents this recommendation unaltered for OPAC consideration.

Cape Perpetua Analysis Table

Ecological				
Guidelines			OPAC	Final Recommendation
Alongshore length: minimum range (5-10km) preferred range (10-20km)			13.2 - 26 km (accounting for the dogleg)	6.5 km (MR); 5.5 km (N.MPA)
Habitat: east- west extent TS= Oregon Territorial Sea			Habitat protection extends from intertidal to outer edge of TS in northern portion, but not in southern portion, of site.	MR: Habitat protection extends from intertidal to outer edge of TS
Seafloor types and depth ranges			Seafloor types include: Rocky intertidal, subtidal sand, and subtidal mixed. Subtidal rock is scattered-patch reefs. Seafloor types include a diversity of depth ranges. The amount of subtidal rock habitat is representative of the limited subtidal rock habitat found in this area of the TS.	MR: the total subtidal rock area is reduced from 0.9 km2 (OPAC) to 0.39 km2. Overall the seafloor types and depth ranges within the MR are similar to that of OPAC. <i>The inclusion of the North MPA would bring the rocky reef habitat total to 0.51 km and would also add back the majority of the subtidal mixed habitat except as affected by allowable activities.</i>
Special features			5 pinniped haul outs; 33 emergent rocks; 15 nesting bird colonies	1 pinniped haulout (MR); 1 (N.MPA) 10 emergent rocks (MR); 20 (N.MPA) 2 nesting bird colonies (MR); 2 (N.MPA)
Habitat representation in marine reserve: <div><div>+/- 10 km to and S of OPAC</div><div>TS north of Cape Blanco</div></div>				
rock:	0.4 %	4.5 %	0.9%	1.1% (MR); 0.8% (MR + MPA)
mixed:	7.5%	2.7 %	18.8%	20.7% (MR); 21.8 % (MR + MPA)
sand:	92.1%	92.8 %	80.3%	78.2 % (MR); 77.4% (MR + MPA)

Ecological continued		
Guidelines	OPAC	Final Recommendation
Species likely to be afforded protection	<p>MR:</p> <ul style="list-style-type: none"> ▪ attached algae ▪ sessile & habitat forming invertebrates: bryzoans, sponges*, mussels, tubeworms, marine worms, anemones ▪ mobile benthic invertebrates: sea urchins*~, sea stars~, snails~, marine worms ▪ fish species with limited adult movement ranges: <ul style="list-style-type: none"> – brown rockfish – china rockfish** – copper rockfish (some protection) – quillback rockfish** – black rockfish (some protection)** – tiger rockfish – vermilion rockfish – yelloweye rockfish (some protection) – kelp greenling** – cabezon** – some surfperch spp.** – wolfeel – starry flounder – English Sole ▪ other fish species: lingcod; nest guarding males may be afforded some protection <p>* Long lived invertebrate species 100+ years with limited reproductive output ~ Species that exhibit top down predatory control ** Species more likely to show a response (species common to the site that are fished heavily and/or top predators)</p>	<p>MR, compared to OPAC:</p> <ul style="list-style-type: none"> ▪ attached algae- no change ▪ sessile invertebrates- no change ▪ mobile benthic- no change ▪ fish- less protection afforded <p><i>North MPA in combination with the MR may increase number of species afforded protection and provide some additional protection to species represented</i></p>

Socioeconomic- possible user groups affected		
User Group	OPAC	Final Recommendation
Commercial Fishing	Crab: 3.4% of fleet wide catch – Moderately effected Salmon: Moderately effected	Crab: >70% opportunity returned – Greatly reduces effect Salmon: Reduces effect
Recreational Fishing (non-charter) * no spatial data available	Crab: Minimally effected Salmon: Minimally effected Groundfish: Minimally effected Shoreside: Highly effected	Crab: Greatly reduces effect Salmon: Greatly reduces effect Groundfish: Minimally reduces effect Shoreside: Greatly reduces effect
Charter Fishing	1% opportunity loss: Minimally effected	1% opportunity loss: No change
Communities of Place	Newport: Moderately effected Yachats: Highly effected Florence: Moderately effected	Newport: Reduces effect Yachats: Greatly reduces effect Florence: Reduces effect