MARINE RECREATIONAL INFORMATION PROGRAM

Addressing Recommendations from the MRIP Sponsored Review of Monitoring of Washington's Ocean Sampling Program: Evaluation of recreational catch and effort from minor access sites on Washington's coast

Washington Department of Fish and Wildlife

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INTRODUCTION

Comprehensive and sound management of recreational finfish fisheries in Washington State requires information on catch, effort, and stock-specific fishery impacts necessary to meet established conservation and allocation mandates. These data are federally required to open and manage recreational fisheries, especially considering the need to limit and monitor impacts to threatened species. For the Washington ocean Marine Catch Areas (Areas 1-4), these critical fishery information needs are met through the Washington Department of Fish and Wildlife (WDFW) Ocean Sampling Program (OSP).

To generate estimates of marine fish catch and effort in ocean Marine Catch Areas (for the "private boat" and "charter boat" modes), WDFW employs a procedure based on data collected by an access point intercept survey. The OSP survey is designed to provide both total effort and catch per unit effort (CPUE). These data are used to generate estimates of total catch and effort by Marine Catch Area, month, and fishing mode which are provided to the Recreational Fishery Information Network (RecFIN, www.recfin.org).

Currently, ocean fishery sampling occurs in all major ocean access ports during "peak" effort months, May through September. Some access sites are also sampled at a lower rate during March, April, and/or October. These major access sites include Neah Bay (and adjacent Snow Creek launching site), La Push, Westport, and Ilwaco (including the ports of Ilwaco and Chinook, the Cape Disappointment launching ramp, and the land-based fishery from the Columbia River North Jetty).

There are also minor access sites located along Willapa Bay and Grays Harbor that have the potential for ocean fishing effort. Effort has been estimated during the months of July-September each year for Ocean Shores from visual counts made by the Westport exit counter and added to the overall effort count for Westport; none of the sites have been sampled for ocean fishery effort or catch. Ocean fishery effort and catch have been assumed to be insignificant in all of these non-sampled sites.

The objective of this project was to test the assumption that ocean fishing effort and catch are indeed insignificant from the minor access sites. This was a recommendation resulting from the Marine Recreational Information Program's (MRIP) recent review of the WDFW OSP. Work on this project began July 1, 2012, and ceased on September 30, 2012.

METHODS

One field sampler was stationed to sample each minor Washington coastal access complex: southern Willapa Bay (Nahcotta, Bay Center, and South Bend), northern Willapa Bay (South Bend, Smith Creek, and Tokeland), and Grays Harbor (Ocean Shores, 28th Street launch in Hoquiam, and John's River) (see Figure 1). One Scientific Technician and one Biologist worked to coordinate sampling, collect and keypunch data, and generate estimates of catch and effort. One Biometrician analyzed the resulting catch data, comparing minor ports to adjacent normally sampled major access sites (the Ilwaco/Chinook complex and Westport) and will complete analysis once final catch estimates are available.

A pressure index was developed by permanent OSP staff to assign a probability matrix to the minor ports. This matrix was used to randomly select sample sites for each minor port complex for each month. Sites were selected for sampling between 2 and 14 days per month.

The OSP mainly uses a two-stage design for each port, with days constituting the primary sampling units (PSU) and boats within each sampled day as the secondary sampling units (SSU). Selection of days follows simple random procedures. Although sampling of boats is approximately systematic (e.g., every k^{th} boat), the selection procedure is not exact and this stage is treated as simple random for estimation purposes. Daily estimates are expanded over days within strata to produce weekly, monthly and annual estimates.

Effort is measured in units of boat-trips and angler-trips, and on sampled days, is measured throughout the entire period of boat activity, i.e., from the time when the first boat enters a port until the last boat returns. On a given sampling day, the total number of boats that left a port is counted. Boat effort was measured during this project through an <u>entrance count:</u> a count of all boats entering that marina.

The catch per boat is sampled through intercept surveys. Returning boats are systematically sampled at a minimum target rate of 20% within each boat type (charter and private). Every k^{th} boat to enter the harbor is included in the sample regardless of size, mooring location, trip type, or other attributes.. The size of the sample (leading to the calculation of m) depends on the projected effort and the number of available samplers. Overall, the sampling rate during normally sampled timeframes in each major Washington coastal port in a year averages over 50% for charter boats and over 40% for private boats. For this project, the sampling goal was 100% of the vessels entering the port on each sampled day in sites with anticipated low effort. Where effort was higher, the desired sampling rate was adjusted inversely proportional to effort.

Data collected from each sampled boat trip include target species, area fished, number of anglers, landed catch by species, released salmon by species, releases of all marine fish by species, depth at which the majority of rockfish in the catch were hooked, and other biological data.

Catch and Effort Estimation

The OSP generates preliminary estimates of catch and effort in-season to meet the demands of ocean fishery management. Catch estimates for quota fisheries (currently salmon and halibut) are generated weekly; catch estimates for all other species are generated monthly and provided to the RecFin database by the end of the following month. Final post-season catch and effort estimates for all species are generated by February 1 each year; these post-season estimates replace any existing in-season estimates. For this project, final estimates of effort and catch were generated monthly and provided to the RecFin database by the end of the following month

OSP Estimated Stratum Totals (Primary Stage)

Combined (total) catch estimates are typically stratified by weekend/holiday and weekday. In some strata, every day is sampled. In those strata the combined estimates are simply sums of the daily catches. In other strata, where some days are not sampled, the average catch per day over all sampled days is multiplied by the number of days in the stratum to estimate the total catch.

Let:

a = the marine catch area,

i = trip type,

t = Weekend/holiday or Weekday stratum,

N_t = the number of days in stratum t,

T_t = collection of all days in stratum t,

n_t = the number of days sampled in stratum t, (rather than the number of boats sampled as above),

S_t = collection of sampled days in stratum t (when S=T, n=N),

Y_{taik} = estimated catch (or effort) on day k for stratum t in area a from trip type i,

C_{tai} = catch for stratum t in area a from trip type i,

Then

$$\hat{C}_{tai} = N_t \frac{\sum_{k \in S_t} \hat{Y}_{taik}}{n_t}$$

with estimated variance (Thompson 1992, p. 129):

$$\hat{V}\left(\hat{C}_{tai}\right) = \frac{N_t(N_t - n_t)}{n_t} \frac{\sum_{k \in S_t} \left(\hat{Y}_{taik} - \hat{\bar{Y}}_{tai}\right)^2}{n_t - 1} + \frac{N_t}{n_t} \sum_{k \in S_t} \hat{V}\left(\hat{Y}_{taik}\right)$$

where

$$\hat{\bar{Y}}_{tai} = \frac{\sum_{k \in S_t} \hat{Y}_{taik}}{n_t}.$$

For strata with all days sampled, $n_t = N_t$, and the catch and variance estimators reduce to:

$$\hat{C}_{tai} = \sum_{k \in T_t} \hat{Y}_{taik}$$

and

$$\hat{V}\left(\hat{C}_{tai}\right) = \sum_{k \in T_t} \hat{V}\left(\hat{Y}_{taik}\right).$$

OSP Daily Catch and Effort Estimation (Secondary Stage)

Both catch and effort are post-stratified by trip-type and area fished. Effort in terms of boat-trips is simply the sample number of boats for each trip-type and area expanded by the appropriate boat-type (charter or private) exit/entrance count. Effort in terms of angler-trips is calculated as the mean number of anglers per boat (indexed by trip-type and area) expanded by the counted total population of boats.

The total catch for a given species on a sampled day is the product of the population of boats and the estimated catch per boat, again post-stratified by trip-type and area fished. Key assumptions in the current estimation procedures are that:

1) All boats exiting/entering a port are included in the exit/entrance count
2) Exit/entrance counts are made without error
3) The approximate systematic sample of boats can be treated as a simple random sample
4) Anglers answer questions accurately and do not conceal fish

In the following discussion, subscripts referring to port and boat-type are suppressed. Let:

M_t	=	total exit or entrance count for a given port on day *t* (assumed known without error),
m_t	=	total boats sampled on day *t*,
m_{tai}	=	number of boats sampled of trip type *i* fishing in area *a* on day *t*,

a_{taij} = number of anglers on the jth boat from trip type i fishing in area a on day t,

y_{taij} = number of species specific fish caught on the jth boat from trip type i in area a on day t, and

Y_{tai} = total catch of specific species caught from trip type i in area a on day t.

The estimate of the number of boat-trips of trip-type i and area a follows the procedure outlined in Lai et. al. (1991) where the proportion of boats in each category is estimated by:

$$\hat{p}_{tai} = \frac{m_{tai}}{m_t}$$

with estimated variance (Cochran 1977, p. 52):

$$V(\hat{p}_{tai}) = \frac{\hat{p}_{tai} \cdot (1 - \hat{p}_{tai})}{(m_t - 1)} \cdot (\frac{M_t - m_t}{M_t})$$

The estimated total boat-trips is then obtained by:

$$\hat{M}_{tai} = M_t \cdot \hat{p}_{tai}$$

with estimated variance:

$$\hat{V}(\hat{M}_{tai}) = M^2{}_t \cdot \hat{V}(\hat{p}_{tai})$$

Effort expressed in terms of angler-trips is the product of the average anglers per boat-trip times the total number of boat-trips. The mean number of anglers per boat-trip (for trip-type i and fishing area a) is estimated as:

$$\hat{\hat{a}}_{tai} = \frac{\sum_j a_{taij}}{m_t}$$

with variance:

$$\hat{V}(\hat{\hat{a}}_{tai}) = \frac{\sum_j (a_{taij} - \hat{\hat{a}}_{tai})^2}{m_t (m_t - 1)} \cdot (\frac{M_t - m_t}{M_t})$$

Thus the estimated total number of angler-trips is

$$\hat{a}_{tai} = M_t \cdot \hat{\hat{a}}_{tai}$$

with variance

$$\hat{V}(\hat{a}_{tai}) = M_t^2 \cdot \hat{V}(\hat{\bar{a}}_{tai})$$

The catch (or number released) for a specific species on sampled day *t* in area *a* from trip type *i* is similarly estimated by

$$\hat{Y}_{tai} = \frac{\sum_j y_{taij}}{m_t} M_t$$

with estimated variance

$$\hat{V}\left(\hat{Y}_{tai}\right) = \frac{\sum_j \left(y_{taij} - \hat{\bar{y}}_{tai}\right)^2}{m_t\left(m_t - 1\right)} M_t\left(M_t - m_t\right).$$

This estimate and its variance differs somewhat from that described in Lai et al. (1991) since the total count, M_t (assumed to be a known quantity), is used to expand the estimated CPUE (calculated over all sampled boats) rather than the estimated boat-trips by trip-type and area fished.

Comparing catch estimates between exclusion and inclusion of minor ports

One metric used to evaluate estimators is through comparing the mean squared error (MSE) which takes into account both bias and variance and is

$$MSE\left(\hat{C}\right) = Bias^2\left(\hat{C}\right) + Variance\left(\hat{C}\right).$$

Often the most desirable estimator is one with the smallest MSE. However, a zero bias does not always equate to a smaller MSE. At times, additional sampling to reduce or eliminate bias can increase the variance of an estimator, particularly if additional parameters are required to obtain an unbiased estimate of the target quantity. Alternatively, the cost of additional sampling may not decrease an MSE sufficiently to justify the use of additional resources.

If the total, unbiased catch in a year is the sum of the current OSP estimate plus the catch from minor ports, then

$$Bias\left(\hat{C}\right) = \hat{C}_{OSP} - \left(\hat{C}_M + \hat{C}_{OSP}\right),$$

$$Bias\left(\hat{C}\right) = -\hat{C}_M$$

where $\hat{C}_{OSP}$ = catch as estimated by the current OSP program,

$\hat{C}_M$ = catch from the minor ports,

$\hat{C}$ = the total catch for the year.

Total catch is underestimated by the amount of harvest in minor ports.

Under the assumption that minor port harvest is small or non-existent and $\hat{C}_{OSP}$ is used for total harvest, the MSE is

$$MSE(\hat{C}) = (\hat{C}_M)^2 + Variance(\hat{C}_{OSP}).$$

The MSE of total harvest calculated by sampling all ports, major and minor, is

$$MSE(\hat{C}) = Variance(\hat{C}_{OSP} + \hat{C}_M),$$
$$MSE(\hat{C}) = Variance(\hat{C}_{OSP}) + Variance(\hat{C}_M)$$

because the bias is zero and all ports are sampled independently.

Current OSP catch estimates can be corrected for negative bias using a the following bias correction,

$$\hat{C}_{corr} = \frac{\hat{C}_{OSP}}{BiasCorr}$$

where $BiasCorr = \dfrac{\hat{C}_{OSP}}{\hat{C}_{OSP} + \hat{C}_M}$. The corrected catch estimate $\hat{C}_{corr}$ is unbiased to the first term of a Taylor series expansion,

$$E(\hat{C}_{corr}) \doteq \frac{E(\hat{C}_{OSP})}{\dfrac{E(\hat{C}_{OSP})}{E(\hat{C}_{OSP} + \hat{C}_M)}},$$
$$E(\hat{C}_{corr}) \doteq E(C_{OSP} + C_M)$$
$$E(\hat{C}_{corr}) \doteq C$$

The variance of the bias corrected estimate, $\hat{C}_{corr}$, is as follows,

$$Var(\hat{C}_{corr}) \doteq \hat{C}_{corr}^2 \left(\frac{Var(\hat{C}_{OSP})}{\hat{C}_{OSP}^2} + \frac{Var(BiasCorr)}{BiasCorr^2} \right)$$

where $Var(BiasCorr)$ is a function of the $\hat{C}_{OSP}$, $\hat{C}_W$, and their associated variances,

$$Var(BiasCorr) \doteq \left(\frac{\hat{C}_M}{\hat{C}_{OSP} + \hat{C}_M} \right)^2 \left(\frac{Var(\hat{C}_{OSP})}{\hat{C}_{OSP}^2} + \frac{Var(\hat{C}_M)}{(\hat{C}_{OSP} + \hat{C}_M)^2} \right).$$

Note that the above variance equation is derived under the assumption that a bias correction would be independently estimated. Because $\hat{C}_{corr}$ is unbiased, the MSE is equal to the variance.

RESULTS

Preliminary results on total boat effort per day indicate that the average number of recreational vessels leaving all minor ports is small compared with the adjacent major ports (Westport and the Ilwaco/Chinook complex) (Table 1). July, prior to the opening of recreational fisheries inside Willapa Bay and Grays Harbor, showed the largest difference in total effort (Table 2).

The majority of sampled boat trips in minor ports were either engaged in non-fishing activities (crabbing, oyster gathering, siteseeing) or participating in inside fisheries (mainly Willapa Bay or Grays Harbor salmon fisheries). The one minor port with a significant portion of its effort occurring in the ocean was Ocean Shores. All minor ports had a higher proportion of non-fishing boat trips than the adjacent major ports. Table 3 shows the contribution of each target trip type to total effort by port and the proportion of total effort that participated in ocean fishing.

Average ocean salmon catch per angler trip by port is shown in Table 4; Table 5 shows ocean bottomfish catch per angler trip for the most common bottomfish species. Ocean salmon fishing trips were sampled in four of the eight minor ports, and catch per angler trip does not appear to differ significantly from the nearest major port, Westport. Of the minor ports, only Ocean Shores had ocean bottomfishing effort, and again, catch per angler does not appear to differ significantly from nearby Westport.

Since Ocean Shores appears to be the only minor port with significant ocean fishing effort, we compared catch estimates for Westport using two methods – our "conventional" method and a "stratified" method.

Conventional Westport area catch estimates generated by the OSP include an effort estimator from Ocean Shores. The Westport exit count site is located directly across a narrow portion of Grays Harbor from Ocean Shores. During visual morning exit counts, boats seen departing from Ocean Shores are tallied independently on the Westport exit count form, and are added to the total Westport exit count to which sample data are expanded. Heavy rain or fog can impede visibility; in those cases, an estimated number of boats from Ocean Shores is added proportionally based on observed days. Catch sample data from Westport is applied to the combined exit count data to generate estimates of fishing effort and catch. We refer to this catch estimation method as the "conventional" method.

With the data collected from Ocean Shores in 2012, we were able to apply Ocean Shores specific sample data to effort counts taken from Ocean Shores. We independently estimated ocean fishing effort and catch from Westport and Ocean Shores and added the two estimates together for a total Westport area catch (the "stratified" method).

The two methods of estimating ocean fishing effort and catch produced very similar results with similar variance levels. We compare effort and catch estimates for common species during the July – September time period using the two estimation methods in Table 6.

DISCUSSION

Among the minor launching sites in Willapa Bay, only Tokeland had any ocean fishing effort during our study period. Tokeland's ocean effort was limited to salmon and was minimal. In Grays Harbor, the 28th Street launch and John's River each had minor ocean salmon fishing effort while Ocean Shores ocean fishing effort was more significant and included salmon, bottomfish, and albacore tuna directed trips. Note that Washington inside (estuary) salmon effort and catch is estimated using angler catch record cards rather than from sampling data, so this report is concerned only with ocean fishing effort and catch.

Given the very small and inconsistent nature of ocean fishing effort seen in all minor ports other than Ocean Shores, WDFW believes that the cost of sampling those ports at this time far outweighs the benefit in terms of more accurate catch and effort estimates. The Agency does not feel that an "adjustment factor" to current ocean catch estimates for these small launch sites is warranted or appropriate. Periodic checks of those launching sites during times when inside fisheries are not open are recommended to monitor any change in use patterns.

When we compared estimates of ocean catch and fishery effort in the Westport ocean area using our "conventional" estimation method (described above) and the "stratified" method - combining independently generated estimates for Westport and Ocean Shores -, the differences were minimal and demonstrated no bias toward over- or under-estimation. The differences in estimates of both commonly retained species (Chinook and coho salmon, black rockfish, and lingcod) and species of concern (canary and yelloweye rockfish) fell well within normal confidence intervals associated with OSP ocean catch estimates. Weighing the increased costs of collecting sampling data at Ocean Shores against the potential associated catch estimate accuracy benefits, we believe that the conventional method of accounting for Ocean Shores effort using visual counts from Westport and applying Westport sampling data to that effort is desirable. We further recommend that as funding allows, periodic sampling of Ocean Shores be conducted and comparisons of catch and effort estimates using the conventional and stratified methods be performed.

Figure 1: Locations of major and minor ocean access sites.

Table 1: Comparison of average number of boat trips per day, minor ports and adjacent major ports, July – September.

Port	Total Days Sampled	Total Boat Effort on Sampled Days	Average Boats per Day
Ocean Shores	35	403	12
28th St, Hoquiam	17	638	38
Johns River	15	332	22
Tokeland	38	1,093	29
Smith Creek	7	36	5
South Bend	26	441	17
Bay Center	10	2	0
Nahcotta	29	53	2
WESTPORT	**69**	**6,756**	**98**
ILWACO and CHINOOK	**132**	**11,815**	**90**

Table 2: Average number of boat trips per day by month, minor ports and adjacent major ports.

	Ocean Shores	28th St, Hoquiam	Johns River	Tokeland	Smith Creek	South Bend	Bay Center	Nahcotta	**WESTPORT**	**ILWACO and CHINOOK**
July	9	0	3	6	3	3	1	2	76	54
August	12	3	1	62	6	28	0	1	124	163
September	14	57	40	18	6	14	0	2	97	51

Table 3: Percent contribution of each target trip type to total effort and proportion of effort in ocean in minor ports and adjacent major ports, 2012.

Port	Month	NON-FISHING	Tuna		Bottomfish		Salmon		Sturgeon		Halibut		% OCEAN EFFORT
			Ocean	Inside	Ocean	Inside	Ocean	Inside	Ocean	Inside	Ocean	Inside	
Ocean Shores	July	49%	2%	0%	14%	3%	32%	0%	0%	0%	0%	0%	**49%**
	August	54%	1%	0%	6%	1%	37%	0%	0%	0%	0%	0%	**45%**
	Sept	29%	0%	0%	4%	1%	33%	34%	0%	0%	0%	0%	**36%**
John's River	July	75%	0%	0%	0%	0%	25%	0%	0%	0%	0%	0%	**25%**
	August	90%	0%	0%	0%	10%	0%	0%	0%	0%	0%	0%	**0%**
	Sept	2%	0%	0%	0%	0%	0%	98%	0%	0%	0%	0%	**0%**
28th St	July	-	-	-	-	-	-	-	-	-	-	-	-
	August	70%	0%	0%	0%	0%	30%	0%	0%	0%	0%	0%	**30%**
	Sept	1%	0%	0%	0%	0%	0%	99%	0%	0%	0%	0%	**0%**
Tokeland	July	31%	0%	0%	0%	0%	3%	65%	0%	0%	0%	0%	**3%**
	August	3%	0%	0%	0%	0%	1%	96%	0%	0%	0%	0%	**1%**
	Sept	3%	0%	0%	0%	0%	2%	95%	0%	0%	0%	0%	**2%**
Smith Creek	July	25%	0%	0%	0%	0%	0%	75%	0%	0%	0%	0%	**0%**
	August	6%	0%	0%	0%	0%	0%	94%	0%	0%	0%	0%	**0%**
	Sept	27%	0%	0%	0%	0%	0%	73%	0%	0%	0%	0%	**0%**
South Bend	July	65%	0%	0%	0%	12%	0%	12%	0%	12%	0%	0%	**0%**
	August	4%	0%	0%	0%	0%	0%	96%	0%	0%	0%	0%	**0%**
	Sept	4%	0%	0%	0%	0%	0%	96%	0%	0%	0%	0%	**0%**
Bay Center	July	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**0%**

	August	-	-	-	-	-	-	-	-	-	-	-	-
	Sept	-	-	-	-	-	-	-	-	-	-	-	-
Nahcotta	July	95%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	**0%**
	August	77%	0%	0%	0%	0%	0%	23%	0%	0%	0%	0%	**0%**
	Sept	94%	0%	0%	0%	6%	0%	0%	0%	0%	0%	0%	**0%**
Ilwaco/ Chinook	July	19%	8%	0%	6%	0%	58%	0%	0%	9%	0%	0%	**72%**
	August	7%	4%	0%	1%	0%	24%	65%	0%	0%	0%	0%	**29%**
	Sept	20%	7%	0%	3%	1%	23%	46%	0%	0%	0%	0%	**33%**
Westport	July	10%	6%	0%	7%	1%	76%	0%	0%	0%	0%	0%	**89%**
	August	5%	12%	0%	3%	1%	79%	0%	0%	0%	0%	0%	**94%**
	Sept	3%	10%	0%	2%	1%	58%	27%	0%	0%	0%	0%	**70%**

Table 4: Ocean salmon angler trips sampled and catch per angler by port.

Port	Total Days Sampled	Number Anglers Sampled	Chinook per Angler Trip	Coho per Angler Trip
Ocean Shores	35	325	0.32	0.27
28th St	17	10	0.60	0.20
Johns River	15	1	1.00	1.00
Tokeland	38	21	0.33	0.29
Smith Creek	7	0	-	-
South Bend	26	0	-	-
Bay Center	10	0	-	-
Nahcotta	29	0	-	-
Westport	**69**	**7,377**	**0.53**	**0.30**
Ilwaco/Chinook	**132**	**5,594**	**0.36**	**0.34**

Table 5: Ocean bottomfish angler trips sampled and catch per angler by port.

Port	Total Days Sampled	Number Anglers Sampled	Black Rockfish per Angler Trip	Ling cod per Angler Trip
Ocean Shores	35	80	2.00	0.56
28th St	17	0	-	-
Johns River	15	0	-	-
Tokeland	38	0	-	-
Smith Creek	7	0	-	-
South Bend	26	0	-	-
Bay Center	10	0	-	-
Nahcotta	29	0	-	-
Westport	**69**	**748**	**2.80**	**0.67**
Ilwaco/Chinook	**132**	**576**	**2.28**	**0.51**

Table 6: Comparison of estimated Westport area ocean salmon and bottomfish angler trips and catch of common species in July-September using conventional and stratified estimation methods.

	CONVENTIONAL ESTIMATION METHOD		STRATIFIED ESTIMATION METHOD			
Variable Estimated	**Estimated total**	**Variance**	**Estimated total**	**Variance**	**Difference in Estimates**	**% Difference**
Black rockfish	78,076	10,232,973	79,336	10,355,817	(1,260)	-2%
Canary rockfish (retained)	2	2	2	2	-	0%
Canary rockfish (released)	91	304	90	296	1	1%
Chinook	11,912	140,627	12,142	132,068	(230)	-2%
Coho	11,740	174,842	11,453	160,469	287	2%
Lingcod	6,841	123,601	7,009	124,390	(169)	-2%
Yelloweye rockfish (released)	44	104	43	98	1	3%
Ocean bottomfish angler trips	6,062	83,019	6,218	83,066	(155)	-3%
Ocean salmon angler trips	31,011	287,007	31,042	267,117	(30)	0%