

# **Progress Report for 2003 Chinook Encounter Study**

SUBMITTED TO:

US CHINOOK TECHNICAL COMMITTEE  
FOR FUNDING UNDER THE BUDGET INCREMENT ASSOCIATED  
WITH THE U. S. CHINOOK LETTER OF AGREEMENT AND ABUNDANCE-  
BASED MANAGEMENT

SUBMITTED BY:

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE  
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## **PREFACE**

The chinook annex of the 1999 PSC Agreement mandates that the Chinook Technical Committee (CTC) use estimates of total mortality to assess the impacts of fishery regulations in PSC fisheries. The current methodology uses landed catch for establishing quota values and harvest sharing between the parties. This project is focused on development of information necessary to create a new model for fishery regulation analysis. The objectives of the study reflect the requirement for the CTC to produce new estimates of stock impacts which include all sources of mortality. The goals of this project are to estimate the number of chinook salmon released and stock composition of all encountered chinook salmon in the Washington ocean and Puget Sound troll and sport fisheries.

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## **1. INTRODUCTION**

The Pacific Fishery Management Council (PFMC) adopted 2003 recreational and commercial troll fisheries for all salmon species in the area between Cape Falcon, Oregon and the U.S./Canada border. Mark-selective fisheries for coho were included in all four Catch Record Card areas (Areas 1, 2, 3, and 4) for both recreational and commercial fisheries.

Council-area fisheries were adopted based on assumptions regarding coho and chinook abundance, distribution of stocks, chinook age class distributions, coho mark rates, compliance with selective fishery regulations, and incidental mortality. The Washington Department of Fish and Wildlife (WDFW) implemented a monitoring plan to test some of these assumptions through dockside catch and effort sampling along with on-water observations of the fisheries in progress. Both dockside and on-water sampling included collection of DNA tissue samples from chinook.

## **2. OBJECTIVES**

The objectives of the CTC-sponsored portion of this project are: first, to estimate the number of legal and sublegal sized chinook salmon encountered during the Washington non-treaty ocean troll and recreational fisheries such that all estimates will fall within  $\pm 30\%$  of the true value 90% of the time and, second, to collect genetic material (DNA tissue samples) from sublegal and legal sized chinook to estimate the stock composition by age.

The objectives of the mark-selective coho fishery monitoring portion of this project are to test some of the assumptions used during the process of modeling ocean fisheries, specifically to determine coho mark rates by area and month, to determine compliance with selective fishery regulations, to estimate incidental mortality, and to compare release information collected dockside with observed release data.

## **3. SEASON DESCRIPTION**

### **3.1 Ocean Recreational Fisheries**

Area 1: The ocean recreational fishery from Cape Falcon, Oregon to Leadbetter Point, Washington and west of the Buoy 10 line at the Columbia River mouth was open for all salmon species Sunday through Thursday from June 29 through July 25, and seven days per week from July 26 to September 30, for a total of 88 fishing days. A two salmon daily bag limit was in effect, only one of which could be a chinook. All retained coho were required to have a healed adipose fin clip. The Columbia Control Zone was closed; additionally, the area between Cape Falcon and Tillamook Head was closed beginning August 1.

Area 2: The ocean recreational fishery from Leadbetter Point to the Queets River was open for all salmon species Sunday through Thursday from June 22 through July 25, and

seven days per week from July 26 to September 14, for a total of 77 fishing days. A two salmon daily bag limit was in effect, only one of which could be a chinook. All retained coho were required to have a healed adipose fin clip. The Grays Harbor Control Zone was closed beginning August 16.

Area 3: The ocean recreational fishery from the Queets River to Cape Alava was open for all salmon species seven days per week from June 22 through September 14. From September 20 to October 5, salmon fishing was restricted to the part of Area 3 defined by a line from Teahwhit head northwesterly to “Q” buoy, to Cake Rock, then true east to the shoreline, seven days per week. A total of 101 fishing days were available in Area 3. A two salmon daily bag limit plus one additional pink salmon was in effect; only one chinook could be retained per day. All retained coho were required to have a healed adipose fin clip.

Area 4: The ocean recreational fishery from Cape Alava to the U.S./Canada border was open seven days per week from June 22 through September 14, for a total of 85 fishing days. All salmon species could be retained, except no chum retention was allowed north of Cape Alava from August 1 through September 14. A two salmon daily bag limit plus one additional pink salmon was in effect; only one chinook could be retained per day. All retained coho were required to have a healed adipose fin clip. Chinook retention east of the Bonilla-Tatoosh line was allowed from July 1 through July 31 only.

### **3.2 Non-Treaty Commercial Troll Fisheries**

The non-treaty troll fishery was open seven days per week from Cape Falcon, Oregon to the U.S./Canada border May 1 through June 6 and June 26 through June 30 for all salmon except coho. The area reopened Thursdays through Sundays, July 3 through September 14 for all salmon species. A total of 96 fishing days were available.

## **4. METHODS**

Direct on-water observation of salmon encounters was the primary method used to estimate the encounter ratios of legal to sublegal sized chinook, marked to unmarked coho, and drop-offs, and to collect DNA samples from sublegal chinook. Observers from WDFW rode along on charter boats, and samplers worked from WDFW test-fishing boats to collect encounter rate data from the recreational fisheries. These observers recorded all hook-ups aboard the vessel; for each hook-up, the following information was recorded: result of the hook-up (fish kept, released, or dropped off), species, mark status, and size class (legal or sublegal). Recreational anglers were also solicited to use voluntary trip reports while fishing to record the above information.

Observers from WDFW also rode aboard commercial vessels participating in the non-treaty troll fishery. This effort was coordinated with the CTC-sponsored study for treaty troll encounters conducted by Makah tribal biologists. Observers aboard non-treaty trollers recorded the same information as recreational fishery observers.

A sampling protocol was established for both the charter and troll observers so that the most important information relative to this study was collected first. The first priority for the observers was to record the species, mark status, and result of each hook-up aboard the vessel. This allows estimation of legal to sublegal chinook encounter ratios, marked to unmarked coho encounter ratios, and drop-off numbers. The second priority was to collect DNA samples (a small non-lethal clipping from the tip of the dorsal fin), lengths, and scale samples from sublegal sized chinook. DNA from sublegal sized chinook was prioritized above that from legal sized chinook since legal sized fish were available on the dock as well as at sea. The third priority was to collect DNA, lengths, and scale samples from legal sized chinook.

Dockside samplers were placed in the four major landing ports for the ocean fisheries: Neah Bay, La Push, Westport, and Ilwaco (including the port of Chinook). Each port was sampled a minimum of 4 to 5 days per week, with weekend and weekday days stratified. On each sample day, a total recreational boat count was obtained either by counting boats exiting the port or entering the port. A minimum of 20% of the boats returning to the port within each boat type (charter and private) was sampled, which should provide weekly estimates of catch by species and mark status with CVs no higher than 5%. Information collected during each sample included number of anglers, target species, landed catch by species, mark status of landed salmon, identification and recovery of coded wire tags, and angler estimates of released salmon by species and mark status and of released groundfish by species. Additionally, dockside samplers collected DNA samples, lengths, and scale samples from landed chinook.

For the genetic stock identification portion of this study, a target of 300 chinook genetic tissue samples per stratum with accompanying scale samples was set. The stratum was defined as week, port, and gear type. This should result in approximately 100 samples per age for the most abundant brood year ages, 3 and 4. The stratum may be redefined during, or after, the season depending on the size of the fishery and the success of obtaining samples.

## **5. RESULTS**

### **5.1 Recreational Catch and Effort**

In Catch Record Card Area 1, 71,226 anglers harvested a total of 106,423 coho (95 percent of the 112,500 coho quota) and a total of 8,137 chinook. In Area 2, 48,049 anglers harvested a total of 39,267 coho (47 percent of the 83,250 coho quota) and a total of 21,814 chinook. In Area 3, 4,369 anglers harvested a total of 3,407 coho (59 percent of the 5,750 coho quota) and a total of 1,888 chinook. In Area 4, 20,449 anglers harvested a total of 19,749 coho (84 percent of the 23,400 coho quota) and 4,697 chinook. Table 1 shows estimated total effort and landed coho and chinook catch by month for the catch areas north of Cape Falcon.

### **5.2 Non-Treaty Troll Catch Landed in Washington**

A total of 1,290 coho and 1,920 chinook harvested in Area 1 during the non-treaty troll fishery were landed in Washington State ports. From Area 2, catches landed in Washington totaled

3,200 coho and 16,773 chinook. A total of 2,784 coho and 6,995 chinook were harvested in Area 3 and landed in Washington, while Area 4 catches totaled 1,683 coho and 30,514 chinook. Total catches north of Cape Falcon (landed in both Washington and Oregon) were 15,668 coho (21 percent of the 75,000 coho quota) and 69,775 chinook (96 percent of the 72,400 chinook quota).

## **5.2 Legal and Sublegal Sized Chinook Encountered**

The number of legal and sublegal sized chinook salmon observed in the ocean recreational fisheries are listed in Table 2. In Area 1, ride-along samplers on charter boats observed 167 chinook encountered, of which 57 were sublegal sized, for a sublegal sized rate of 35%. In Area 2, ride-along samplers on charter boats observed 432 chinook encountered, of which 224 were sublegal sized, for a sublegal sized rate of 52%. There were no on-board observation data in Area 3; voluntary trip reports showed 52% sublegal sized rate for this area. In Area 4, WDFW encountered 53 chinook during its test fishery, of which 16 were sublegal sized, for a sublegal sized rate of 36%. Sublegal sized rates from voluntary trip reports were 62%, 77% and 53% for Area 1, Area 2, and Area 4 respectively, consistently higher than those observed from ride-along samplers.

Table 3 shows the number of observed chinook by size during the non-treaty troll fisheries. On-board observers were present on trollers in Areas 2, 3, and 4. In Area 2, ride-along samplers observed 2,190 encountered chinook, of which 1,085 were sublegal sized for a sublegal sized rate of 50%. In Area 3, ride-along samplers observed 465 encountered chinook, of which 298 were sublegal sized for a sublegal sized rate of 64%. In Area 4, ride-along samplers observed 1,289 encountered chinook, of which 315 were sublegal sized for a sublegal sized rate of 25%.

## **5.3 Mark Rates in Selective Fisheries**

Tables 4 and 5 show the mark rates of coho and chinook, respectively, encountered in the ocean recreational fisheries.

In Area 1, WDFW staff observed encounters on board charter boats for each week the fishery was open. A total of 934 coho encounters were observed aboard chartered fishing vessels. Of these encounters, 539 coho were adipose fin clipped resulting in a mark rate of 58% through the season. The mark rate by month was 60% in July, 54% in August, and 65% in September (Table 4). Angler logbooks collected from Area 1 showed a coho mark rate of 60% through the season. A total of 260 chinook encounters were observed; 36 of these were adipose fin clipped, resulting in a chinook mark rate of 14% through the season (Table 5). Dockside landings indicated a chinook mark rate of 22% through the season.

In Area 2, WDFW staff observed anglers on board charter boats for each week the fishery was open. A total of 718 coho encounters were observed aboard chartered fishing vessels. Of these encounters, 389 coho were adipose fin clipped resulting in a mark rate of 54% through the season. The mark rate by month was 63% in June, 54% in July, 52% in August, and 54% in September (Table 4). Angler logbooks collected from Area 2 showed

a coho mark rate of 38% through the season. A total of 498 chinook encounters were observed; 102 of these were adipose fin clipped, resulting in a chinook mark rate of 20% through the season (Table 5). Dockside landings indicated a chinook mark rate of 13% while angler logbooks reported a chinook mark rate of 27% through the season.

Angler logbooks were collected from Area 3 during July and August. A total of 108 coho were reported encountered. Of these encounters, 33 coho were adipose fin clipped resulting in a mark rate of 31% through the season. The mark rate by month was 29% in July and 33% in August (Table 4). The chinook mark rate through the season was 8% based on both dockside interview data and angler logbook data (Table 5).

WDFW staff observed catch or test fished in Area 4 for each week the fishery was open. A total of 305 coho were encountered; of these, 117 coho were adipose fin clipped, resulting in a mark rate of 39% through the season. The mark rate by month was 30% in June, 38% in July, 42% in August, and 32% in September (Table 4). Angler logbooks collected from Area 4 showed 44% coho mark rate through the season. A total of 57 chinook encounters were observed; 9 chinook were adipose fin clipped, resulting in a mark rate of 16% through the season (Table 5). Chinook mark rates through the season were 15% based on dockside interview data and 19% based on angler logbook data.

Table 6 shows chinook mark rates observed in the non-treaty troll fisheries. Mark rates of coho encountered in the non-treaty troll fisheries are currently being calculated.

#### **5.4 Chinook to Coho Ratios**

Table 7 shows observed ratios of encountered chinook to coho by month in the ocean recreational fisheries. Based on the on-board observation data, 0.17 chinook were encountered per coho in Area 1, 0.59 chinook were encountered per coho in Area 2, and 0.14 chinook per coho were encountered in Area 4; in comparison, angler logbook data showed ratios of 0.17 in Area 1, 1.52 in Area 2, 0.53 in Area 3, and 0.67 in Area 4.

Table 8 shows observed ratios of encountered chinook to coho by month in the non-treaty troll fisheries. During the May-June chinook-directed fishery, the chinook to coho ratios were estimated at 5.08, 15.25, and 13.04 chinook per coho in Areas 2, 3, and 4, respectively. During the summer all-species fishery, chinook to coho encounter ratios were 2.29 in Area 2 and 2.42 in Area 4.

#### **5.5 Comparison of Pre-season and Post-season Estimates of Mark Rates**

Pre-season projections of 2003 coho mark rates were estimated using the Fishery Regulation Assessment Model (FRAM). The 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 0319 was the final pre-season assessment of the PFMC's adopted fishery package for the 2003 ocean fisheries. Table 9 compares the coho mark rates projected by the FRAM model with those observed through on-water monitoring by month and area for the

recreational fisheries. As described above, mark rates for the commercial troll fisheries are currently being analyzed.

Observation data showed actual coho mark rates lower than pre-season projections in all areas for the recreational fisheries. The total observed coho mark rate for the season in the Area 1 selective fishery was 58% compared to 85% projected pre-season. The total observed coho mark rate for the season in the Area 2 selective fishery was 53% compared to 74% projected pre-season. In Area 3, the coho mark rate calculated from angler logbooks was 31%, compared to 60% projected pre-season. The observed coho mark rate in the Area 4 selective fishery was 39% compared to 50% projected pre-season.

## **5.6 Comparison of Dockside and Observer Data in Recreational Selective Fisheries**

Observation data during recreational selective coho fisheries were collected in part to investigate potential bias in estimates of coho mark rates based on angler recollection of released coho. Table 10 compares coho release rates based on dockside interview data with those release rates computed through on-board observation data in Areas 1 and 2 and angler logbook data in Areas 3 and 4.

Relative to estimates of released salmon from observation data, information collected at the dock showed a small bias towards higher numbers of salmon released in Areas 1 and 2 while a small bias towards lower numbers of salmon released in Areas 3 and 4 existed based on angler logbook data. Dockside sampling data from Areas 1 and 2 showed coho release rates of 51% and 54%, respectively, compared to rates of 45% and 48% observed on the water; in Area 3, the release rate reported dockside was 70%, compared with a release rate of 79% reported in angler logbooks; in Area 4, the release rate reported dockside was 74%, compared with a release rate of 79% reported in angler logbooks.

## **5.7 Compliance**

Information on compliance with selective regulations was collected through both dockside sampling by the WDFW sampling program and enforcement activities conducted by WDFW Enforcement staff.

Compliance with the selective fishery regulations in the recreational fisheries was high for both private and charter vessels. In Area 1, 33% of the total estimated coho landed by the recreational fishery were sampled dockside by the Ocean Sampling Program; the observed compliance rate in this area was 99.5%. In Area 2, 37% of the total estimated coho landed by the recreational fishery were sampled dockside; a compliance rate of 99.2% was observed. In Area 3, 73% of the total estimated coho landed by the recreational fishery were sampled; the observed compliance rate was 99.0%. In Area 4, 36% were sampled dockside; a compliance rate of 97.7% was observed. Table 11 reports compliance rates observed by dockside samplers for the recreational fisheries by area and month. These rates are similar to the compliance rates observed in 2002.

The WDFW Enforcement Program monitored compliance with selective fishery

regulations in the recreational fisheries coastwide. Enforcement staff estimated compliance regarding the possession of unmarked coho at 99.0% in Area 1, 98.7% in Area 2, 99.3% in Area 3, and 98.8% in Area 4 (Exhibit C.2.b, Supplemental WDFW Report, presented to the Pacific Fisheries Management Council on March 10, 2004).

During the non-treaty troll fisheries, a total of 1,337 coho (15% of the total coho landed in Washington) were examined dockside by WDFW sampling staff. These samplers observed a coho mark-selective compliance rate of 99.3%.

## **5.8 Drop Off Rates**

On-water observers and recreational anglers completing voluntary logs were asked to record information on fish that 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 judgment 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 recreational fisheries throughout the season estimated from on-water observation data ranged from less than 1% to just over 1% in all areas. Estimates of drop off mortality rates from on-water observation data collected during the recreational fisheries are compared with FRAM projections in Table 12.

## **5.9 Estimated Mortality**

Table 13 shows the FRAM pre-season projections of total coho mortality in the ocean recreational fisheries. Estimates of actual coho mortality in these fisheries are shown in Table 14. This analysis uses estimates of coho mark rates from on-water sampling and voluntary angler logbooks to estimate total coho released. Estimates of incidental mortality are calculated using rates adopted by the Council for recreational fisheries (5% drop off mortality and 14% hooking mortality).

In Area 1, incidental mortality is estimated at 20,655 which, when combined with a total coho retention of 106,423, puts the estimate of total coho mortality in the Area 1 selective fishery at 126,423. This compares to a pre-season projected total mortality of 118,221 coho.

Incidental coho mortality in Area 2 is estimated at 8,319 which, when combined with a total coho retention of 39,267, puts the estimate of total coho mortality in the Area 2 selective fishery at 47,586. This compares to a pre-season projected total mortality of 93,689 coho.



In Area 3, incidental mortality is estimated at 1,435 which, when combined with a total coho retention of 3,407, puts the estimate of total coho mortality in the Area 3 selective fishery at 4,501. This compares to a pre-season projected total mortality of 8,154 coho.

Incidental coho mortality in Area 4 is estimated at 6,659 which, when combined with a total coho retention of 19,749, puts the estimate of total coho mortality in the Area 4 selective fishery at 26,408. This compares to a pre-season projected total mortality of 29,100 coho.

## **5.10 DNA Samples**

One ride-along sampler per port proved to be adequate to meet DNA collection goals for the troll fishery. These boats would typically fish all day, targeting chinook, which allowed samplers ample opportunity to record encounters and collect DNA samples. Due to the nature of the sport fishery, encounter rate data and DNA samples were much more difficult to obtain. Charter vessels motor to the fishing grounds and fish until the boat has limited. Action can be very fast with multiple hook-ups at any given time, keeping the sampler busy just collecting encounter rate data and leaving little time for collecting DNA samples. With fewer lines in the water and fewer total fish landed per trip, fewer chinook were encountered, limiting availability to the sampler. Consequently, fewer DNA samples could be collected in a sampling day. Lack of availability also proved to be the case when WDFW did its own test fishing with sport gear in Catch Record Area 4; one rod per sampler did not yield enough samples to meet our goals for encounters or DNA samples.

Table 15 shows the number of chinook DNA samples collected by month, area, size class, and sampling type (on-board or dockside) from the ocean recreational fisheries. A total of 43 sublegal and 647 legal sized chinook were DNA sampled in Area 1. In Area 2, 2,214 DNA samples were collected from sublegal sized chinook and 1,371 DNA samples were collected from legal sized chinook. No on-board DNA data collection occurred in Area 3; dockside sampling yielded 127 legal sized chinook DNA samples. In Area 4, 18 DNA samples were collected from sublegal sized chinook and 373 DNA samples were collected from legal sized chinook.

The number of chinook DNA samples collected by month, area, size class, and sampling type from the non-treaty troll fisheries is shown in Table 16. Onboard observers collected DNA from a total of 744 sublegal sized chinook in Area 2; a total of 3,075 legal sized chinook were DNA sampled. In Area 3, a total of 41 sublegal and 185 legal sized chinook were DNA sampled. A total of 309 DNA samples from sublegal sized chinook and 2,969 from legal sized chinook were collected from Area 4. No DNA samples were collected from the non-treaty troll fishery in Area 1.

Baseline data for stock composition estimates are currently being collected and analyzed. The DNA samples collected in this project will be archived and held for future analysis when the baseline database is complete.

Table 1. Salmon Catch and Effort by Area and Month in the 2003 Ocean Recreational Fisheries.

Area	Month	Angler Trips	Coho	Chinook
Area 1	June	606	655	52
	July	20,308	32,594	2,045
	August	42,124	63,630	5,240
	September	8,188	9,544	800
	<b>Total</b>	<b>71,226</b>	<b>106,423</b>	<b>8,137</b>
Area 2	June	4,278	2,714	1,972
	July	20,747	14,882	9,103
	August	18,302	17,343	8,953
	September	4,722	4,328	1,786
	<b>Total</b>	<b>48,049</b>	<b>39,267</b>	<b>21,814</b>
Area 3	June	244	136	128
	July	1,774	1,564	785
	August	1,595	1,502	802
	September	756	205	173
	<b>Total</b>	<b>4,369</b>	<b>3,407</b>	<b>1,888</b>
Area 4/4B	June	1,372	785	589
	July	10,109	9,104	3,071
	August	8,071	8,721	997
	September	897	1,139	40
	<b>Total</b>	<b>20,449</b>	<b>19,749</b>	<b>4,697</b>

Table 2. Number of Legal and Sublegal Sized Chinook Encountered in the Ocean Sport Fisheries.

	On-Board Observation					Voluntary Trip				
	Total Encountered	Legal Sized	Sublegal Sized	Unknown	Sublegal Sized Rate	Total Encountered	Legal Sized	Sublegal Sized	Unknown	Sublegal Sized Rate
Area 1										
June	-	-	-	-	-	-	-	-	-	-
July	127	80	41	6	32%	-	-	-	-	-
Aug.	122	80	40	2	33%	25	9	13	3	52%
Sept.	11	5	4	2	36%	-	-	-	-	-
<b>Total</b>	<b>260</b>	<b>165</b>	<b>85</b>	<b>10</b>	<b>33%</b>	<b>25</b>	<b>9</b>	<b>13</b>	<b>3</b>	<b>52%</b>
Area 2										
June	98	53	41	4	42%	-	-	-	-	-
July	171	78	90	2	53%	16	5	11	0	69%
Aug.	152	56	94	2	62%	39	6	33	0	85%
Sept.	77	42	34	1	44%	11	5	6	0	55%
<b>Total</b>	<b>498</b>	<b>229</b>	<b>259</b>	<b>9</b>	<b>52%</b>	<b>66</b>	<b>16</b>	<b>50</b>	<b>0</b>	<b>76%</b>
Area 3										
June	-	-	-	-	-	-	-	-	-	-
July	-	-	-	-	-	42	20	20	2	48%
Aug.	-	-	-	-	-	21	9	12	0	57%
Sept.	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>63</b>	<b>29</b>	<b>32</b>	<b>2</b>	<b>51%</b>
Area 4										
June	-	-	-	-	-	14	11	3	0	21%
July	30	21	7	2	23%	72	30	42	0	58%
Aug.	27	8	13	6	48%	-	-	-	-	-
Sept.	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>57</b>	<b>29</b>	<b>20</b>	<b>8</b>	<b>35%</b>	<b>86</b>	<b>41</b>	<b>45</b>	<b>0</b>	<b>52%</b>

Table 3. The Number of Legal and Sublegal Sized Chinook Encountered in the Ocean Troll Fisheries (On-board Observation).

		Total Encountered	Legal Sized	Sublegal Sized	Unknown	Sublegal Sized Rate
Area 2	May	944	485	455	4	48%
	June	264	145	118	1	45%
	July	460	250	202	8	44%
	August	463	215	247	1	53%
	Sept.	120	39	80	1	67%
	<b>Total</b>		<b>2,251</b>	<b>1,134</b>	<b>1,102</b>	<b>15</b>
Area 3	May	-	-	-	-	-
	June	488	167	302	19	62%
	July	1	1	-	-	0%
	August	-	-	-	-	-
	Sept.	-	-	-	-	-
	<b>Total</b>		<b>489</b>	<b>168</b>	<b>302</b>	<b>19</b>
Area 4	May	613	324	283	6	46%
	June	-	-	-	-	-
	July	575	499	30	46	5%
	August	143	135	6	2	4%
	Sept.	-	-	-	-	-
	<b>Total</b>		<b>1,331</b>	<b>958</b>	<b>319</b>	<b>54</b>

Table 4. 2003 Mark Rate of Legal-sized Coho Encountered in the Ocean Recreational Fisheries.

		On-Board Observation					Voluntary Trip				
		Total Encountered	Marked	Unmarked	Unknown	Mark Rate	Total Encountered	Marked	Unmarked	Unknown	Mark Rate
Area 1	June	-	-	-	-	-	-	-	-	-	-
	July	475	265	181	29	56%	-	-	-	-	-
	Aug.	460	239	207	14	52%	87	50	31	6	57%
	Sept.	57	35	20	2	61%	19	10	9	0	53%
	<b>Total</b>	<b>992</b>	<b>539</b>	<b>408</b>	<b>45</b>	<b>54%</b>	<b>106</b>	<b>60</b>	<b>40</b>	<b>6</b>	<b>57%</b>
Area 2	June	85	51	30	4	60%	-	-	-	-	-
	July	344	179	155	10	52%	14	4	10	0	29%
	Aug.	222	116	105	1	52%	22	8	14	0	36%
	Sept.	95	49	43	3	52%	5	3	0	2	60%
	<b>Total</b>	<b>746</b>	<b>395</b>	<b>333</b>	<b>18</b>	<b>53%</b>	<b>41</b>	<b>15</b>	<b>24</b>	<b>2</b>	<b>37%</b>
Area 3	June	-	-	-	-	-	-	-	-	-	-
	July	-	-	-	-	-	57	16	39	2	28%
	Aug.	-	-	-	-	-	53	17	34	2	32%
	Sept.	-	-	-	-	-	-	-	-	-	-
	<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>110</b>	<b>33</b>	<b>73</b>	<b>4</b>	<b>30%</b>
Area 4	June	34	10	23	1	29%	24	13	7	4	54%
	July	47	18	29	0	38%	99	39	59	1	39%
	Aug.	238	90	140	8	38%	-	-	-	-	-
	Sept.	27	10	17	0	37%	-	-	-	-	-
	<b>Total</b>	<b>346</b>	<b>128</b>	<b>209</b>	<b>9</b>	<b>37%</b>	<b>123</b>	<b>52</b>	<b>66</b>	<b>5</b>	<b>42%</b>

Table 5. 2003 Mark Rate of Chinook (legal, sublegal sized) Encountered in the Ocean Recreational Fisheries.

		On-board Observation					Dockside Interview					Voluntary Trip				
		Total En- countered	Marked	Un- marked	Un- known	Mark Rate	Total En- countered	Marked	Un- marked	Un- known	Mark Rate	Total En- countered	Marked	Un- marked	Un- known	Mark Rate
Area 1	June	-	-	-	-	-	31	7	24	0	23%	-	-	-	-	-
	July	127	18	95	14	14%	225	42	181	2	19%	-	-	-	-	-
	Aug.	122	17	93	12	14%	158	33	125	0	21%	25	0	21	4	0%
	Sept.	11	1	7	3	9%	75	24	51	0	32%	-	-	-	-	-
	<b>Total</b>	<b>260</b>	<b>36</b>	<b>195</b>	<b>29</b>	<b>14%</b>	<b>489</b>	<b>106</b>	<b>381</b>	<b>2</b>	<b>22%</b>	-	-	-	-	-
Area 2	June	98	23	60	15	23%	318	21	192	105	7%	-	-	-	-	-
	July	171	29	121	20	17%	611	87	519	5	14%	16	2	14	0	13%
	Aug.	152	36	91	25	24%	247	47	200	0	19%	39	9	30	0	23%
	Sept.	77	14	54	9	18%	9	3	6	0	33%	11	7	3	1	64%
	<b>Total</b>	<b>498</b>	<b>102</b>	<b>326</b>	<b>69</b>	<b>20%</b>	<b>1,185</b>	<b>158</b>	<b>917</b>	<b>110</b>	<b>13%</b>	<b>66</b>	<b>18</b>	<b>47</b>	<b>1</b>	<b>27%</b>
Area 3	June	-	-	-	-	-	9	3	6	0	33%	-	-	-	-	-
	July	-	-	-	-	-	31	4	27	0	13%	42	3	33	6	7%
	Aug.	-	-	-	-	-	34	3	31	0	9%	21	2	18	1	10%
	Sept.	-	-	-	-	-	16	0	16	0	0%	-	-	-	-	-
	Oct.	-	-	-	-	-	37	0	22	15	0%	-	-	-	-	-
	<b>Total</b>	-	-	-	-	-	<b>127</b>	<b>10</b>	<b>102</b>	<b>15</b>	<b>8%</b>	<b>63</b>	<b>5</b>	<b>51</b>	<b>7</b>	<b>8%</b>
Area 4	June	-	-	-	-	-	89	5	84	0	6%	14	3	11	0	21%
	July	30	9	20	1	30%	202	37	165	0	18%	72	13	59	0	18%
	Aug.	27	0	22	5	0%	45	7	38	0	16%	-	-	-	-	-
	Sept.	-	-	-	-	-	6	1	5	0	17%	-	-	-	-	-
	<b>Total</b>	<b>57</b>	<b>9</b>	<b>42</b>	<b>6</b>	<b>16%</b>	<b>342</b>	<b>50</b>	<b>292</b>	<b>0</b>	<b>15%</b>	<b>86</b>	<b>16</b>	<b>70</b>	<b>0</b>	<b>19%</b>

Table 6. 2003 Mark Rate of Chinook Encountered (legal, sublegal, unknown) in the Ocean Troll Fisheries.

		On-board Observation					Dockside Interview				
		Total Encountered	Marked Encountered	Unmarked Encountered	Unknown	Mark Rate	Total Encountered	Marked Encountered	Unmarked Encountered	Unknown	Mark Rate
Area 2	May	944	163	758	23	17%	326	32	283	11	10%
	June	264	38	215	11	14%	380	49	330	1	13%
	July	460	65	385	10	14%	749	89	660	0	12%
	August	463	91	353	19	20%	757	90	662	5	12%
	Sept.	120	24	92	4	20%	184	28	156	0	15%
	<b>Total</b>	<b>2251</b>	<b>381</b>	<b>1803</b>	<b>67</b>	<b>17%</b>	<b>2396</b>	<b>288</b>	<b>2091</b>	<b>17</b>	<b>12%</b>
Area 3	May	-	-	-	-	-	16	0	16	0	0%
	June	488	110	357	21	23%	-	-	-	-	-
	July	1	0	1	0	0%	83	17	66	0	20%
	August	-	-	-	-	-	18	2	16	0	11%
	Sept.	-	-	-	-	-	10	0	10	0	0%
	<b>Total</b>	<b>489</b>	<b>110</b>	<b>358</b>	<b>21</b>	<b>22%</b>	<b>127</b>	<b>19</b>	<b>108</b>	<b>0</b>	<b>15%</b>
Area 4	May	613	113	487	13	18%	704	176	462	66	25%
	June	-	-	-	-	-	152	43	109	0	28%
	July	575	37	507	31	6%	896	129	767	0	14%
	August	143	7	130	6	5%	532	63	469	0	12%
	Sept.	149	26	123	0	-	149	26	123	0	17%
	<b>Total</b>	<b>1480</b>	<b>183</b>	<b>1247</b>	<b>50</b>	<b>12%</b>	<b>2433</b>	<b>437</b>	<b>1930</b>	<b>66</b>	<b>18%</b>

Table 7. 2003 Chinook per Coho Estimates in the Ocean Recreational Fisheries.

	On-board Observation			Voluntary Trip		
	Total Chinook Encountered	Total Coho Encountered	Chinook/Coho	Total Chinook Encountered	Total Coho Encountered	Chinook/Coho
Area 1 June	-	-	-	-	-	-
July	127	500	0.25	-	-	-
Aug.	122	477	0.26	25	131	0.19
Sept.	11	57	0.19	-	19	-
<b>Total</b>	<b>260</b>	<b>1034</b>	<b>0.25</b>	<b>25</b>	<b>150</b>	<b>0.17</b>
Area 2 June	98	92	1.07	-	-	-
July	171	357	0.48	16	14	1.14
Aug.	152	226	0.67	39	25	1.56
Sept.	77	95	0.81	11	5	2.20
<b>Total</b>	<b>498</b>	<b>770</b>	<b>0.65</b>	<b>66</b>	<b>44</b>	<b>1.50</b>
Area 3 June	-	-	-	-	-	-
July	-	-	-	42	57	0.74
Aug.	-	-	-	21	55	0.38
Sept.	-	-	-	-	-	-
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>63</b>	<b>112</b>	<b>0.56</b>
Area 4 June	0	47	0.00	14	24	0.58
July	30	79	0.38	72	117	0.62
Aug.	27	279	0.10	-	-	-
Sept.	0	37	0.00	-	-	-
<b>Total</b>	<b>57</b>	<b>442</b>	<b>0.13</b>	<b>86</b>	<b>141</b>	<b>0.61</b>



Table 8. 2003 Chinook per Coho Estimates in the Ocean Troll Fisheries.

		Total Chinook Encountered	Total Coho Encountered	Chinook/Coho
Area 2	May	944	216	4.37
	June	264	22	12.00
	July	460	176	2.61
	August	463	224	2.07
	September	120	56	2.14
	<b>Total</b>	<b>2,251</b>	<b>694</b>	<b>3.24</b>
Area 3	May	-	-	-
	June	488	32	15.25
	July	1	-	-
	August	-	-	-
	September	-	-	-
	<b>Total</b>	<b>489</b>	<b>32</b>	<b>15.28</b>
Area 4/4B	May	613	47	13.04
	June	-	-	-
	July	575	277	2.08
	August	143	81	1.77
	September	149	-	-
	<b>Total</b>	<b>1,480</b>	<b>405</b>	<b>3.65</b>

Table 9. 2003 Mark Rate of Legal-sized Coho Encountered during On-board Observation of the Recreational Fisheries Compared with the FRAM Preseason Projected Mark Rates.

		Total Coho Encountered	Observed Mark Rate	Projected Mark Rate
Area 1	June	-	-	89%
	July	475	56%	87%
	Aug.	460	52%	83%
	Sept.	57	61%	83%
	<b>Total</b>	<b>992</b>	<b>54%</b>	<b>85%</b>
Area 2	June	85	60%	75%
	July	344	52%	74%
	Aug.	222	52%	72%
	Sept.	95	52%	74%
	<b>Total</b>	<b>746</b>	<b>53%</b>	<b>74%</b>
Area 3	June	-	-	64%
	July	57	28%	54%
	Aug.	53	32%	64%
	Sept.	-	-	18%
	<b>Total</b>	<b>110</b>	<b>30%</b>	<b>60%</b>
Area 4	June	34	29%	39%
	July	47	38%	57%
	Aug.	238	38%	45%
	Sept.	27	37%	52%
	<b>Total</b>	<b>346</b>	<b>37%</b>	<b>50%</b>

Table 10. Comparison of Coho Release Rates Observed On-water and Reported through Dockside Interviews in the 2003 Ocean Recreation Fisheries.

		On-Board Observation/ Angler Logs			Dockside Interview		
		Coho Retained	Coho Released	Release Rate	Coho Retained	Coho Released	Release Rate
Area 1	June	-	-	-	742	594	44.5%
	July	263	198	43.0%	10,454	9,682	48.1%
	Aug.	236	215	47.7%	20,167	21,505	51.6%
	Sept.	35	19	35.2%	3,443	4,459	56.4%
	<b>Total</b>	<b>534</b>	<b>432</b>	<b>44.7%</b>	<b>34,806</b>	<b>36,240</b>	<b>51.0%</b>
Area 2	June	50	36	41.9%	1,455	1,523	51.1%
	July	173	163	48.5%	5,540	6,390	53.6%
	Aug.	115	107	48.2%	5,960	7,064	54.2%
	Sept.	48	43	47.3%	1,692	2,048	54.8%
	<b>Total</b>	<b>386</b>	<b>349</b>	<b>47.5%</b>	<b>14,647</b>	<b>17,025</b>	<b>53.8%</b>
Area 3	June	-	-	-	117	240	67.2%
	July	12	44	78.6%	979	2,711	73.5%
	Aug.	11	43	79.6%	1,229	2,480	66.9%
	Sept.	-	-	-	141	240	63.0%
	Oct.	-	-	-	9	41	82.0%
	<b>Total</b>	<b>23</b>	<b>87</b>	<b>79.1%</b>	<b>2475</b>	<b>5712</b>	<b>69.8%</b>
Area 4	June	5	15	75.0%	383	712	65.0%
	July	21	85	80.2%	3,117	9,680	75.6%
	Aug.	-	-	-	3,088	9,014	74.5%
	Sept.	-	-	-	620	1,580	71.8%
	<b>Total</b>	<b>26</b>	<b>100</b>	<b>79.4%</b>	<b>7,208</b>	<b>20,986</b>	<b>74.4%</b>

Table 11. Compliance with Coho Selective Fishery Regulations Observed through Dockside Port Sampling Interviews in the 2003 Ocean Recreation Fisheries.

		Total Coho Sampled	Marked Coho Sampled	Unmarked Coho Sampled	% Sampled Coho Marked
Area 1	June	742	705	37	95.0%
	July	10,454	10,416	38	99.6%
	August	20,167	20,078	89	99.6%
	September	3,443	3,423	20	99.4%
	<b>Total</b>	<b>34,806</b>	<b>34,622</b>	<b>184</b>	<b>99.5%</b>
Area 2	June	1,455	1,443	12	99.2%
	July	5,540	5,502	38	99.3%
	August	5,960	5,907	53	99.1%
	September	1,692	1,685	7	99.6%
	<b>Total</b>	<b>14,647</b>	<b>14,537</b>	<b>110</b>	<b>99.2%</b>
Area 3	June	117	113	4	96.6%
	July	979	976	3	99.7%
	August	1,229	1,214	15	98.8%
	September	141	138	3	97.9%
	Oct.	9	9	0	100.0%
	<b>Total</b>	<b>2,475</b>	<b>2,450</b>	<b>25</b>	<b>99.0%</b>
Area 4	June	383	363	20	94.8%
	July	3,117	3,043	74	97.6%
	August	3,088	3,025	63	98.0%
	September	620	609	11	98.2%
	<b>Total</b>	<b>7,208</b>	<b>7,040</b>	<b>168</b>	<b>97.7%</b>

Table 12. Estimated Drop Off Mortality in the 2003 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/
Area 1	June	31	0	0	2	0.0%
	July	860	58	5	43	0.5%
	August	765	39	3	38	0.4%
	Sept.	145	6	0	7	0.3%
	<b>Total</b>	<b>1801</b>	<b>103</b>	<b>8</b>	<b>90</b>	<b>0.5%</b>
Area 2	June	571	53	4	29	0.7%
	July	1364	212	17	68	1.2%
	August	706	92	7	35	1.0%
	Sept.	238	37	3	12	1.2%
	<b>Total</b>	<b>2879</b>	<b>394</b>	<b>32</b>	<b>144</b>	<b>1.1%</b>
Area 3	June	9	0	N/A	0	N/A
	July	31	0	N/A	2	N/A
	August	34	0	N/A	2	N/A
	Sept.	16	0	N/A	1	N/A
	Oct.	37	0	N/A	2	N/A
	<b>Total</b>	<b>127</b>	<b>0</b>	<b>N/A</b>	<b>6</b>	<b>N/A</b>
Area 4/4B	June	148	12	1	7	0.6%
	July	340	9	1	17	0.2%
	August	440	87	7	22	1.6%
	Sept.	48	11	1	2	1.8%
	<b>Total</b>	<b>976</b>	<b>119</b>	<b>10</b>	<b>49</b>	<b>1.0%</b>

a/ Assume 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 13. Preseason FRAM (model run 0319) Projected Coho Mortality in the 2003 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/
Area 1	June	1,200	1,197	3	153	7,248	89%	362	21	384	1,584
	July	30,000	29,903	97	4,736	18,339	87%	917	663	1,580	31,580
	August	60,000	59,741	259	12,713	15,768	83%	788	1,780	2,568	62,568
	Sept.	21,300	21,206	94	4,622	10,836	83%	542	647	1,189	22,489
	<b>Total</b>	<b>112,500</b>	<b>112,047</b>	<b>453</b>	<b>22,224</b>	<b>52,191</b>	<b>85%</b>	<b>2,610</b>	<b>3,111</b>	<b>5,721</b>	<b>118,221</b>
Area 2	June	4,000	3,971	29	1,422	5,675	75%	284	199	483	4,483
	July	24,000	23,817	183	8,976	34,496	74%	1,725	1,257	2,981	26,981
	August	32,500	32,240	260	12,744	47,302	72%	2,365	1,784	4,149	36,649
	Sept.	22,750	22,581	169	8,595	32,449	74%	1,622	1,203	2,826	25,576
	<b>Total</b>	<b>83,250</b>	<b>82,609</b>	<b>641</b>	<b>31,737</b>	<b>119,922</b>	<b>74%</b>	<b>5,996</b>	<b>4,443</b>	<b>10,439</b>	<b>93,689</b>
Area 3	June	300	296	4	182	501	64%	25	25	51	351
	July	1,600	1,570	30	1,472	3,172	54%	159	206	365	1,965
	August	2,250	2,221	29	1,399	3,791	64%	190	196	385	2,635
	Sept./Oct.	1,700	1,548	152	7,441	9,240	18%	462	1,042	1,504	3,204
	<b>Total</b>	<b>5,850</b>	<b>5,635</b>	<b>215</b>	<b>10,494</b>	<b>16,704</b>	<b>60%</b>	<b>835</b>	<b>1,469</b>	<b>2,304</b>	<b>8,154</b>
Area 4/4B	June	1,200	1,154	46	2,253	3,527	39%	176	315	492	1,692
	July	6,000	5,901	99	4,867	11,243	57%	562	681	1,244	7,244
	August	10,000	9,713	287	14,077	24,697	45%	1,235	1,971	3,206	13,206
	Sept.	6,200	6,063	137	677	13,294	52%	665	95	759	6,959
	<b>Total</b>	<b>23,400</b>	<b>22,831</b>	<b>569</b>	<b>21,874</b>	<b>52,761</b>	<b>50%</b>	<b>2,638</b>	<b>3,062</b>	<b>5,700</b>	<b>29,100</b>

a/ Marked handled + Unmarked handled.

b/ 5% of total handled.

c/ 14% of unmarked released.

d/ Drop off + Release mortality.

e/ Total retention + Incidental mortality.

Table 14. Estimated Actual Coho Mortality in the 2003 Ocean Recreational Fisheries.

		Total Retention	Marked Retention	Unmarked Retention	Unmarked Released	Total handled a/	Observed Mark Rate b/	Drop Off Mortality c/	Release Mortality d/	Incidental Mortality e/	Total Mortality f/
Area 1	June	655	622	33	-	-	-	-	-	-	-
	July	32,594	32,476	118	25,617	58,211	55.8%	2,911	3,586	6,497	39,091
	August	63,630	63,349	281	58,297	121,927	52.0%	6,096	8,162	14,258	77,888
	Sept.	9,544	9,489	55	5,909	15,453	61.4%	773	827	1,600	11,144
	<b>Total</b>	<b>106,423</b>	<b>105,936</b>	<b>487</b>	<b>89,823</b>	<b>195,591</b>	<b>54.3%</b>	<b>9,780</b>	<b>12,575</b>	<b>22,355</b>	<b>128,123</b>
Area 2	June	2,714	2,692	22	1,772	4,486	60.0%	224	248	472	3,186
	July	14,882	14,780	102	13,522	28,404	52.0%	1,420	1,893	3,313	18,195
	August	17,343	17,189	154	15,553	32,896	52.3%	1,645	2,177	3,822	21,165
	Sept.	4,328	4,310	18	4,028	8,356	51.6%	418	564	982	5,310
	<b>Total</b>	<b>39,267</b>	<b>38,970</b>	<b>297</b>	<b>34,875</b>	<b>74,142</b>	<b>52.9%</b>	<b>3,707</b>	<b>4,882</b>	<b>8,590</b>	<b>47,857</b>
Area 3	June	136	131	5	-	-	-	-	-	-	-
	July	1,564	1,559	5	3,991	5,555	28.1%	278	559	836	2,400
	August	1,502	1,484	18	3,124	4,626	32.1%	231	437	669	2,171
	Sept./Oct.	205	201	4	-	-	-	-	-	-	-
	<b>Total</b>	<b>3,407</b>	<b>3,375</b>	<b>32</b>	<b>7,114</b>	<b>10,180</b>	<b>30.0%</b>	<b>509</b>	<b>996</b>	<b>1,505</b>	<b>4,571</b>
Area 4/4B	June	785	744	41	1,745	2,530	29.4%	126	244	371	1,156
	July	9,104	8,888	216	14,103	23,207	38.3%	1,160	1,974	3,135	12,239
	August	8,721	8,543	178	13,871	22,592	37.8%	1,130	1,942	3,071	11,792
	Sept.	1,139	1,119	20	1,882	3,021	37.0%	151	263	414	1,553
	<b>Total</b>	<b>19,749</b>	<b>19,289</b>	<b>460</b>	<b>31,600</b>	<b>51,349</b>	<b>37.0%</b>	<b>2,567</b>	<b>4,424</b>	<b>6,991</b>	<b>26,740</b>

a/ Marked handled + Unmarked handled.

b/ Observed mark rate in Area 3 assumed from angler logbooks data.

c/ 5% of total handled.

d/ 14% of unmarked released.

e/ Drop off + Release mortality.

f/ Total retention + Incidental mortality.

Table 15. Number of Chinook DNA Samples Collected from the Ocean Recreational Fishery by Size Class and Sample Type

		On-Board Sampling		Dockside Sampling	Total Number of DNA Samples
		Sublegal Sized	Legal Sized	Legal Sized	
Area 1	June	0	0	16	16
	July	25	120	240	385
	August	16	33	158	207
	September	2	5	75	82
	<b>Total</b>	<b>43</b>	<b>158</b>	<b>489</b>	<b>690</b>
Area 2	June	35	42	275	352
	July	96	77	683	856
	August	54	27	218	299
	September	29	40	9	78
	<b>Total</b>	<b>214</b>	<b>186</b>	<b>1,185</b>	<b>1,585</b>
Area 3	June	0	0	9	9
	July	0	0	39	39
	August	0	0	26	26
	September	0	0	53	53
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>127</b>	<b>127</b>
Area 4/4B	June	0	0	89	89
	July	6	21	200	227
	August	12	21	36	69
	September	0	0	6	6
	<b>Total</b>	<b>18</b>	<b>42</b>	<b>331</b>	<b>391</b>



Table 16. Number of Chinook DNA Samples Collected from the Non-Treaty Troll Fishery by Size Class and Sample Type

		On-Board Sampling		Dockside Sampling	Total Number of
		Sublegal Sized	Legal Sized	Legal Sized	DNA Samples
Area 2	May	274	217	372	863
	June	40	0	313	353
	July	200	243	816	1,259
	August	169	142	757	1,068
	September	61	31	184	276
	<b>Total</b>	<b>744</b>	<b>633</b>	<b>2,442</b>	<b>3,819</b>
	Area 3	May	0	0	16
June		41	58	0	99
July		0	0	83	83
August		0	0	18	18
September		0	0	10	10
<b>Total</b>		<b>41</b>	<b>58</b>	<b>127</b>	<b>226</b>
Area 4		May	195	124	743
	June	0	0	152	152
	July	17	371	896	1,284
	August	97	2	532	631
	September	0	0	149	149
	<b>Total</b>	<b>309</b>	<b>497</b>	<b>2,472</b>	<b>3,278</b>