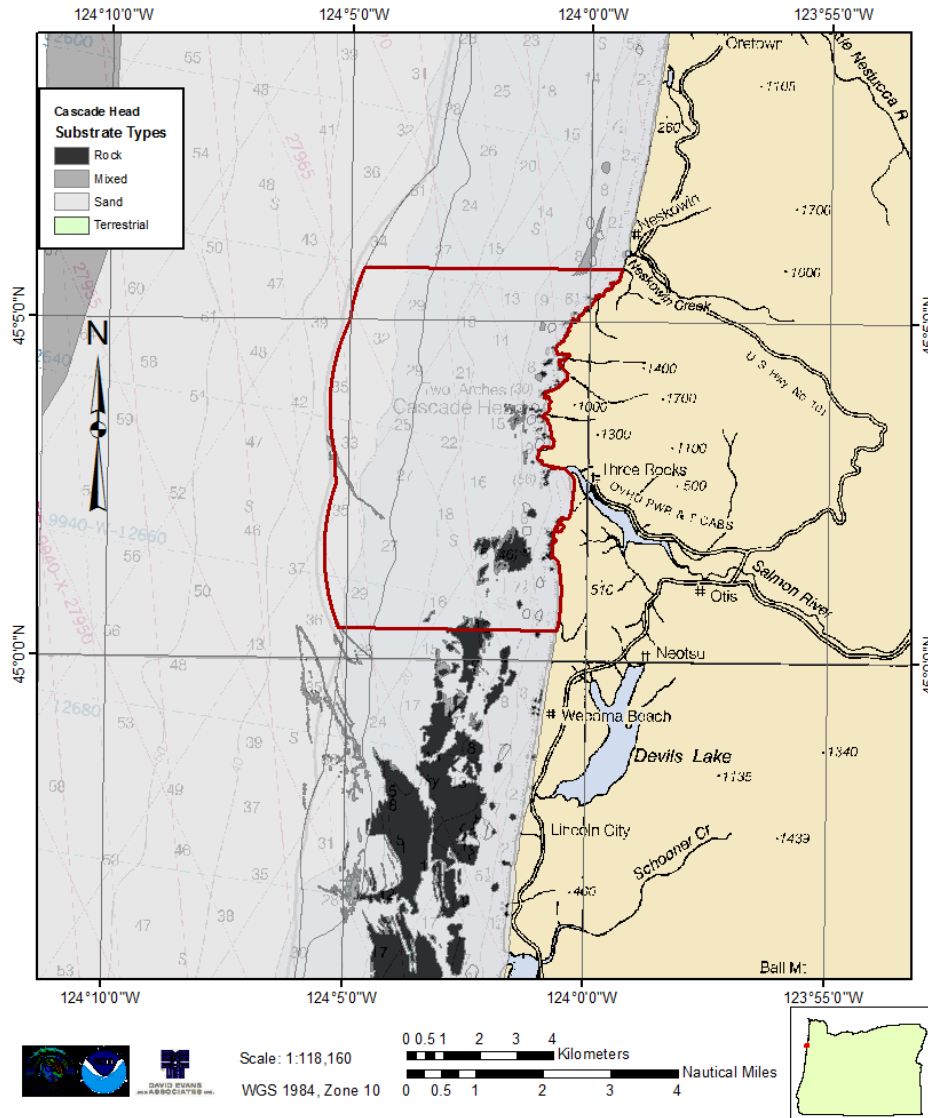


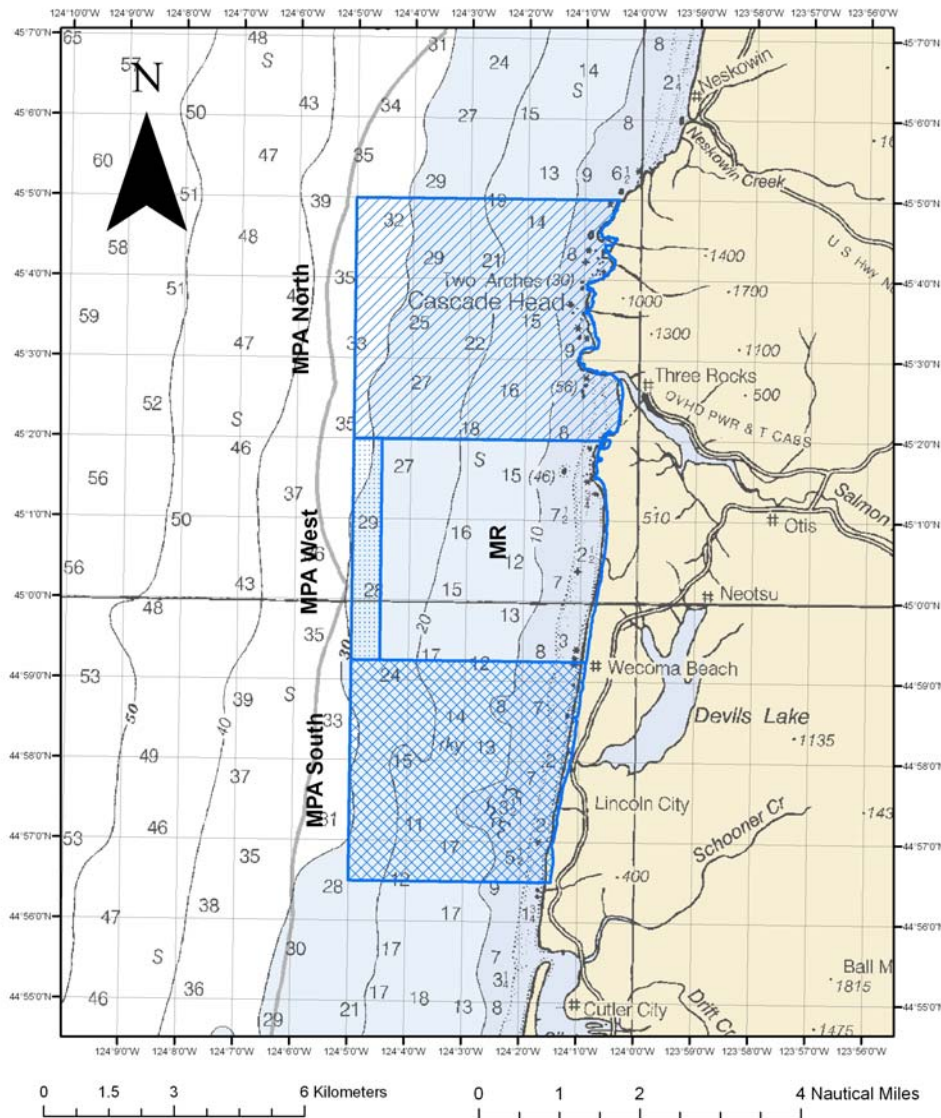
Section 1:
Cascade Head Analysis of ODFW Recommendation
December 3, 2010

Marine Reserve Site as Modified By OPAC



Area: 61.8 km²
Alongshore length: 9.9 km
Offshore length: 5.9 km

Cascade Head ODFW Recommendation



Marine Reserve:

Area: 29.93 km²

Alongshore length: 5.1 km

Offshore length: 5.0 km

West MPA:

Area: 3.34 km²

Alongshore length: 5.1 km

Offshore length: 0.7 km

Allowances: Commercial and sport crab & salmon. All other extractive activities (including new ocean development) prohibited.

North MPA:

Area: 31.85 km²

Alongshore length: 5.5 km

Offshore length: 5.7 km

Allowances: Commercial and sport crab & salmon, and sport groundfish fishing for fishermen launching out of Knight Park (Salmon River). All other extractive activities (including new ocean development) prohibited.

South MPA:

Area: 25.48 km²

Alongshore length: 5.2 km

Offshore length: 5.7 km

Allowances: All activities allowed in current regulations except: trawl, nets, and new ocean development.

OPAC Attributes:

Seafloor area:						Consumptive users shown or assumed to use the area:																																									
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Cascade Head Analysis Narrative

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

Socio-economic sidebar:

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 1.4% of the total fleet-wide catch for commercial crab which equates to approximately 117,000 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 recreational fishing grounds, specifically outside the mouth of the Salmon River, for both shoreside and personal watercraft fishers for crab, salmon, and groundfish.
- A loss of some charter opportunity for the Depoe Bay fleet. The Sport Observer data showed minimal use inside the OPAC site by the Depoe Bay fleet. 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 loss of some traditional recreational fishing opportunity outside the mouth of the Salmon River when the bar is navigable to local residents and anglers launching boats from the county launch at Knight Park. This also may cause a socio-cultural impact to certain families from Otis, Rose Lodge and other Salmon River communities from the loss of traditional activities and opportunity for subsistence fishing.

Ecological sidebar:

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 of 9.9 km is within the 5-10 km minimum alongshore length guideline. The site extends from the rocky intertidal to the outer edge of the territorial sea, covering the entire depth range within the Cascade Head area, and meeting the east-west extend guideline.
- 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 habitats, primarily gravel. All depth ranges present in the area are represented. Much of the site consists of sandy substrate across the site’s depth range, with some gravel and rocky habitat. The mid-deep subtidal rocky habitat is relatively small and underrepresented compared with adjacent areas to the south.
- Representation of seafloor types and depth ranges: The site contains all seafloor types and depth ranges found in that segment of the coast. The overall proportional distribution of shallow rocky habitat (0-25 m) and mixed and sand seafloor types and depths is generally representative of the area within 10 km north and south of the site. However, mid-depth rocky subtidal habitat (25-55 m) is not representative of the area (at 0.8%) when compared to the area within 10 km north and south of the OPAC site (at 7.3%).
- Species representation: Given the variety of seafloor types and depth ranges, species affiliated with shallow rocky habitat as well as shallow water and mid-deep water species affiliated with mixed and sand habitats should be well represented. 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 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 limited home ranges. Due to the lack of mid-depth subtidal rocky areas, species with small to moderate home

ranges affiliated with these types of habitats are not likely to be represented at this site, but would be found on the larger reef complex located to the south.

- Special features and other considerations: The site contains 73 emergent rocks, which are sites of high biodiversity, 27 nesting seabird colonies, and 2 pinniped haulouts. Cascade Head is a major upwelling center, generating productive waters that influence areas farther south. This area also receives fresh water input from the Salmon River.

Decision Point 1 Finding

The site does not meet the two sideboards. The OPAC site's socio-economic impacts and under-representation of mid-deep (25-55 m) subtidal rocky habitat justify the need to explore site modifications designed to reduce negative socio-economic effects while improving habitat representation to better meet the ecological sideboard.

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 Cascade Head community team site recommendation developed and voted on at their November 9, 2010, meeting. The recommendation provides for a marine reserve, reduced in size (29.93 km² compared to 61.8 km²) and shifted south from the OPAC site, along with three MPAs. The north MPA would prohibit extractive uses except commercial and sport fishing for crab and salmon, and sport groundfish fishing for anglers launching out of Knight Park (Salmon River). The west MPA would prohibit extractive uses except commercial and sport fishing for crab and salmon. The south MPA would only prohibit trawl fisheries and any other net fisheries. All three MPAs would prohibit new ocean development. For purposes of this analysis, only the west 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 west MPA would add 3.34 km² giving a total area for the site of 33.27 km². Due to the extractive uses allowed in the north and south MPAs, 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:

The final recommendation has a reduced effect on commercial crab and salmon fishing and a reduced or minimal effect to most non-charter recreational fisheries. The communities of place experience varied effects with the local Salmon River communities seeing a great reduction in effect while Depoe Bay experiences an increase in effect from the expansion of the marine reserve to the south which is more highly used by the charter fleet. The following points summarize the relevant effects to the commercial, recreational, charter, and shoreside fisheries as well as the identified communities of place:

- Greatly reduced effect to the commercial crab fishery with 85% of the opportunity restored.
- A reduced effect is expected for the commercial salmon fishery through some possible fishing grounds being restored by the MPAs.
- Greatly reduced effects to personal watercraft recreational crab, salmon, and groundfish fishing due to the allowances in the MPAs and a continued minimal effect to shoreside fishermen due to the extension of the marine reserve to the south.

- The charter fleet out of Depoe Bay is expected to experience a continued minimal effect for salmon and crab fishing but does see an increase in effect for groundfish opportunity. The final proposal, as compared to OPAC, removes more of the charter opportunity for the area and the MPA does not offset this loss. Although more heavily targeted fishing grounds are available farther south and nearer to Depoe Bay, loss of the relatively shallow area in the marine reserve could exacerbate effects during periods when RCA closures move into 20 fm.
- Communities of place - The local Salmon River communities see a great reduction in effect because the northern MPA would allow recreational salmon, crab, and groundfish fishing outside the mouth of the Salmon River when the bar is navigable. Pacific City and Lincoln City see continued minimal effects from this scenario but Depoe Bay experiences an increase in effect due to the loss of additional groundfish opportunity. Although not explicitly analyzed, if there were effects on the community of Neskowin, these impacts would be greatly reduced because the northern boundary of the site is shifted south of the community.

Ecological Sideboard:

The recommended marine reserve, combined with the complementary west 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 5.1 km, a reduction from the OPAC site but still consistent with the 5-10 km minimum alongshore length guideline. The marine reserve extends out to about 28 fathoms depth, or about 700 m shy of the territorial sea line. The complementary west MPA extends the site out to the territorial sea line (western boundary straightened for enforcement purposes) so that the combined marine reserve/MPA site includes the entire depth range in area and meets the east-west extent guideline
- Seafloor types and depth ranges: The marine reserve component retains the variety of seafloor types and depth ranges, with a marked increase in mid-depth subtidal rocky reef habitat compared with the OPAC site (1.9 km² compared to 0.5 km²). This rocky habitat consists of relative large patches of high-relief bedrock. The complementary west MPA adds some deeper water sand habitat to the site, which was lacking in the marine reserve component. 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. The proposed marine reserve component provides markedly better representation than the OPAC site due to the increase in mid-depth subtidal rocky areas. The complementary west MPA adds to the total area of sand. The proportions of seafloor types in combined marine reserve and west MPA almost exactly match the area within 10 km north and south of the site.
- Species representation: Given the variety of seafloor types and depth ranges in the marine reserve and west 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 marine reserves 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. In the marine reserve, the subtidal rocky habitat consists of contiguous patches, the largest 1.75 km long, and would likely protect more rocky habitat affiliated species and individuals than the primarily small shallow patch reefs in the OPAC site. The reduction in size of the subtidal sand habitat may reduce representation of subtidal sand habitat affiliated species in the marine reserve compared to the OPAC site. This is partially made up by the complementary west MPA. The west MPA also completes the protected ecological corridor for all fish species in the marine reserve except salmon and crab to move to offshore waters and habitats.

- 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: 0 vs. 2; emergent rocks: 26 vs. 73; seabird colonies: 5 vs. 27). The reduction primarily results from the southern shift of the marine reserve away from the main headland of Cascade Head where most of the seabird colonies, pinniped haulouts, and emergent rocks are located. Cascade Head is a major upwelling center, generating productive waters that influence areas farther south. This area also receives fresh water input from the Salmon River.

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 or ecological sideboards (see Decision Point 1). The community team worked to decrease the socio-economic effects where possible, and increase the ecological footprint of the site to strike a better balance within the two sideboards. The support of the community team for this compromise recommendation is strong (12 yes, 4 no among voting representatives). The final recommendation addressed the OPAC site deficiencies in meeting the sideboards as follows:

Socio-economic: The combined marine reserve and MPAs reduce the potential adverse impacts of the OPAC site by restoring 85% of the opportunity to the commercial crab fishery, restoring some fishing grounds to the salmon fishery, restoring opportunity for recreational crab, salmon, and groundfish fishing off the mouth of the Salmon River, and reducing the effect to the local Salmon River communities. There is, however, an increase in the effect to the charter fleet out of Depoe Bay from the additional loss of grounds to the south of the original OPAC boundary. 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 west MPA provide an area of suitable size, variety of seafloor types and depth ranges, and species representation to meet the ecological sideboard. Shifting the marine reserve area to the south dramatically increased the amount of subtidal rocky reef area, a potentially species rich area which addresses the primary habitat deficiency of the OPAC site. The west MPA extends the protections for groundfish species out to the territorial sea boundary. While not included in determining conformance with the ecological sideboard, the north and south MPAs provide some additional protections and avert future disturbances which could have resulted from potential future ocean development.

ODFW concludes that the final Cascade Head 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.

Cascade Head Analysis Table

Ecological																		
Guidelines	OPAC	Final Recommendation																
Alongshore length: minimum range (5-10km) preferred range (10-20km)	9.9 km	5.1 km (MR); <i>5.1 km (W.MPA)</i>																
Habitat: east- west extent TS= Oregon Territorial Sea	Habitat protection extends from intertidal to outer edge of TS	MR: habitat protection does not extend the full extent from the intertidal to the outer edge of TS. <i>The West MPA provides additional protection to habitats west of the marine reserve to the extent of the TS except as effected by allowable activities. (The MPA adds 700 meters to the west).</i>																
Seafloor types and depth ranges	Seafloor types include: Rocky intertidal and subtidal sand, mixed, and rock; low representation of mid-depth (25-55 m) subtidal rock habitat Subtidal rock habitat is predominately patchy shallow reef. Rocky intertidal habitat consists of primarily ledges and vertical faces around the base of cliffs and some scattered boulder fields.	MR: near doubling of mid-depth subtidal rock, similar mixed, and a decrease in sand compared to the OPAC site. <i>The addition of the West MPA increases the amount of sand of the site in the deeper depth range.</i>																
Habitat representation:																		
	<table border="1"> <thead> <tr> <th></th> <th><u>+/- 10 km to N and S of OPAC</u></th> <th><u>TS north of Cape Blanco</u></th> <th></th> </tr> </thead> <tbody> <tr> <td>rock:</td> <td>9.5 %</td> <td>4.5 %</td> <td>2.9%</td> </tr> <tr> <td>mixed:</td> <td>1.3 %</td> <td>2.7 %</td> <td>0.8%</td> </tr> <tr> <td>sand:</td> <td>89.2 %</td> <td>92.8 %</td> <td>95.8%</td> </tr> </tbody> </table>		<u>+/- 10 km to N and S of OPAC</u>	<u>TS north of Cape Blanco</u>		rock:	9.5 %	4.5 %	2.9%	mixed:	1.3 %	2.7 %	0.8%	sand:	89.2 %	92.8 %	95.8%	
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		10.5% (MR); <i>9.4 % (MR + MPA)</i>																
		1.5% (MR); <i>1.3 % (MR + MPA)</i>																
		88.0% (MR); <i>89.3 % (MR + MPA)</i>																

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"> - china rockfish - copper rockfish (some protection) - black rockfish (some protection)* - kelp greenling* - cabezon* - some surfperch spp.* - starry flounder ▪ 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> <ol style="list-style-type: none"> 1. attached algae - no change 2. sessile invertebrates - no change 3. mobile benthic - no change 4. fish species - increase in number of species with limited adult movement ranges likely to be afforded protection; more species likely to show a response <p><i>West MPA in combination with the MR may provide some additional protection to species represented.</i></p>
Special features	<p>27 nesting seabird colonies 2 pinniped haul outs 73 emergent rocks</p>	<p>5 nesting seabird colonies; 0 (MPA) 0 pinniped haul outs; 0 (MPA) 26 emergent rocks (MR); 0 (MPA)</p>

Socioeconomic- possible user groups affected		
Guidelines	OPAC	Final Recommendation
Commercial Fishing	Crab: 1.4% of total fleet wide catch Salmon: Expect moderate to high effect	Crab: >80% opportunity returned – Greatly reduces effect Salmon: Reduces effect
Recreational Fishing (non-charter) * no spatial data available	Crab: Highly effected Salmon: Highly effected Groundfish: Minimally effected Shoreside: Minimally effected	Crab: Greatly reduces effect Salmon: Greatly reduces effect Groundfish: Greatly reduces effect Shoreside: No change in effect
Charter Fishing	4% loss of opportunity: Minimally effected	20% loss of opportunity: Increases effect
Communities of Place	Pacific City: Minimally effected Lincoln City: Minimally effected Otis/Salmon River: Highly effected Depoe Bay: Minimally effected	Pacific City: No change in effect Lincoln City: No change in effect Otis/Salmon River: Greatly reduces effect Depoe Bay: Increases effect