Marine Recreational Information Program
Port of Nehalem Additional Sampling, 2013
Oregon Department of Fish & Wildlife

Funded through the Pacific States Marine Fisheries Commission
PSMFC Contract No. 14-25
NOAA Award No. NA12NMF4370239

Final Report

Eric Schindler
Maggie Sommer

Oregon Department of Fish and Wildlife
Newport, Oregon

February 20, 2014

Port of Nehalem Additional Sampling
Final Project Report
For the 2013 Sampling Season (May 20 – October 27, 2013)

I. Introduction:

The Port of Nehalem located on the Northern Oregon Coast (Figure 1) has never been included as part of the Ocean Recreational Boat Survey (ORBS). The assumption has been that Nehalem has very little activity due to the unreliable nature of the bar crossing at this location (Oregon State Marine Board – Nehalem Bay: www.oregon.gov/OSMB/library/docs/coastalboating/nehalembay.pdf). In addition, prior reviews by ORBS staff of the salmon catch record cards indicated low levels of ocean salmon fishing activity out of Nehalem as compared to other coastal ports. The assumed low level of activity, coupled with a relatively complex array of launch sites scattered around a large estuary area, made the sampling and effort estimation logistics of Nehalem a poor fit for ORBS, as it was generally viewed as a location that could not be managed with a single seasonal employee to cover both dockside interviews and bar crossing counts, and it did not have enough activity to warrant a second seasonal sampler.

The effort and catch out of Nehalem has been included as part of a 4% expansion of ORBS data prior to the inclusion into the RecFIN (Recreational Fishery Information Network) database. This expansion is specifically to address ocean access points and time periods that are not sampled.

Recent anecdotal reports have indicated that ocean activity out of Nehalem may have increased, and that there was a risk that ORBS was not adequately accounting for the Nehalem fishery via the 4% expansion. New video boat counting technology also provided an opportunity to design and implement a test project at Nehalem using a single employee to conduct both effort counts and sampling.

With funding support from the Marine Recreational Information Program (MRIP) and the cooperation from Shirley LaViolette, the owner of "Jetty Fishery", a video recording system was purchased and installed near the mouth of Nehalem Bay at "Jetty Fishery" (Figure 2) to record outgoing (and incoming) vessels. This system was designed to allow for transfer of the video to a laptop computer that could be reviewed and traffic tallied by a sampler while waiting at launch sites to interview returning vessels.

Video equipment was operational by mid-May, with interviews and effort counting commencing in week 20 (May 13-19). With full week sampling continued through week 43 (October 21-27). Sampling was also conducted on October 28-30, but this partial week sampling was not used in the final assessment.

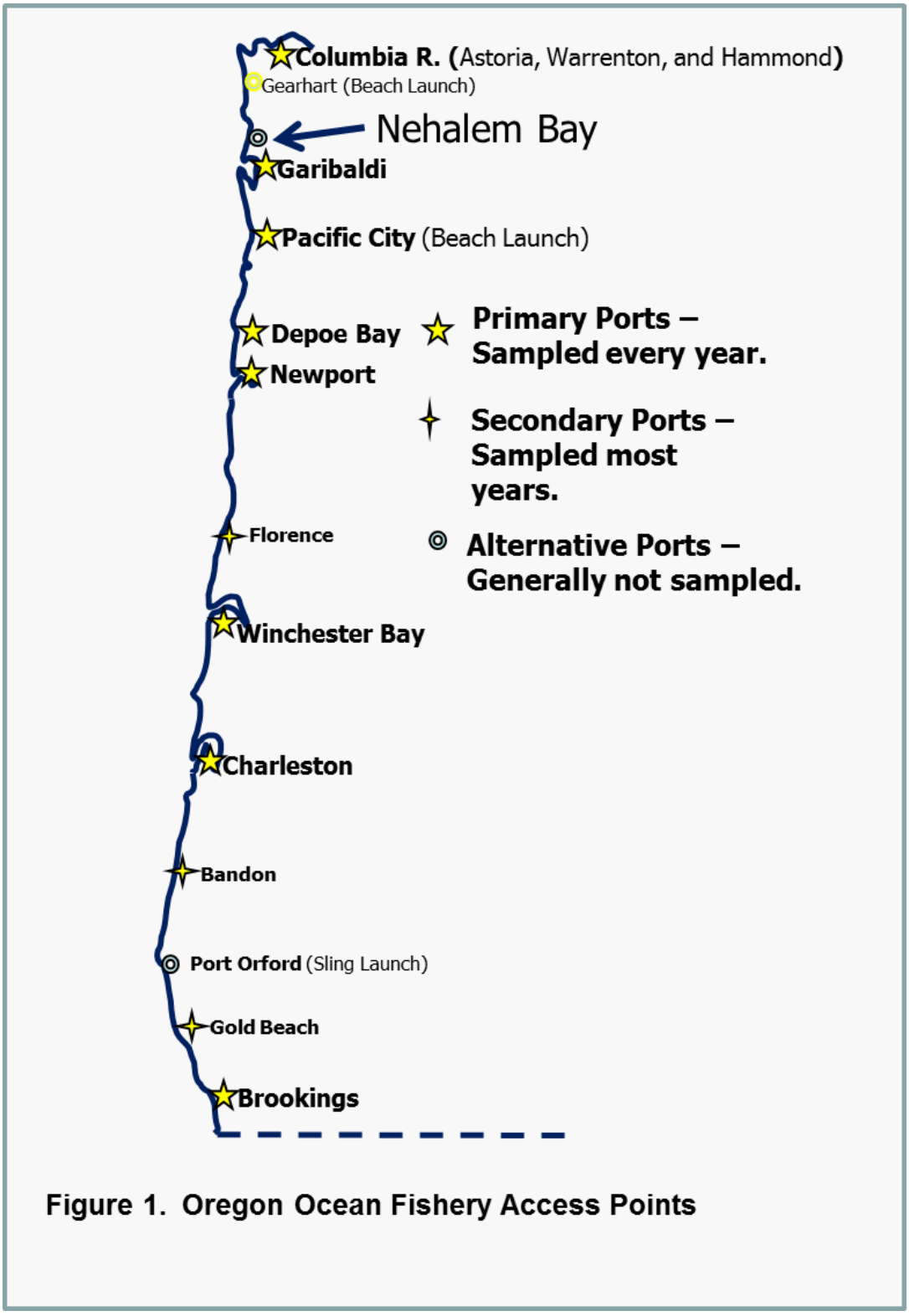

Figure 1. Oregon Ocean Fishery Access Points

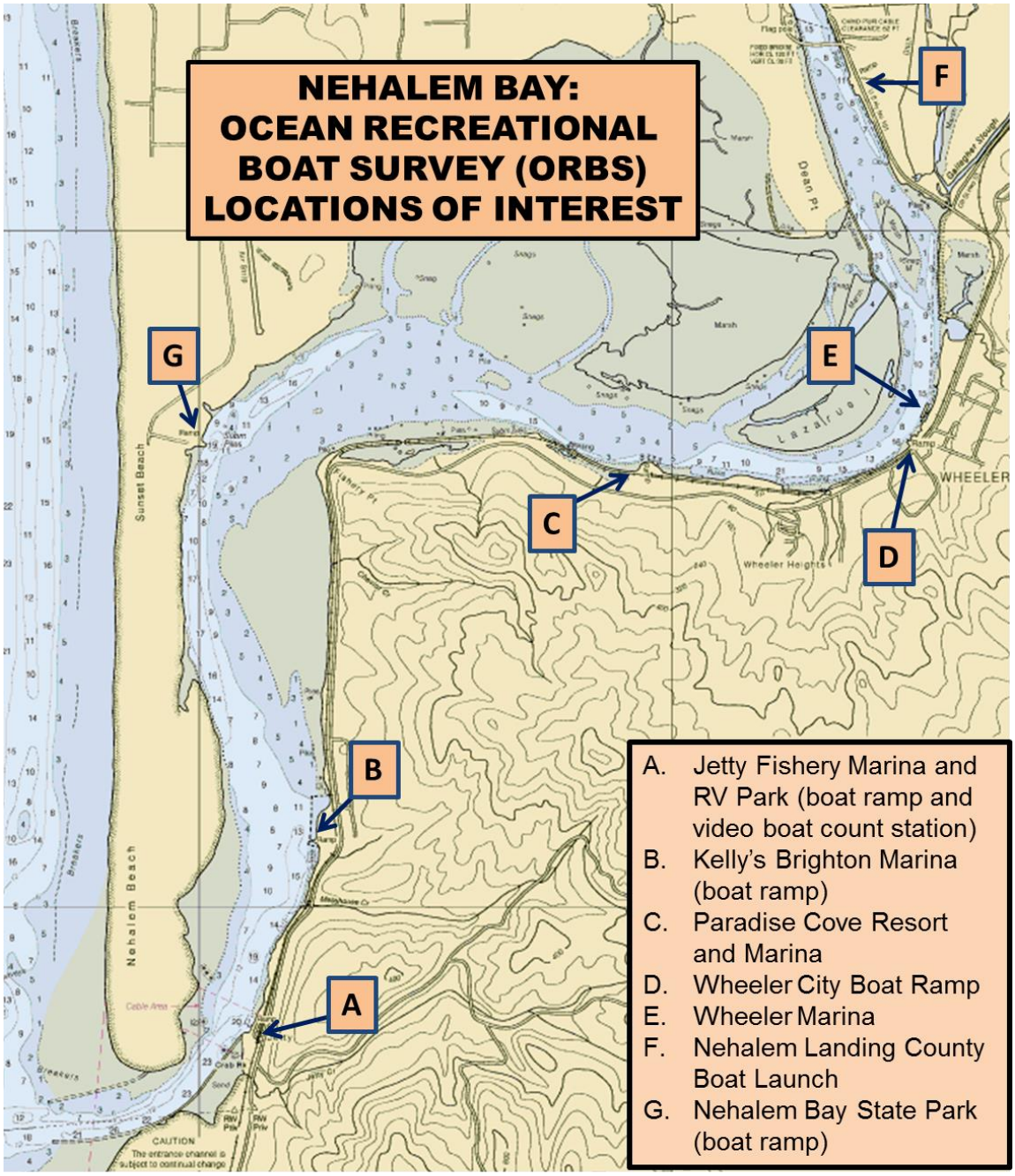

Figure 2. Nehalem Bay ocean boat angling access points.

II. Contract Personnel:

Maggie Sommer – ODFW Data & Technical Services Manager
Eric Schindler – Ocean Recreational Boat Survey (ORBS) Project Leader
Jason Edwards – ORBS Assistant Project Leader
Gabe Garza – ORBS North Coast Field Crew Chief
Gina Claeys – Seasonal Field Sampler

III. Methods:

Video Boat Count: The Nehalem video boat count system consisted of a Bosch Dinion2X Day/Night camera equipped with a Tamron 20-100mm Varifocal lens enclosed in an outdoor housing. The camera and housing were mounted to a light pole located at Jetty Fishery Marina and RV Park (Figure 2). This location on the east shore of the Nehalem Bay provided a viewpoint to the mouth for accounting of vessels entering and exiting the ocean. Cable was run from the camera to a building on the property via a trenched PVC electrical conduit. Inside the building, the power cable from the camera was connected to an Altronix ALTV244UL CCTV power supply which was plugged into a surge protector. The coaxial cable from the camera was connected to an Everfocus 264-9X1R/500 DVR. The DVR unit was connected to a viewing monitor for operating the DVR GUI. Both the DVR and monitor were plugged into the same surge protector as the Altronix power supply.

The field of view (FOV) for the camera did not encompass the entire ocean entrance (Figure 3); however all boats approaching the ocean entrance would cross through the FOV, and no boats were crossing at the north corner due to more hazardous conditions in that location.

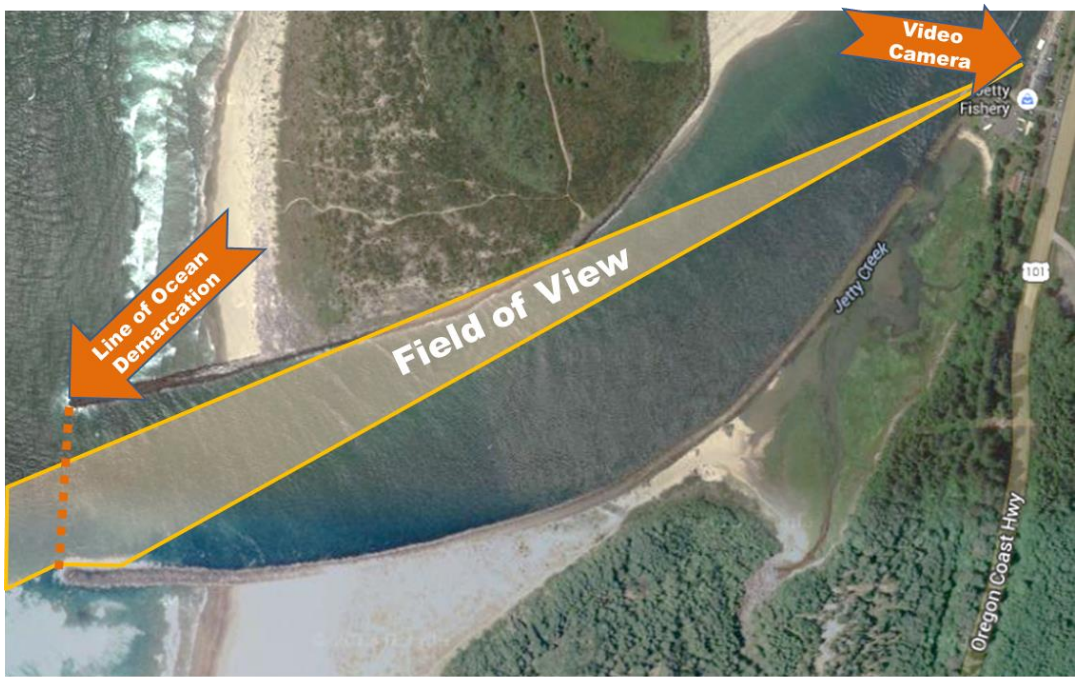

Figure 3. Nehalem Bay video boat counting station and approximate field of view of video.

The video monitoring system ran continuously, 24 hours per day, seven days a week. After 16:15 each day, the port sampler downloaded the daily bar crossing recording from the DVR hard drive to a flash drive. The use of a flash drive

allowed the sampler to store and view the recordings remotely on a laptop at the sampler's convenience. This significantly increased efficiency of the seasonal employee by allowing the employee to review the video while on site waiting for returning recreational boats. To minimize download time, the recording rate was reduced from 30 to 3 fps. To conduct the video boat count, the sampler recorded the number of boats crossing the bar by vessel type at half-hour intervals beginning at 04:15 and ending at 16:15. Video boat counts were conducted for all days during the study period from May 16 through October 30.

Angler-intercept Interviews: Angler interviews were typically conducted five days per week between May 16 and October 30. The field sampler interviewed anglers returning from fishing trips using the next boat protocol described in Sampling Design of the Oregon Department of Fish & Wildlife's Ocean Recreational Boat Survey, available at http://www.dfw.state.or.us/MRP/salmon/docs/ORBS_Design.pdf. Interviews were conducted with boats returning from both ocean and estuary trips; however, effort estimates and catch expansions are only generated for ocean trips. Data obtained during interviews characterized the trips and included departure and return time, type of trip (including non-fishing trips), number of anglers per boat, number of fish caught by species, number of fish released by species, and length and/or weight data from a subsample of the landed catch. Interview procedures are described in detail in the ORBS design document.

Each sampling day, the seasonal employee would make a circuit of the major access points (Jetty Fishery, Kelly's Brighton Marina, Wheeler, Nehalem Landing County Boat Launch, and the Nehalem Bay State Park boat launch) (Figure 2) to check on the number and type of boat trailers at each location. The seasonal employee would then select sampling locations based on the potential for returning ocean trips at each site. The Paradise Cove Resort and Marina was not included in the daily canvasing of sites due to access issues and comments from resort staff that very few boats from their site enter the ocean. By mid-season, the seasonal employee was no longer checking at the Nehalem Landing County Boat Launch as only estuary trips had been observed to be launched at this location. Most ocean activity was found to occur from launches out of Nehalem Bay State Park, and to a lesser degree out of the Wheeler Boat Ramp.

Effort and Catch Estimation: Effort estimates for the ocean-boat component of the fishery were made by combining the expanded boat counts with average number of anglers per boat, stratified by features including trip type and season type, in order to derive effort estimates. Estimates of catch by species are normally made at a statistical week level by combining interview data with effort estimates. Details on the standard ORBS catch and effort estimation methods are available at http://www.dfw.state.or.us/MRP/salmon/docs/ORBS_Design.pdf Due to the overall low volume of fishing effort, the estimates for this study will be provided at the statistical month level.

IV. Results:

During the survey period, 148 boats were interviewed that returned from trips into the ocean (Table 1). Anglers on 137 of the interviewed boats reported some angling occurred during their trip. An additional 1,050 boat trips were interviewed from trips in the estuary of which 781 reported angling activity. The majority of interviewed trips that reported angling activity were trips that fished for salmon (ocean (80%) and the estuary (98%)). The majority of the interviewed non-angling trips for both the ocean (82%) and the estuary (99%) were trips that were crabbing without any angling activity.

Table 1. Number of interviewed and total recreational ocean boat trips out of Nehalem Bay by statistical week, 2013.

Statistical Week (Ending Date)	Number of Boats Interviewed	Number of Boats Counted Across Bar	Weekly Sampling Rate	Monthly Sampling Rate
21 (May 26)	1	4	25%	25%
22 (June 2)	2	8	25%	
23(June 9	1	1	100%	30%
24 (June 16)	7	22	32%	
25 (June 23)	8	24	33%	
26 (June 30)	3	16	19%	
27 (July 7)	10	30	33%	32%
28 (July 14)	2	13	15%	
29 (July 21)	8	41	20%	
30 (July 28)	0	12	0%	
31 (Aug. 4)	20	82	24%	29%
32 (Aug. 11)	10	31	32%	
33 (Aug. 18)	14	54	26%	
34 (Aug. 25)	6	36	17%	
35 (Sept. 1)	17	32	53%	
36 (Sept. 8)	8	23	35%	43%
37 (Sept. 15)	18	38	47%	
38 (Sept. 22)	6	14	43%	
39 (Sept. 29)	0	0		
40 (Oct. 6)	0	0		30%
41 (Oct. 13)	1	8	13%	
42 (Oct. 20)	3	11	27%	
43 (Oct. 27)	3	4	75%	
Total	148	503	29%	

The overall sampling rate for ocean boats for the season was 29%. Standard ORBS project goals are to sample a minimum of 20% of ocean fishing trips by statistical week, but in 5 out of the 23 weeks sampled (Table 1), sampling at Nehalem did not meet the 20% goal. In week 30, there were 12 ocean trips recorded from the video count, but no boats were sampled. This was not unexpected due to the number and distance between access points. There were also two weeks with no ocean activity. Due to the problems of adequately sampling at the statistical week level, for the purposes of this report the data was rolled up to the statistical month level for evaluation. At the statistical month strata, sampling rates exceeded 20% for all months.

Effort Estimates: An estimated total of 1,024 angler trips were made into the ocean out of Nehalem Bay during the study period. Of the estimated angling effort: 77% of the trips fished for salmon during at least part of their trip, 14% targeted bottomfish, 8% fished for Pacific Halibut, and 1% fished for tuna (Table 2). When compared to the coast wide angling effort for the same time period, the activity out of Nehalem made up only 0.61% of the total ocean angling effort (Table 3 and Figure 4). Salmon angler trips accounted for 0.94% of the coast wide ocean trips, while bottomfishing and trips targeting Pacific Halibut only accounted for 0.25% and 0.55% of the statewide totals respectively.

Table 2. Estimated ocean angler trips by trip type and statistical month out of Nehalem Bay, May 20-Oct. 27, 2013.

TripType	May	June	July	August	Sept.	Oct.	Total	% of Effort by Trip Type
Bottomfish	8	70	29	28	9		144	14%
Combo (salmon + other angling)		20	43	32	7	7	109	11%
Halibut		20	10	53			83	8%
Salmon	12	20	96	344	166	43	681	67%
Tuna				7			7	1%
Total	20	130	178	464	182	50	1,024	
% of Effort by Month	2%	13%	17%	45%	18%	5%		

August was the month with the most angling activity with 45% of the estimated angler trips from the study credited to August. The second half of May only accounted for 2% of the angler trips, and October only accounted for 5% of the estimated trips. Over 95% of the trips in September and all trips in October targeted salmon. Observations from the seasonal employee indicated that a high proportion of the salmon fishing trips were occurring just outside the Nehalem Bay entrance. These trips would largely have been fishing for the returning fall Chinook Salmon to the Nehalem Basin, and in many cases boat were trolling back and forth across the entrance to Nehalem.

Table 3. Estimated ocean angler boat trips by trip type out of Nehalem Bay and Oregon Coast total, May 20-Oct. 27, 2013.

TripType	Nehalem Ocean Angler Trips	All Oregon Ports Ocean Angler Trips	Nehalem Pct. of All Trips Total
Bottomfish	144	58,679	0.25%
Combo (salmon + other angling)	109	13,072	0.83%
Halibut	83	15,091	0.55%
Salmon	681	71,422	0.95%
Tuna	7	9,446	0.07%
Total	1,024	167,710	0.61%

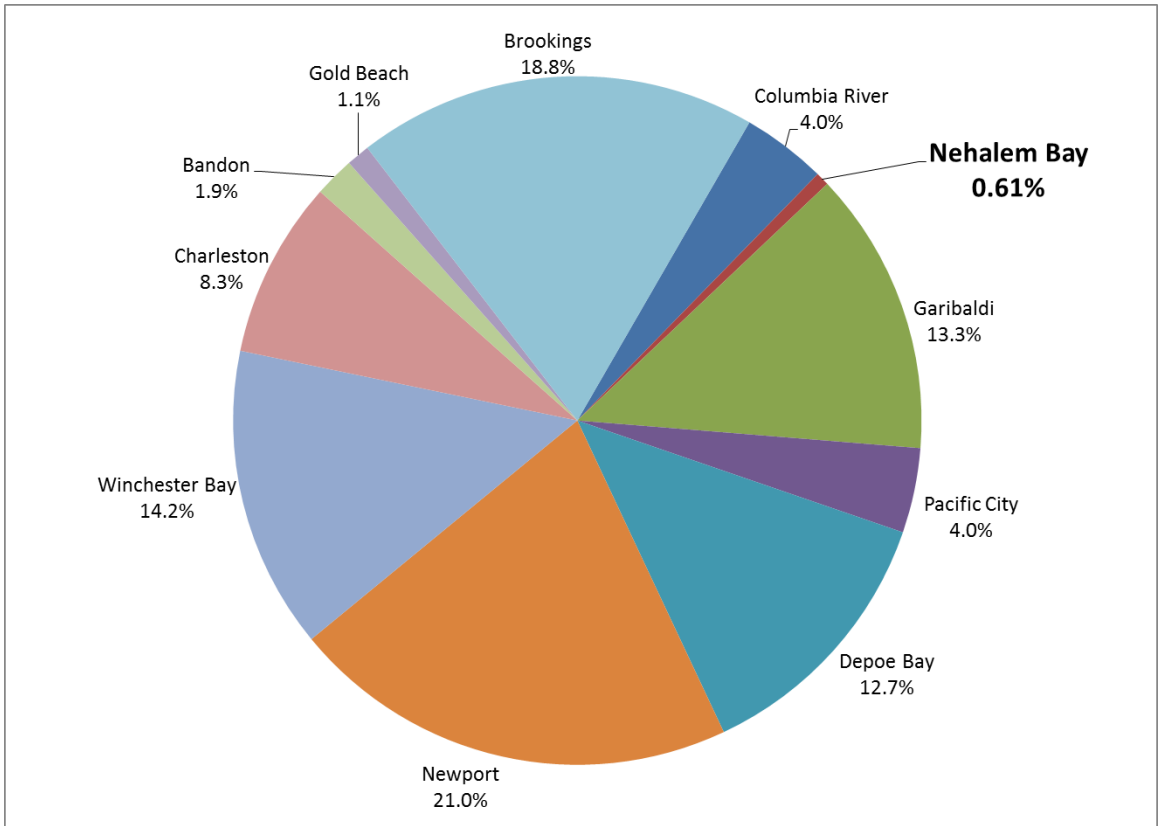

Figure 4. Oregon ocean angler trips by port, May 20 - Oct. 27, 2013

Harvest Estimates: Anglers harvested an estimated 571 finfish during the study period (Table 4). Black Rockfish, Chinook Salmon, and Lingcod were the most common species in the catch making up 29%, 26%, and 23% respectively of the total landings. When compared to the statewide catches for the same time period, the landed catch at Nehalem accounted for less than 0.50% of the statewide catch of any species.

Table 4. Estimated retained catch by species of marine fish by month from ocean angler trips out of Nehalem Bay, 2013.

Species	May (5/13-6/2)	June	July	Aug.	Sept.	Oct.	Total
Kelp Greenling (*Hexagrammos decagrammus*)			14				14
Pacific Halibut (*Hippoglossus stenolepsi*)		3	5	25			33
Coho Salmon (*Oncorhynchus kisutch*)			24	7	14		45
Chinook Salmon (*Oncorhynchus tshawytsha*)	4			67	68	7	146
Lingcod (*Ophiodon elongatus*)	4	60	34	18		13	129
Cabezon (*Scorpaenichthys marmoratus*)			5				5
Yellowtail Rockfish (*Sebastes flavidus*)		3	5	4		16	28
Black Rockfish (*Sebastes melanops*)	24	90	10	39			163
Tiger Rockfish (*Sebastes nigrocinctus*)				4			4
Albacore Tuna (*Thunnus alalunga*)				4			4
Total of all finfish	32	156	97	168	82	36	571

Table 5. Estimated retained catch by species of marine fish from ocean angler trips out of Nehalem Bay compared to all Oregon ports, May 20 through Oct. 27. 2013.

Species	Nehalem Bay Catch	All Oregon Ports Catch	Nehalem Pct. Of Statewide Total Catch
Kelp Greenling (*Hexagrammos decagrammus*)	14	7,558	0.19%
Pacific Halibut (*Hippoglossus stenolepsi*)	33	10,038	0.33%
Coho Salmon (*Oncorhynchus kisutch*)	45	14,580	0.31%
Chinook Salmon (*Oncorhynchus tshawytsha*)	146	29,862	0.49%
Lingcod (*Ophiodon elongatus*)	129	32,398	0.40%
Cabezon (*Scorpaenichthys marmoratus*)	5	3,300	0.15%
Yellowtail Rockfish (*Sebastes flavidus*)	28	11,994	0.23%
Black Rockfish (*Sebastes melanops*)	163	209,241	0.08%
Tiger Rockfish (*Sebastes nigrocinctus*)	4	846	0.47%
Albacore Tuna (*Thunnus alalunga*)	4	21,567	0.02%
Total of all finfish	571	376,759 a/	0.15%

a/ Total landings from all Oregon ports includes estimated landings of species not recorded in the landings at Nehalem Bay.

V. Discussion and Evaluation:

Advances in video surveillance equipment and boat counting techniques provided ORBS the tools to evaluate the level of the recreational ocean angling activity at Nehalem Bay with a single field sampler. However, it was found that the use of a

single sampler at Nehalem still faced significant challenges in meeting sampling rate goals. The primary challenges to sampling at Nehalem are the distances between ocean access points at Nehalem, and the extreme fluctuations in daily effort related to bar crossing and ocean conditions. If future sampling were to occur at Nehalem Bay, it would be advisable to focus sampling efforts at Nehalem Bay State Park and the two sites in Wheeler exclusively (the Wheeler boat ramp and marina can be covered concurrently). Addition of a second and possibly third camera may also be warranted to assist in clarifying actual ocean entrance of vessels.

Overall ocean effort and catch falls within the range expected and is adequately accounted for by the RecFIN unsampled port and time period expansion of 4%. In no case did the effort by trip type or the catch by species exceed 1% of the statewide total for the same time period. When Nehalem is compared to the other port locations currently sampled by ORBS (Astoria, Garibaldi, Pacific City, Depoe Bay, Newport, Winchester Bay, Charleston, Bandon, Gold Beach, and Brookings), it has less than 60% of the ocean angling effort of the next lowest effort port that is currently sampled (Gold Beach). It is also important to note that at this time, there are no charter fishing boats based out of Nehalem.

VI. Summary:

When all factors are considered, there does not appear to be justification to include Nehalem in the ORBS sampling frame at this time. Should the status at Nehalem change in the future, ORBS could consider sampling at Nehalem either as another test, or add Nehalem directly to the standard sampling frame.

Bar crossing conditions at Nehalem, lack of a US Coast Guard presence, and proximity to a more reliable ocean entrance at Garibaldi (with US Coast Guard on station); all contribute to minimal ocean activity out of Nehalem. A similar review of activity at Port Orford in 2012 indicated activity that was less than 0.5% of the Oregon total. Both Nehalem and Port Orford will continue as unsampled recreational access points that are included in the RecFIN expansion for unsampled locations and times.

Our project also wishes to extend our thanks and appreciation to Shirley LaViolette and the staff at the “Jetty Fishery Marina and RV Park” for their cooperation and assistance in establishing a viable video boat counting site on their property for the project. Appreciation also to the Marine Recreational Information Program for funding support, and to the members of the ORBS team who were able to make this all come together (Jason Edwards, Gabe Garza, Suzanne Bauer, Jessica Moll, and Gina Claeys).