

**Monitoring Results from the 1999 Ocean Recreational Selective Fisheries  
from Leadbetter Point to the U.S. Canada Border**

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The Pacific Fishery Management Council (PFMC) adopted selective fisheries for coho in all four ocean areas from Cape Falcon, Oregon to the U.S./Canada border as well as the Buoy 10 fishery in the Columbia River estuary. This paper is a report on the three areas north of Leadbetter Point (Catch Record Card Areas 2, 3 and 4).

When the Council set the 1999 selective fisheries, assumptions were made about coho and chinook abundance, distribution of stocks, coho mark rates, compliance with the new regulations, and incidental mortality. A monitoring plan was developed to test some of these assumptions through dockside catch and effort sampling along with direct on-water observations of the fisheries in progress.

### Fishery Descriptions

**AREA 2:** The ocean recreational fishery from Leadbetter Point, Washington to the Queets river (Area 2) opened on July 19 and was scheduled to run through the earlier of September 30 or attainment of the 42,200 coho quota. A harvest guideline of 13,400 chinook also existed. The fishery was open Sunday through Thursday, July 19 through August 29, and then seven days per week August 30 through September 30, for a total of 62 fishing days. A two salmon daily bag limit was in effect, only one of which could be a chinook. Retained coho were required to have a healed adipose fin clip. No more than 6 salmon were allowed per person in 7 calendar days (Sunday through Saturday). The fishery was closed from 0 - 3 miles from shore beginning August 22.

**AREA 3:** The ocean recreational fishery from the Queets river to Cape Alava (Area 3) opened on July 19 and was scheduled to run through the earlier of September 30 or attainment of the 2,600 coho quota. A harvest guideline of 400 chinook was also in effect. The fishery was open seven days per week July 19 through September 30, for a total of 74 fishing days with a two salmon daily bag limit; retained coho were required to have a healed adipose fin clip.

**AREA 4:** The ocean recreational fishery from Cape Alava to the US/Canada border (Area 4) opened on July 19 and was scheduled to run through the earlier of September 30 or attainment of the 10,200 coho quota. The fishery was open seven days per week July 19 through September 30, for a total of 74 fishing days, with a two salmon daily bag limit and no chinook retention; retained coho were required to have a healed adipose fin clip.

### Methods

**AREA 2:** WDFW stationed four dockside samplers and two on-water observers in Westport to monitor the Area 2 selective fishery. The on-water observers concentrated their efforts on the charter fleet operating from Westport. Charter operators volunteered space on their vessels to accommodate the WDFW observers. The observers on charter boats collected information about that specific boat's encounters for the day. Data recorded included species hooked,

presence or absence of the adipose fin, size (legal or sublegal), and result of the hookup (fish retained, released, or dropped off) for each hookup that occurred on that vessel.

Dockside port samplers collected catch information through interviews and catch inspections as fishing boats returned to port. Data collected per boat included catch by species, presence or absence of adipose fins on all retained salmon, number of anglers, total number of salmon released by species, and number of adipose-clipped coho released. Landed salmon were sampled for species, fin mark, and coded-wire tag and scale collection. Due to the mass marking of hatchery coho, electronic detection equipment was used to indicate the presence or absence of coded-wire tags in all coho.

Total effort data was collected through counts of vessels leaving the port on their way to the fishing grounds each day. Dockside sampling data was then expanded according to the observed effort profile to estimate total effort and retained and released catch.

**AREA 3:** WDFW stationed one employee in La Push to monitor the selective recreational ocean fishery in Area 3. Because there is little to no charter boat activity in La Push, and because the private sport activity is relatively low and scattered, on-water observation was not feasible. The port sampler in La Push handed out voluntary salmon angler trip reports to as many fishers as possible and collected them upon the anglers' return to port.

Dockside, the port sampler collected catch information through interviews and catch inspections as described above. Total effort data was collected through a count of vessels returning to the port. Dockside sampling data was then expanded according to the observed effort profile to estimate total effort and retained and released catch.

**AREA 4:** WDFW stationed four people dockside and two on-water observers in Neah Bay to monitor the Area 4 selective fishery. The on-water observers worked from a WDFW vessel, observing hookups by the private boat fleet. The observer vessel positioned itself each day near concentrations of private fishing boats. When a hookup occurred, the WDFW vessel moved as close as feasible, and observers recorded species hooked, presence or absence of the adipose fin, size (legal or sublegal), and result of the hookup (fish retained, released, or dropped off) as possible.

In addition, WDFW personnel fished aboard a privately owned boat whenever possible and recorded the above information about each encounter. This method was implemented when it became apparent that due to conditions such as fog, low effort, and the fact that fishers didn't tend to group in one area like in other areas along the coast, it was possible to witness more encounters this way.

On-water observers also rode along on charter boats whenever possible. Charter operators in Neah Bay volunteered space on their vessels to accommodate the WDFW observers. The observers on charter boats collected information identical to that collected in Westport. However, low charter boat salmon effort from Neah Bay resulted in very few ride-along trips. Finally, voluntary salmon angler trip reports were handed out by WDFW dockside staff as in La Push. The trip reports were collected from anglers as they returned to port.

Dockside, the port samplers collected catch information through interviews and catch inspections as described above. Total effort data was collected through counts of vessels leaving the port on their way to the fishing grounds each day. Dockside sampling data was then expanded according to the observed effort profile to estimate total effort and retained and released catch.

### Catch and Effort

In Area 2, 19,072 anglers caught a total of 12,595 coho or 30% of the 42,200 coho quota, and 6,585 chinook or 49% of the 13,400 chinook guideline.

In Area 3, 2,921 anglers caught a total of 2,577 coho or 56% of the 4,600<sup>1</sup> coho quota, and 984 chinook or 246% of the 400 chinook guideline.

In Area 4, 8,102 anglers caught a total of 5,370 coho or 53% of the 10,200 coho quota.

Table 1 shows estimated total effort and landed salmon catch by month for the catch areas north of Leadbetter Point.

### Selective Fishery Observation

**AREA 2.** WDFW staff observed anglers on board charter boats for each week the fishery was open in Area 2. Data collected include observations of 815 legal-sized coho encountered aboard chartered fishing vessels. Of these encounters, 483 coho were retained, which is 3.8% of the 12,595 coho retained in the ocean fishery. The mark rate (adipose fin clipped) of the legal-sized coho encountered through the season was 60%. The mark rate by month was 62%, 60% , and 54% for July, August and September respectively (Table 2). Twenty-eight percent of the 1,817 salmon observed hooked in Area 2 dropped off prior to being landed.

**AREA 3.** The voluntary angler trip report system was the only method used to collect encounter rate data from Area 3 since effort is too low and dispersed to accommodate on the water remote platform observations, and there is no charter boat fleet in La Push. Data collected in the fishery include records of 250 individual hook-ups of legal-sized coho from private fishing vessels brought to the boat. Of these encounters, 88 coho were retained, which is 3.4% of the 2,577 coho retained in the fishery. The mark rate (adipose fin clipped) of the legal-sized coho encountered through the season was 40%. The mark rate by month was 39%, 44%, and 36% for July, August and September respectively (Table 2). The trip report data showed that of the 361 salmon hooked, 48 salmon (13%) dropped off prior to being landed.

**AREA 4.** WDFW staff observed catch in the Area 4 fishery from an on-water remote platform, through fishing from a privately owned boat, and from a few charter ride alongs. A total of 395 legal-sized coho were observed as they were brought to the boat. Of these encounters, 87 coho were retained, which is 1.6% of the 5,370 coho retained in the fishery. The

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<sup>1</sup>The original Area 3 coho quota of 2,600 plus an additional 2,000 made available in-season from coho remaining on the non-treaty troll fishery quota.

mark rate (adipose fin clipped) of the legal-sized coho encountered through the season was 26.%. The mark rate by month was 29%, 24%, and 29% for July, August and September respectively (Table 2). Of the 562 salmon observed hooked, 72 salmon (13%) dropped off prior to being landed.

### Ocean Troll Fisheries

The 1999 non-Treaty and Treaty troll fisheries were non-selective fisheries. The coho mark rates observed in landings from these fisheries could provide another assessment the actual mark rate in the ocean population of coho

**Non-Treaty Troll Fishery.** The non-Treaty troll fishery was open for coho and chinook in a non-selective plug only fishery beginning July 10 with quotas of 20,000 coho and 7,000 chinook. The fishery is not a very good choice for comparison with the sport fishery because Area 4 was closed within 17 miles of shore for the first part of the fishery and later, all of Area 4 was closed. Furthermore, the fishery was directed towards chinook with plugs the only legal gear, and coho catches were low. Even with a sample rate of 74%, the total catch of 3,815 coho distributed between Areas 2,3 and 4 is not enough coho to do a very good comparison.

Impacts in the fishery were modeled with the FRAM model and the mark rate for coho was predicted to be 49%. If the fishery had gone exactly as planned pre-season, the landed catch should have been 9,760 marked coho and 10,240 unmarked coho. The actual landed catch in the fishery was 3,815 and of the 2,809 sampled coho, 1,043 (37%) were marked.

**Treaty Troll Fishery.** The Treaty troll fishery was open for coho and chinook in a non-selective fishery beginning August 1 with quotas of 38,500 coho and 30,000 chinook. Impacts in the fishery were modeled with the FRAM model and the mark rate was predicted to be 42%. If the fishery had gone exactly as planned pre-season, the landed catch should have been 16,016 marked coho and 22,484 unmarked coho. The actual landed catch in the fishery was 33,441; of the 9,142 sampled coho, 3,034 (33%) were marked. Since no selection was presumed to have taken place in the fishery it should be possible to expand the sample data to the total catch providing another method of estimating the mark rate in the ocean population of coho. Applying the mark rate observed through dockside sampling to the 33,441 landed coho, 11,099 are estimated to have been marked fish and 22,342 unmarked fish. Landings from the Treaty troll fishery were more than 5,000 fish under the quota, but with the mark rate significantly lower than projected pre-season, the number of landed unmarked coho was almost identical to the pre-season prediction.

The 33% mark rate observed in the Treaty troll fishery compares to a rate of 26% in the Area 4 sport fishery. The difference in mark rates may be due to the fact that the Treaty troll fishery occurs mainly outside of the Straits, while a large portion of the sport fishery effort occurs inside the Strait of Juan de Fuca, and the mark rate on coastal and Columbia River coho stocks was higher than that on Puget Sound stocks.

### Comparison of Pre-season vs. Post-season Estimates of Coho Mark Rates

Pre-season projections of 1999 coho mark rates were estimated using the coho Fishery Regulation Assessment Model (FRAM). The coho FRAM uses inputs of pre-season run size projections and historic coded wire tag recovery data to predict the resulting impacts from a proposed fishery. Fram model run 9931 was the final pre-season assessment of the PFMC's adopted fishery package for the 1999 ocean fisheries. Table 3 compares the coho mark rates projected by the FRAM model with those observed through on-water monitoring in Areas 2, 3, and 4 in 1999.

Observation data showed actual coho mark rates very similar to pre-season projections in Area 2. The total observed coho mark rate for the season in the ocean Area 2 selective fishery was 60% compared to 61% projected pre-season. The observed mark rates in Areas 3 and 4 were lower than projected pre-season. In ocean Area 3, the observed coho mark rate was 40%, compared to the pre-season projection of 54%. The observed coho mark rate in the ocean Area 4 selective fishery 26%, compared to 43% projected pre-season.

#### Comparison of Dockside and Observer Data in Selective Fisheries

Observation data on 1999 selective coho fisheries were collected in part to investigate potential bias in estimates of coho mark rates based on angler recognition of released coho. Relative to estimates of released salmon from fishery observation data, information collected at the dock shows a small bias towards higher numbers of salmon released (Table 4).

The dockside sampling of the ocean Area 2 selective fishery showed a coho release rate of 46%, compared to a rate of 40% observed on the water. In Area 3, dockside sampling data showed a coho release rate of 68%, compared to a rate of 65% reported on voluntary angler catch reports. Dockside sampling data from Area 4 showed a coho release rate of 80%, compared to a rate of 78% observed on the water.

#### Compliance

Concerns about compliance with selective regulations existed pre-season because 1999 was the first year for selective ocean fisheries in Areas 2, 3, and 4. Information on compliance was collected through both dockside sampling by the WDFW sampling program and enforcement activities conducted by WDFW Enforcement staff.

Compliance with the selective fishery regulation in the ocean area fishery was high for both private and charter vessels. In Area 2, 37% of the total estimated number of coho landed were sampled dockside by the ocean sampling program. In Area 3, 74% of the total estimated coho landed were sampled, and in Area 4, 34% were sampled dockside. Dockside sampling showed compliance rates for the season of 99.2%, 98.4%, and 96.4% for Area 2, Area 3, and Area 4 respectively (Table 5).

Boat patrols, dockside enforcement, and investigative work conducted by WDFW Enforcement found nearly identical selective fishery compliance rates. In Area 2, the compliance rate was estimated at 99.5%; a 98.1% compliance rate was estimated in Area 3, and a compliance rate of 95.4% was estimated for Area 4 (Attachment 1).

## Drop Off Rates

On-water observers in all areas recorded information on fish which were hooked but lost before being brought to the boat, commonly referred to as drop offs. For this study, the definition of drop off was that the fish was actually hooked but became free before it could be landed. This definition calls for some judgement on the part of the observers or anglers recording the data, resulting in potential bias.

Current Council methodology for estimating mortality due to drop off uses a rate of 5% of the total number of fish handled (retention plus release). Mortality rates for the season estimated from on-water observation data ranged from 1% in Areas 3 and 4 to 3% in Area 2. Estimates of drop off mortality rates from on-water observation data collected during the ocean selective fisheries are compared with FRAM projections in Table 6.

## Estimated Mortality

Table 7 shows the FRAM pre-season projections of total coho mortality. Estimates of actual coho mortality in the ocean selective fisheries are shown in Table 8. This analysis uses estimates of coho mark rates from on-water sampling to estimate total coho release. Estimates of incidental mortality are calculated using rates adopted by the Council for recreational fisheries (5% drop off mortality and 8% hooking mortality).

Incidental coho mortality in Area 2 is estimated at 1,704 which, when combined with a total coho retention of 12,595, puts the estimate of total coho mortality in the Area 2 selective fishery at 14,299. This compares to a pre-season projected total mortality of 47,936 coho. Had the fishery taken its full quota, the total coho mortality would have been nearly identical to what was modeled pre-season.

In Area 3, incidental mortality is estimated at 602 which, when combined with a total coho retention of 2,577, puts the estimate of total coho mortality in the ocean selective fishery at 3,179. This compares to a pre-season projected total mortality of 3,018 coho.

Incidental coho mortality in Area 4 is estimated at 2,211 which, when combined with a total coho retention of 5,370, puts the estimate of total coho mortality in the ocean selective fishery at 7,581. This compares to a pre-season projected total mortality of 22,127 coho. Had the fishery taken its full quota, the total coho mortality would have been significantly higher than what was modeled pre-season because a much higher percent of the handled fish would have been unmarked since the observed mark rate was lower than projected pre-season.

## Conclusion

The coho mark rate in Area 2 was nearly identical to pre-season projections. The ratio of marked coho decreased compared to pre-season projections moving north where the influence of Puget Sound stocks is higher.

The release data collected through dockside interviews matched what was observed during on-

water observations. Angler recollection did not appear to decrease with an increasing number of released fish.

The selective fishing compliance rate ranged from 95% to over 99% on the coast. Enforcement activities suggested identical compliance rates to what was observed by samplers on the dock. The pre-season model projected a rate of 5% retention of all unmarked handled coho; in-season data showed a retention rate of 1% of handled unmarked coho in all three areas.

### Acknowledgments

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**TABLE 1:** Salmon catch and effort by area and month in the 1999 ocean recreational fisheries.

MONTH	Area 2			Area 3			Area 4		
	Angler trips	Coho	Chinook	Angler trips	Coho	Chinook	Angler trips	Coho	Chinook
July	5,329	4,060	2,271	1,022	661	396	2,524	1,456	0
August	9,427	7,264	3,103	1,230	1,318	488	3,950	2,963	0
Sept	4,319	1,271	1,211	669	598	100	1,628	951	0
<b>TOTAL</b>	<b>19,075</b>	<b>12,595</b>	<b>6,585</b>	<b>2,921</b>	<b>2,577</b>	<b>984</b>	<b>8,102</b>	<b>5,370</b>	<b>0</b>

**TABLE 2:** 1999 mark rate of legal-sized coho encountered during on-board observation (Areas 2 and 4) and from angler trip reports (Area 3) in the ocean recreational fisheries.

		Total	Marked	Unmarked	Unknown	Coho Mark Rate
		Encountered	Encountered	Encountered	Encountered	
<b>AREA 2</b>	July	213	132	81	0	62.0%
	August	534	318	216	0	59.6%
	Sept	68	37	31	0	54.4%
	<b>Total</b>	<b>815</b>	<b>487</b>	<b>328</b>	<b>0</b>	<b>59.8%</b>
<b>AREA 3</b>	July	173	67	106	0	38.7%
	August	55	24	31	0	43.6%
	Sept	22	8	14	0	36.4%
	<b>Total</b>	<b>250</b>	<b>99</b>	<b>151</b>	<b>0</b>	<b>39.6%</b>
<b>AREA 4</b>	July	145	42	101	2	29.0%
	August	208	49	158	1	23.6%
	Sept	42	12	30	0	28.6%
	<b>Total</b>	<b>395</b>	<b>103</b>	<b>289</b>	<b>3</b>	<b>26.1%</b>

**TABLE 3:** 1999 mark rate of legal-sized coho encountered during on-board observation (Area 2 and 4) and from angler trip reports (Area 3) in the ocean recreational fisheries compared with the FRAM preseason projected mark rates.

		Total Legal Sized Coho Encountered	Observed Coho Mark Rate	Projected Coho Mark Rate
<b>AREA 2</b>	July	213	62.0%	63.9%
	August	534	59.6%	60.1%
	Sept	68	54.4%	60.1%
	<b>Total</b>	<b>815</b>	<b>59.8%</b>	<b>60.5%</b>
<b>AREA 3</b>	July	173	38.7%	60.5%
	August	55	43.6%	50.2%
	Sept	22	36.4%	50.2%
	<b>Total</b>	<b>250</b>	<b>39.6%</b>	<b>53.8%</b>
<b>AREA 4</b>	July	145	29.0%	43.1%
	August	208	23.6%	42.9%
	Sept	42	28.6%	42.9%
	<b>Total</b>	<b>395</b>	<b>26.1%</b>	<b>43.0%</b>

**TABLE 4:** Comparison of coho release rates observed on-water and reported through dockside interviews in the 1999 ocean recreational fisheries.

		ON-WATER OBSERVATIONS			DOCKSIDE REPORTS		
		Coho Retained	Coho Released	Release Rate	Coho Retained	Coho Released	Release Rate
<b>AREA 2</b>	July	127	104	45.0%	1,119	992	47.0%
	August	318	269	45.8%	3,086	2,470	44.5%
	Sept	38	43	53.1%	459	526	53.4%
	<b>Total</b>	<b>483</b>	<b>416</b>	<b>46.3%</b>	<b>4,664</b>	<b>3,988</b>	<b>46.1%</b>
<b>AREA 3</b>	July	64	109	63.0%	365	834	69.6%
	August	17	38	69.1%	1,179	2,406	67.1%
	Sept	7	15	68.2%	372	797	68.2%
	<b>Total</b>	<b>88</b>	<b>162</b>	<b>64.8%</b>	<b>1,916</b>	<b>4,037</b>	<b>67.8%</b>
<b>AREA 4</b>	July	43	103	70.5%	527	1,769	77.0%
	August	34	188	84.7%	962	3,774	79.7%
	Sept	10	49	83.1%	330	1,723	83.9%
	<b>Total</b>	<b>87</b>	<b>308</b>	<b>78.0%</b>	<b>395</b>	<b>7,266</b>	<b>94.8%</b>

**TABLE 5:** Compliance with selective fishery regulations observed through dockside port sampling.

		Total	Marked	Unmarked	% Landed
		Coho Landed	Coho Landed	Coho Landed	Coho Marked
<b>AREA 2</b>	July	4,060	4,032	28	99.3%
	August	7,264	7,233	31	99.6%
	Sept	1,271	1,229	42	96.7%
	<b>Total</b>	<b>12,595</b>	<b>12,494</b>	<b>101</b>	<b>99.2%</b>
<b>AREA 3</b>	July	661	649	12	98.2%
	August	1,318	1,292	26	98.0%
	Sept	598	594	4	99.3%
	<b>Total</b>	<b>2,577</b>	<b>2,535</b>	<b>42</b>	<b>98.4%</b>
<b>AREA 4</b>	July	1,456	1,396	60	95.9%
	August	2,963	2,869	94	96.8%
	Sept	951	911	40	95.8%
	<b>Total</b>	<b>5,370</b>	<b>5,176</b>	<b>194</b>	<b>96.4%</b>

**TABLE 6:** Estimated drop off mortality in the 1999 ocean recreational fisheries using on-water observation data.

		Total Salmon Handled	Observed Drop Offs	Estimated Observed Drop Off Mortality a/	FRAM total Drop Off Mortality b/	Observed Drop Off Mortality Rate c/
<b>AREA 2</b>	July	363	185	15	18	4.1%
	August	810	273	22	41	2.7%
	Sept	141	45	4	7	2.6%
	<b>Total</b>	<b>1,314</b>	<b>503</b>	<b>40</b>	<b>66</b>	<b>3.1%</b>
<b>AREA 3</b>	July	219	42	3	11	1.5%
	August	68	6	0	3	0.7%
	Sept	26	0	0	1	0.0%
	<b>Total</b>	<b>313</b>	<b>48</b>	<b>4</b>	<b>16</b>	<b>1.2%</b>
<b>AREA 4</b>	July	183	39	3	9	1.7%
	August	245	19	2	12	0.6%
	Sept	62	14	1	3	1.8%
	<b>Total</b>	<b>490</b>	<b>72</b>	<b>6</b>	<b>25</b>	<b>1.2%</b>

*a/ Assumes 8% hooking mortality rate on observed drop offs.*

*b/ Total drop off mortality calculated using FRAM methodology (5% of handled fish).*

*c/ Estimated drop off mortality/Total salmon handled; 5% used by FRAM pre-season.*

**TABLE 7:** Preseason FRAM (model run 9931) projected coho mortality in the 1999 ocean recreational fisheries.

		Total Retention	Marked Retention	Unmarked Retention	Unmarked Released	Total Handled a/	Predicted Mark Rate	Drop Off Mortality b/	Release Mortality c/	Incidental Mortality d/	Total Mortality e/
<b>AREA 2</b>	July	5,000	4,854	146	2,776	8,086	63.9%	404	222	626	5,626
	August/Sept f/	37,200	35,931	1,269	24,115	63,608	60.1%	3,180	1,929	5,110	42,310
	<b>Total</b>	<b>42,200</b>	<b>40,785</b>	<b>1,415</b>	<b>26,891</b>	<b>71,694</b>	<b>60.5%</b>	<b>3,585</b>	<b>2,151</b>	<b>5,736</b>	<b>47,936</b>
<b>AREA 3</b>	July	1,000	967	33	637	1,698	60.5%	85	51	136	1,136
	August/Sept	1,600	1,520	80	1,521	3,218	50.2%	161	122	283	1,883
	<b>Total</b>	<b>2,600</b>	<b>2,487</b>	<b>113</b>	<b>2,158</b>	<b>4,916</b>	<b>53.8%</b>	<b>246</b>	<b>173</b>	<b>418</b>	<b>3,018</b>
<b>AREA 4</b>	July	7,000	6,541	459	8,717	16,135	43.1%	807	697	1,504	8,504
	August/Sept	11,200	10,459	741	14,074	25,942	42.9%	1,297	1,126	2,423	13,623
	<b>Total</b>	<b>18,200</b>	<b>17,000</b>	<b>1,200</b>	<b>22,791</b>	<b>42,077</b>	<b>43.0%</b>	<b>2,104</b>	<b>1,823</b>	<b>3,927</b>	<b>22,127</b>

a/ Marked handled + Unmarked handled.

b/ 5% of total handled.

c/ 8% of unmarked released.

d/ Drop off + Release mortality.

e/ Total retention + Incidental mortality.

f/ August and September are modeled as one unit.

**TABLE 8:** Estimated actual coho mortality in the 1999 ocean recreational fisheries.

		Total Retention	Marked Retention	Unmarked Retention	Unmarked Released	Total Handled a/	Observed Mark Rate	Drop Off Mortality b/	Release Mortality c/	Incidental Mortality d/	Total Mortality e/
<b>AREA 2</b>	July	4,060	4,032	28	2,446	6,506	62.0%	325	196	521	4,581
	August/Sept	8,535	8,462	73	5,815	14,350	59.0%	717	465	1,183	9,718
	<b>Total</b>	<b>12,595</b>	<b>12,494</b>	<b>101</b>	<b>8,261</b>	<b>20,856</b>	<b>59.8%</b>	<b>1,043</b>	<b>661</b>	<b>1,704</b>	<b>14,299</b>
<b>AREA 3</b>	July	661	649	12	1,015	1,676	38.7%	84	81	165	826
	August/Sept	1,916	1,886	30	2,622	4,538	41.6%	227	210	437	2,353
	<b>Total</b>	<b>2,577</b>	<b>2,535</b>	<b>42</b>	<b>3,637</b>	<b>6,214</b>	<b>39.6%</b>	<b>311</b>	<b>291</b>	<b>602</b>	<b>3,179</b>
<b>AREA 4</b>	July	1,456	1,396	60	3,364	4,820	29.0%	241	269	510	1,966
	August/Sept	3,914	3,780	134	11,578	15,492	24.4%	775	926	1,701	5,615
	<b>Total</b>	<b>5,370</b>	<b>5,176</b>	<b>194</b>	<b>14,941</b>	<b>20,311</b>	<b>26.1%</b>	<b>1,016</b>	<b>1,195</b>	<b>2,211</b>	<b>7,581</b>

a/ Marked retention/Observed mark rate.

b/ 5% of total handled.

c/ 8% of unmarked released.

d/ Drop off + Release mortality.

e/ Total retention + Incidental mortality.