Section 2: Evaluation of How Sites Collectively Meet the Ecological and Socioeconomic Sideboards (Cape Falcon, Cascade Head, Cape Perpetua)

Ecological Sideboard:

To meet the ecological sideboard Oregon's system wide marine reserve sites need to be large enough to be ecologically meaningful, include key seafloor types, depth ranges, and areas of high biological diversity, and be appropriately spaced. Appropriate spacing along the Oregon coast assures that reserves include the factors above and support larval connectivity between sites. Collectively the sites should provide replication for scientific evaluation, enhance resilience of nearshore ecosystems to natural and human-caused effects and cover the extent of Oregon's nearshore representing each biogeographic region.

The STAC Size and Spacing Report adopted the guideline of 50-100km alongshore spacing between marine reserves to support larval connectivity between sites. The Size and Spacing Report and the scientific literature further state that smaller reserves should have smaller space in between sites to allow for scientific evaluation of ecological effects.

A combination of the existing Pilot Sites (Redfish Rocks and Otter Rock) and the three recommended sites (Cape Falcon, Cascade Head and Cape Perpetua) create a network of Marine Reserves that encompass the Oregon Coast from the Columbia River to the OR/ CA border. This existing combination represents each biogeographical region, includes and replicates key seafloor types (Table 1), includes important oceanographic features (Columbia River, Heacta Bank, Cape Blanco), areas of high biodiversity and collectively provides replication for scientific evaluation.

These attributes combined support the ecological sideboard and meet the spacing guideline (Table 2) with one important exception of a space of 170 km alongshore between Cape Perpetua and Redfish Rocks. This space highlights the critical need for a marine reserve along that stretch of coastline. In addition the presence of only one marine reserve south of Cape Blanco does not provide for replication within the biogeographic region. However, the southern biogeographic region extends into California to Cape Mendocino.

Given the proposed network of existing and recommended marine reserves and complementary MPA sites the removal of one or any of the sites would cause the system to not support the ecological sideboard, and not meet the overall size and spacing guidelines. The removal of the Cape Falcon area would increase the alongshore length between Cascade Head and the Washington Border and remove the highly productive waters of the Columbia River Region. The removal of Cascade Head would create a large gap between the small reserve of Otter Rock and Cape Falcon. In addition the removal of Cascade Head eliminates a productive upwelling center and species rich rocky reef area. The removal of Cape Perpetua would create a large gap between Redfish Rocks and the small Otter Rock reserve. Cape Perpetua is the only marine reserve evaluation site within the unique and highly productive oceanographic area shoreward of Heceta Bank. In addition, there is a group of rocky reef patches off of Cape Perpetua that have unusually high rockfish species diversity and density compared with rocky reefs that have been studied in other parts of the territorial sea.

Socioeconomic Sideboard

In addition to meeting the ecological sideboard the Oregon system of marine reserves must also collectively avoid adverse significant social and economic impacts. Analyzing the possible impacts can be done qualitatively using the same methods applied to the final recommendations. Using the final

recommendations as the basis for a marine reserves system each stakeholder group has been addressed individually as to the possible effects to its implementation.

The Oregon Commercial Crab Fleet: The assessment below is based on one year of crab logbook data and should be considered a snap-shot in time. The total fleet wide catch used for this analysis was 8.4 million pounds of crab. The OPAC proposal sites captured 5.7% of the total fleet wide catch. The final recommendation sites reduce this to 1.7% of the total fleet wide catch (approx. 143,000 pounds). Dungeness crab is a highly mobile species, and crab are likely to move in and out of the remaining closed areas during the fishing season. Therefore, the fleet would likely catch some of these crab while fishing adjacent to the closed areas. The fleet as a whole would likely experience a smaller impact than a 1.7% loss. Individual crabbers could experience negative effects if their primary areas of use fall in two or more of the recommended sites, and the closures cause the need to change their fishing practices and possible crowd adjacent areas.

The Oregon Commercial Salmon & Groundfish Fleets: These fisheries tend to be more regionally based and less mobile than the commercial crab fleet. Salmon is a highly migratory and mobile species but does have some areas considered to be "hot spots" for fishing activities. The OPAC proposal sites showed none to minimal use of the nearshore and fixed gear fisheries by any commercial fishers and the recommended sites also show this same level. The commercial salmon fleet, according to experiential knowledge, would see minimal to moderate effects from the implementation of the recommended system. Some fishers could experience negative effects if their primary areas of use fall in two or more of the recommended sites.

Recreational Fisheries: Private boat fishers and shoreside fishers do have their preferred areas to fish and some have few options of where to put in at or fish from due to proximity from home or income issues. Tradition or subsistence may also motivate the use of an area or targeting of specific species.

The recommended system of marine reserves and MPAs allows for much more opportunity for recreational fishing, both shoreside and from private water craft, than the OPAC proposal areas. All of the sites allow for some level of recreational fishing, mostly for salmon and crab but a few allow for groundfish as well.

Recreational fishers have more freedom, compared to commercial fishers, to move their area of use and transfer their economic contribution to other areas of the coast because their use is motivated mainly by non-market values such as experience.

Charter Operations: The charter fleets represented in this analysis showed very specific areas of use and none of the charter fleets were shown to use more than one of the recommended areas. Knowing this it can be concluded that the effects of implementing the recommended system of marine reserves and MPAs would likely not be more than the sum of the individual impacts. There could be issues of displacement that are unknown at this time for the operators out of Depoe Bay and Newport due primarily to closures on the north end of Siletz Reef. Individual operators would be differentially affected depending on their current fishing practices.

Communities of Place: The communities of place associated with the individual marine reserve and MPA sites are not expected to experience an increased effect from the implementation of one or more of the recommended sites. These areas may or may not see direct impacts from a specific site implementation but the implementation of the system should not affect these individual communities.

The effects to the coastal economy as a whole may be different than the sum of the individual effects from each site. This needs to be monitored over time to determine the overall effects of the system.

TABLE 1: Summary of Seafloor Type and Areas [1]

	Rock			Mixed			Sand			Total		
	area (km2)	**% TS**	**% N. CB**	**area (km2)**	**% TS**	**% N. CB**	**area (km2)**	**% TS**	**% N. CB**	**area (km2)**	**% TS**	**% N. CB**
North of Cape Blance	109.6	3.4%		66.5	2.0%		2258.2	69.0%		2434.3	**74.4%**	
Territorial Sea	221.7	6.8%		80.7	2.5%		2968.6	90.8%		3271.0		
Evaluation												
Evaluation Marine Reserves	4.2	1.9%	3.9%	9.2	11.4%	13.8%	86.1	2.9%	3.8%	99.6	3.0%	4.1%
Evaluation C. MPAs	0.1	0.1%	0.1%	10.5	13.0%	15.8%	44.5	1.5%	2.0%	55.2	1.7%	2.3%
Evaluation MR + C.MPAs	4.4	2.0%	4.0%	19.7	24.4%	29.6%	130.6	4.4%	5.8%	154.7	4.7%	6.4%
Evaluation O. MPAs	9.9	4.5%	9.0%	5.5	6.8%	8.3%	120.5	4.1%	5.3%	135.9	4.2%	5.6%
Evaluation all levels of protection	18.6	8.4%	17.0%	45.0	55.7%	67.6%	381.8	12.9%	16.9%	445.4	13.6%	18.3%
Pilot												
Pilot MR	3.4	1.5%	0.8%	0.71	0.9%	0.0%	6.0	0.2%	0.1%	10.1	0.3%	0.1%
Pilot MPA	0.6	0.2%	N/A	0.03	0.0%	N/A	14.3	0.5%	N/A	14.9	0.5%	N/A
Pilot MR + MPA	4.0	1.8%	0.8%	0.74	0.9%	0.0%	20.3	0.7%	0.1%	25.1	0.8%	0.1%
Total MR (Evaluation + Pilot)	7.7	3.5%	4.7%	9.9	12.3%	13.8%	92.1	3.1%	3.9%	109.7	3.4%	4.2%
Total MR + C. MPA (Evaluation and Pilot)	8.3	3.8%	4.8%	20.5	25.3%	29.6%	151.0	5.1%	5.9%	179.8	5.5%	6.5%

Table 2: Distance Between Sites and to Ports

Distance to nearest port		Distance between sites
	Washington Border	51 km
51 km (Astoria) 23 km (Garibaldi)	Cape Falcon	84 km
23.5 km (Pacific City) 22.5 km (Depoe Bay)	Cascade Head	30.7 km
8 km (Depoe Bay) 13.6 km (Newport)	Otter Rock	53.5 km
40.2 km (Newport) 26.5 km (Florence)	Cape Perpetua	105 km
7.5 km (Coos Bay) 20.7 km (Bandon)	Cape Arago	74 km
4.0 km (Port Orford) 31 km (Gold Beach)	Redfish Rocks	77 km
	California Border	

[1] Analysis based on best available data: pilot site data are based solely on the smooth sheet and evaluation sites are a combination of smooth sheet data and latest bathymetric mapping data. C.MPA = complimentary MPA (see methods in appendix for definition. O.MPA= other MPA (non-complimentary)