

**REVIEW OF THE BRISTOL BAY
2000 SALMON FISHERY**

**ANNUAL SALMON MANAGEMENT REPORT
TO THE ALASKA BOARD OF FISHERIES**



Regional Information Report¹ No. 2A00-34

Alaska Department of Fish and Game
Division of Commercial Fisheries
Central Region
333 Raspberry Road
Anchorage, Alaska 99518

December, 2000

¹ Contribution 2A00-34 from the Anchorage Regional office. The Regional Information Report Series was established in 1987 to provide an informational access system for all unpublished divisional reports. These reports frequently serve diverse ad hoc information purposes or archive basic uninterpreted data. To accommodate timely reporting of recently collected information, reports in this series undergo only limited internal review and may contain preliminary data; this information may be subsequently finalized and published in the formal literature. Consequently, these reports should not be cited without the approval of the author or the Division of Commercial Fisheries.

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	2000 COMMERCIAL SALMON FISHERY	1
	Sockeye Salmon.....	2
	Nak/Kvi District.....	2
	Egegik District	5
	Ugashik District.....	11
	Nushagak District	15
	Togiak District	17
	Chinook Salmon.....	18
	Chum Salmon	19
	Pink Salmon	20
	Coho Salmon	20
	2001 Forecast	22
III.	FIGURES	
1.	Bristol Bay area commercial salmon fishery management districts	24
IV.	TABLES	
1.	Inshore commercial salmon harvest and escapement of sockeye salmon, by river system, in thousands of fish, Bristol Bay, 1998.....	25
2.	Inshore commercial salmon harvest and escapement of sockeye salmon, by river system, in thousands of fish, Bristol Bay, 1999.....	26
3.	Inshore commercial salmon harvest and escapement of sockeye salmon, by river system, in thousands of fish, Bristol Bay, 2000.....	27
4.	Inshore commercial salmon harvest by district and species, in thousands of fish, Bristol Bay, 1998.....	28
5.	Inshore commercial salmon harvest by district and species, in thousands of fish, Bristol Bay, 1999.....	29
6.	Inshore commercial salmon harvest by district and species, in thousands of fish, Bristol Bay, 2000.....	30

7.	Salmon escapements in thousands of fish, by river system and species, compared with escapement goals and ranges, Bristol Bay, 1998.....	31
8.	Salmon escapements in thousands of fish, by river system and species, compared with escapement goals and ranges, Bristol Bay, 1999.....	32
9.	Salmon escapements in thousands of fish, by river system and species, compared with escapement goals and ranges, Bristol Bay, 2000.....	33
10.	Sockeye salmon preseason forecast compared to total inshore run, by river system, in thousands of fish, Bristol Bay, 1998.....	34
11.	Sockeye salmon preseason forecast compared to total inshore run, by river system, in thousands of fish, Bristol Bay, 1999.....	35
12.	Sockeye salmon preseason forecast compared to total inshore run, by river system, in thousands of fish, Bristol Bay, 2000.....	36
13.	Sockeye salmon preseason forecast of total run, escapement goals and expected harvest of major age classes by river system in thousands of fish, returning to Bristol Bay, 2001.....	37
14.	Historical commercial salmon harvest by species, in thousands of fish, Bristol Bay, 1980 -2000.....	38
15.	Estimated exvessel value of the commercial salmon catch by species, in thousands of dollars, Bristol Bay, 1980-2000.....	39

INTRODUCTION

The Bristol Bay area includes all coastal waters and inland waters east of a line from Cape Newenham to Cape Menshikof (Figure 1) and is the largest sockeye salmon producing region in the world. It also produces substantial returns of other salmon species as well as herring. The Togiak herring fishery is the State's largest sac roe fishery.

Bristol Bay is divided into five management districts: Naknek/Kvichak, Egegik and Ugashik Districts on the east side and Togiak, and Nushagak Districts on the west side. Associated with these districts are nine major rivers: Kvichak, Branch, Naknek, Egegik, Ugashik, Togiak, Igushik, Wood, and Nushagak (Figure 1). Several districts are divided into sections. Sections provide more management flexibility in controlling exploitation of individual stocks when more than one river system contributes to the district's return. The districts and sections are confined to areas near the river mouths in order to minimize interceptions of salmon destined for other areas. Fishing schedules are unique in each district and are established by regulation and emergency order (E.O.).

In the last 20 years (1980-1999), Bristol Bay commercial salmon harvests have averaged 26 million sockeye salmon, 102 thousand chinook salmon, 1.1 million chum salmon, 1 million pink salmon (during even-numbered years), and 193 thousand coho salmon (Table 14).

Subsistence catches for the past 20 years have averaged approximately 166,000 salmon per year. Approximately 80% of the subsistence catch are sockeye salmon. The 2000 salmon subsistence information has not been fully tabulated from surveys. It will be available at a later date.

Bristol Bay sport fisheries target on chinook and coho salmon, but pink, sockeye, and chum salmon are also taken. Approximately 45,000 salmon are harvested annually by sportfishers in Bristol Bay.

The management objective for all districts in Bristol Bay is to achieve escapement goals for major salmon species while providing opportunities to harvest surplus fish.

2000 COMMERCIAL SALMON FISHERY

In 2000, the Bristol Bay commercial salmon fishery produced a cumulative harvest of 21.1 million fish (Table 6), worth approximately \$81.1 million to the 1,992 set gillnet and 1,863 drift gillnet permit holders. This was the 3rd lowest exvessel value for the last 20 years (Table 15).

The inshore run of sockeye salmon totaled approximately 28.4 million fish (Table 3) and was the 13th largest inshore return in the last 20 years. It was approximately 15% less than the preseason forecast of 33.4 million fish. The 2000 sockeye salmon harvest of 20.5 million was 29% less than the ten-year average. It is the third lowest harvest in the most recent 10 years. The sockeye salmon harvest accounted for 97% of the total salmon harvest in Bristol Bay. The Westside Districts experienced strong runs significantly higher than preseason forecasts. However, the Naknek-Kvichak District had the lowest peak year return since 1955. Sockeye salmon escapement in all but one system was within 20% of the point goals. The Kvichak River was significantly under its point goal; the final escapement was 1.8 million; less than the midrange of the 6.0 million goal (Table 9).

There was not a directed chinook salmon fishery in any district this year. The chinook salmon harvests in all Bristol Bay districts, except Egegik, were below average. The chinook salmon return was well below average in 2000.

The 2000 chum salmon harvest of 381,000 fish was 67% below the 20-year average (Table 14). Chum salmon harvests have been declining since 1991. Escapements for all districts were average to below average.

Bristol Bay pink salmon return in greater abundance during even-numbered years. The 2000 run produced a commercial harvest of only 57,000 (Table 14).

The Bristol Bay coho salmon harvest for 2000 was 35% below the 20-year average but 18% above the 10-year average with a catch of 126,000 fish (Table 14). The Nushagak District had the largest catch with approximately 109,000 coho salmon taken. This is the largest catch for the Nushagak since 1984.

SOCKEYE SALMON

The 2000 total return of 28.3 million sockeye salmon resulted in an inshore harvest of 20.5 million fish. This is the seventh lowest harvest in the last 20 years (1980-99) (Table 14). It was approximately 15% below the preseason forecast of 33.4 million (Table 12). Returns were above forecast except to Kvichak, Naknek and Ugashik Rivers.

Naknek/Kvichak District

The Naknek/Kvichak District's total inshore return for 2000 was 8.3 million sockeye salmon (Table 3); 45% less than the preseason forecast of 15.0 million. The Kvichak River contribution was 2.9 million (68% below forecast), the Alagnak River was 733 thousand (233% above forecast) and the Naknek River was 4.7 million (9% below forecast). The Kvichak River return of 2000 was the lowest peak year return since 1955. The age-2 component, which was forecasted to be over sixty percent of the total return for the Kvichak, was less than 1 million fish. The age-2 component was below forecast in all the east-side Bristol Bay systems, except the Alagnak River.

In response to the guidelines established in the "Sustainable Salmon Fisheries Policy" (2000), Department staff recommended and the Board of Fish classified the Kvichak River sockeye salmon stock as a stock of concern. This classification is based on the definition of "yield concern" found in the policy.

The management of the Naknek/Kvichak District falls under four management plans; a general bay-wide plan and three district specific plans. The bay-wide plan 5 AAC 06.355 BRISTOL BAY COMMERCIAL SET AND DRIFT GILLNET SOCKEYE SALMON FISHERIES MANAGEMENT AND ALLOCATION PLAN is to ensure adequate escapement for all systems and to distribute the harvestable surplus of sockeye salmon. The other three plans are the specific Naknek/Kvichak allocation plan, the Naknek River Special Harvest Area (NRSHA) and the Egegik River Special Harvest Area (ERSHA). The allocation plan: 5 AAC 06.364 NAKNEK/KVICHAK DISTRICT COMMERCIAL SET AND DRIFT GILLNET SOCKEYE SALMON FISHERIES MANAGEMENT PLAN describes several principles to manage the district to achieve an allocation between gear types of the harvestable surplus. The allocations are 84% drift and 16% set which is divided as 8% Naknek Section setnet and 8% Kvichak Section setnet. The second management plan 5 AAC 06.360 NAKNEK RIVER SOCKEYE

SALMON SPECIAL HARVEST AREA MANAGEMENT PLAN describes the steps to meet the escapement objectives in the Kvichak system and provide opportunity to harvest Naknek River salmon stocks that are in excess of the spawning goals. The final plan, 5 AAC 06.359. EGEGIK RIVER SOCKEYE SALMON SPECIAL HARVEST AREA MANAGEMENT PLAN, describes when the district would be restricted to Loran C line 110 in response to Kvichak escapement. Based on the 2000 forecast, it was expected that the escapement goal and harvest in excess of the goal would be achieved and the NRSHA would not be used.

Based on the 2000 forecast, the preseason management strategy beginning on June 24 was to allow early fishing periods in the Naknek Section only. The fishing schedule prior to June 24 was 4-days per week, 9:00 a.m. Monday to 9:00 a.m. Friday. This schedule also goes into effect on July 17 at 9:00 a.m. (unless superseded by Emergency Order) until September 30 when the commercial salmon season closes. Early fishing periods are used to assess early run strength and effort levels. All fishing periods after 9:00 a.m. June 23 were restricted to the Naknek Section only unless an indication of run strength and escapement into the Kvichak River system was evident. Harvest and effort levels are typically low in early June. However, in 2000, the harvest during the pre-emergency order period was 630,500 sockeye, the fourth highest on record through June 23.

The inseason development of the South Unimak/Shumagin Island intercept sockeye fishery is closely monitored by Bristol Bay fishery managers for indications of migration timing, relative abundance, age composition and fish size in the incoming Bristol Bay run. Information becomes available as early as June 10 when the South Unimak June sockeye fishery typically begins. Under 5 AAC 09.365. SOUTH UNIMAK AND SHUMAGIN ISLANDS JUNE SALMON MANAGEMENT PLAN (b) the South Unimak is allocated 6.8 percent and Shumigan Islands receive 1.5 percent of the harvestable surplus of Bristol Bay bound stocks. In 2000, the commercial catch at South Unimak was 48% 2-ocean, equal to the Bristol Bay forecast of 48%. The 3-ocean component of the Bristol Bay forecast was 52%, compared to the age composition of 49% in the Bristol Bay commercial catch. The forecasted composition of the 2-ocean component in the 2000 Bristol Bay run was 28% age 2.2 and 20% age 1.2. The 2000 actual South Unimak harvest age information indicated that age 2.2 was 21.5% and age 1.2 was 26.5%. This preliminary indication suggested to management that the age class projections fell within expected parameters. This early information is just a snapshot to look at major discrepancies between the forecasted age composition and age of fish returning. Weather and fishing patterns in South Unimak can mask the real age composition of the run.

Following the South Unimak fishery, the Port Moller test fishery begins approximately on June 10. This program collects fishery information that helps project run strength, timing, age, and size composition to the inshore Bristol Bay return of sockeye salmon.

In 2000, indices were very low in the traditional Port Moller fishing stations. However, sites outside the traditional stations (2 to 8) had higher catch rates. It appeared that fish were traveling much farther offshore than traditionally observed. Age composition of the Port Moller catch started off high in 3-ocean, which is a typical occurrence with a shift to 2-ocean age fish by late June. However, by late June the shift to 2-ocean age fish didn't occur. Because of the offshore distribution, many questions arose: 1) Were the 2-ocean fish missing from the return? 2) Were the 2-ocean fish traveling separately from the 3-ocean fish? 3) Was the Port Moller test fishery missing the bulk of the return? South Unimak and Port Moller age compositions were clearly distinct. The age class composition that was representative of the 2000 inshore run wouldn't be determined until the run reached Bristol Bay.

Within the Naknek/Kvichak District there are two main systems, the Naknek River and the Kvichak River. Within the Kvichak drainage there is a smaller component, the Alagnak River. With the close proximity of these two systems (Kvichak and Naknek) one of the difficulties in managing is harvesting surplus sockeye from one river system and minimizing catch from the weaker system. The recent trend of stronger run strength to the Naknek River; has made it difficult to harvest surplus Naknek sockeye salmon while not adversely affecting the Kvichak sockeye return.

In 1986, with the projection of a poor Kvichak River return and a strong Naknek River return, the BOF adopted a plan for the Naknek/Kvichak District. This plan created a special harvest area within the Naknek River. The plan was implemented in 1986, however the escapement goal for the Kvichak River was not met. The 1986 total return to the Kvichak River was 2.0 million fish, which was less than the minimum escapement goal of 5-million sockeye salmon. Since then, the NRSHA has been used just five times from 1996-2000. The Kvichak River escapement goal has been achieved in only two of the last five years. Again, in those five years the total return was less than the minimum BEG, three out of the five years. When the total return exceeds the minimum escapement goal, the in-river plan can work. The management plan has evolved with time restrictions to enact the plan, separation of gear groups, and when the set gillnet fleet enter the NRSHA the Egegik District boundary is reduced to the 110 line.

The forecast for 2000 projected a surplus of 3.5-million sockeye salmon for the Kvichak River and 4-million for the Naknek River. Based on this, the preseason management strategy was to aggressively fish the Naknek Section only on the premise of reducing early Naknek River escapement. Then, in late June, decrease fishing and allow escapement in both systems when a higher proportion of Kvichak fish would be in the district. By fishing the Naknek Section only through most of the season with drift gillnet gear, the allocation split would most likely be achieved and little fishing other than with set gillnet gear in the Kvichak Section would be needed.

The fishery opened on June 1, the first delivery occurred on June 9 in the Naknek Section and June 19 in the Kvichak Section. Early escapement into the Naknek River was slow due to the 4-day a week schedule with a cumulative escapement through June 23 of 1,524 sockeye salmon. In contrast, the catch through June 23 was 628,300 sockeye salmon, the forth highest on record. Escapement rates on the Naknek River increased following the closure on June 23 and by midnight June 24, 44,634 sockeye had passed the tower and by midnight June 25, the cumulative escapement was 173,000 sockeye salmon. The projected escapement through June 25 based on a 1.1 million-goal was 35,000 sockeye salmon. With escapement projections above the goal, commercial fishing occurred during the morning tide of June 25. Escapement remained above the projected goal through the morning tide on July 3. The Naknek Section was open for fishing with both gear groups through the morning of July 3.

However, the Kvichak River sockeye salmon run was not showing the run strength that the Naknek River did early in June. The in-river test fish project began on June 21 and the first substantial index point was not achieved until June 28. This index provided an inriver estimate of 250,000 fish. The tower count through June 28 was only 42,000 sockeye salmon; based on the inriver estimate, the projected cumulative tower count through June 30 would be 300,000 sockeye salmon. Test fish indices dropped off on June 29 but increased on June 30. The in-river estimate for June 30 was 500,000 sockeye salmon and when combined with the 144,000 fish past the tower resulted in a count of nearly 650,000 sockeye salmon by July 2. As stated in the 5 AAC 06.360 NAKNEK RIVER SOCKEYE SALMON SPECIAL HARVEST AREA MANAGEMENT PLAN; when the Kvichak River escapement falls two or more days behind schedule in escapement the NRSHA goes into effect. The projection through July 2 was for escapement into the Kvichak to be less than 2 days behind the escapement curve. With that projection, it was announced that the Kvichak Section would open to set gillnet gear on the morning tide of July 1. Test fish

indices again climbed on July 1 projecting an in-river estimate of 650,000 sockeye. Based on the building indices, escapement less than 2-days behind the escapement goal curve, and with the Kvichak Section closed since June 23, the Kvichak section was opened to set gillnet gear only on July 1.

Test fish indices soon dropped off and tower counts weren't matching the previous inriver estimates. By July 2, Kvichak River escapement was falling and was slightly more than 2-days behind its escapement goal curve and based on inriver estimates would be falling further behind. Harvest from the July 1 and July 2 set gillnet periods were less than favorable with harvest of 50,000 fish and 42,000 fish respectively. On July 3, with the Kvichak River falling further behind it's escapement goal curve, the Naknek/Kvichak District closed to commercial fishing. The allocation through July 2 was: Naknek/Kvichak drift gillnet allocation - 85%, Naknek Section set gillnet 12% and Kvichak Section set gillnet 3%. Escapement into the Naknek River continued on course and by July 3 was only slightly ahead of the curve; in addition over 3.0 million sockeye had been harvested in the Naknek Section alone. Based on the current run strength it was projected that the minimum 800,000 goal for the Naknek River would be met in 2000. With that, the NRSHA opened to drift gillnet gear the evening of July 3. The Naknek/Kvichak District was reopened to set gillnet gear of 25-fathoms or less. The Kvichak Section remained open until the morning of July 6 when the Naknek/Kvichak District closed until further notice. At that time the Egegik Special Harvest Area went into effect. The next fishing period for set gillnet gear would be in the NRSHA.

When both gear groups go into the NRSHA, the department will fish drift and set gillnet gear separately to the extent practicable, alternating fishing periods between the gear groups. The allocation plan pertains to District fishing not inriver, but will to the extent practicable, follow the allocation plan of 84% drift and 16% set gillnet. However, escapement is the first priority. From July 7 through July 24, the NRSHA was the only area open to commercial fishing. Commercial periods occurred on a daily basis. Each gear group was fished separately throughout the season. The final escapement count for the Naknek River was 1,375,500 sockeye salmon, just under the upper range of 1.4-million (Table 3). The final escapement count in the Kvichak River was 1,827,800 sockeye salmon, far short of the minimum goal of 6.0 million fish.

The current trend of the Kvichak River cycle can be put in perspective by the following:

- (1) The 20-year average total return to the Kvichak is 7.5 million fish for off-cycle and 23.0 million fish for pre-peak and peak years.
- (2) The 20-year average harvest for off-cycle years is 4.3 million sockeye salmon and for pre-peak/peak years is 12.3 million sockeye.
- (3) In the past 5-years (1996-2000) the Kvichak River has met it's escapement goals only twice, 1998 and 1999, and both of those years the drift fleet fished in the NRSHA to meet the escapement goals.

Egegik District

The 2000 sockeye salmon run to the Egegik District of 8.1 million fish was the thirteenth largest on record, and was slightly greater than the forecast of 7.9 million sockeye. Sockeye salmon runs to the Egegik District during the past four comparable cycle years, dating back to 1980, have ranged from 3.7 to 15.7 million fish with an average of 10.2 million. The 2000 run was 21% below the average for the recent cycle years. The harvest of 7.1 million sockeye salmon was the eleventh largest commercial harvest in the 104-year history of the fishery. An escapement of approximately 1.03 million fish was achieved, which was within the Biological Escapement Goal (BEG) range of 0.8 to 1.4 million (Table 9).

The Alaska Department of Fish and Game (ADF&G) forecasted a total inshore run to Bristol Bay of 33.4 million sockeye salmon in 2000, with a surplus of approximately 22.2 million. The projected Egegik District harvest of 6.8 million sockeye was 31% of the predicted Bay-wide harvest. There was a reduced effort in the Egegik district early in the season.

Commercial salmon fishing was opened in the Egegik District on June 1, but no landings occurred until June 12. Sockeye salmon catches per unit of set gillnet effort were average to slightly above average through June 16. The fishery was allowed to close as scheduled at 9:00 a.m. on June 16.

Daily inriver test fishing, which provides estimates of sockeye salmon passage into the lower portions of Egegik River, began on June 14 at the usual sites just upstream of Wolverine Creek. The Egegik River counting towers, which provide daily estimates of sockeye salmon passage into Becharof Lake, began operation on June 19.

Initial inriver test fishing catches were low, but by June 19, catches indicated that approximately 96,000 sockeye salmon had passed through the commercial fishing district and were making their way up the river. In addition, 6,200 sockeye salmon were estimated to have passed the counting towers on June 19. With an Egegik inshore forecast of 7.9 million sockeye salmon and approximately 102,000 salmon having passed through the commercial fishing district, a brief 8-hour commercial fishing period was scheduled for 2:00 p.m. on June 20.

Participation in the June 20 opening consisted of approximately 200 drift vessels and 129 setnet permits. The catch of approximately 291,000 sockeye salmon was well above the recent 20-year average for this date of 110,000 fish. Sockeye salmon catches per delivery were well above average for both set and drift gillnet fishers at 365 and 1,092 fish per delivery, respectively. Inriver test fishing results through June 20 suggested that about 128,000 sockeye salmon had entered the Egegik River system. Adding these fish to the accumulated tower count resulted in a projected escapement for June 22 that was six days ahead of schedule. The actual tower count for June 20 of 12,300 sockeye salmon was one day ahead of schedule. With the excellent commercial harvest on June 20 and the healthy escapement situation, another brief commercial fishing period was announced to start at 3:00 p.m. on June 21.

The June 21 harvest of 193,000 sockeye salmon was also well above average. However, the inriver test fish index fell to an average of 177 index points for the day. The Egegik River tower count dropped and escapement returned to expected levels. The fishery closed as planned and stayed closed on June 22. The cumulative inriver index indicated an escapement of about 140,000 fish. Allowing for a two day travel time to the counting towers, this level of escapement was three to four days ahead of schedule. Estimating a travel time of four days put the escapement one day ahead of schedule. Another brief 8-hour commercial fishing period was announced to start at 3:30 a.m. on June 23.

The June 23 harvest of approximately 213,000 sockeye salmon was above average for this date and brought the district's total harvest to about 700,000 fish. Fishing opportunity was switched to the early morning tide because it was the higher of the two daily tides and was believed to be the more productive one. It also provided the most water for fishing the 550 vessels registered to the Egegik District. The inriver test fishing index continued to decline and the fishery was closed as scheduled; it remained close on June 24 pending better abundance indicators.

On the morning of June 24 inriver indices picked up dramatically to an average of 1600 points. If the indices held up for the evening's tide, it could mean an additional 120,000 fish to the escapement. However the evening tides, for the previous three days, did not reveal as much fish movement as the morning tides, and it was not anticipated that the test fishing results for the evening tide of June 24 would prove better than the morning results. The outcome for the evening test fishing drifts would not be known until about 12:30 a.m. on June 25. However, the morning's test fish indices were strong enough to warrant some fishing time and an 8-hour fishing period was announced at noon on June 24 to start at 5:00 a.m. on June 25.

The test fishing indices for the evening of June 24 were the highest observed in three years. An estimated 250,000 sockeye salmon moved into the Egegik River on June 24. Harvest for the 5:00 a.m. June 25 opening of approximately 924,000 sockeye salmon was very good with large catches well inside the district. Inriver test fishing indices remained high with the morning's drifts on June 25 averaging 2500 points. At 12:00 p.m. June 25, an announcement was made to extend commercial fishing for set gillnet fishers and to allow drift gillnet fishers their second period of the day. A 5 ½-hour period was scheduled for drift gillnet fishers to start at 6:30 p.m., with a subsequent period set for 5:30 a.m. the next morning.

The total sockeye salmon harvest for June 25 was approximately 924,000 fish. It was the third largest harvest for this date on record and brought the cumulative harvest to 1.6 million. Inriver test fishing began to slow down, but escapement past the tower continued to climb. Through June 25 the tower count was 185,000 sockeye salmon and was three days ahead of the expected level for that date. Commercial fishing was again extended for set gillnet fishers until 2:30 p.m., June 27, and two more periods were scheduled for drift gillnet fishers, one for the evening tide on June 26 and the other for the morning tide on June 27.

Harvest for June 26 and 27 was approximately 800,000 fish. Tower escapement counts increased dramatically, with 159,000 passing the tower on the 26th and 202,000 on the 27th, bringing the cumulative escapement count to 550,000, or about half way to the midpoint of the BEG range. This level of escapement would normally be observed nine days later. Allowing for two days earlier than normal run timing, escapement was still well ahead of schedule, and opportunity for set gillnet fishers were extended until 3:30 p.m. June 28 while drift gillnet fishers were given another period on the morning tide of June 28. The setnet proportion of the total harvest was approximately 10%, or 4% less than their allocation.

The June 28 fishing effort produced a harvest of approximately 742,000 sockeye salmon. With escapement levels ahead of schedule additional fishing time was given. The setnet opening was extended until 4:00 p.m. June 29 and drift gillnet fishers were allowed 7 and 8-hour fishing periods on the next two tides. Harvest on the 29th was also very good with approximately 890,000 sockeye salmon taken. Setnet harvest had slipped to 9% of the total catch and it was announced at 3:00 p.m., June 29, that set gillnet fishers would be fishing until further notice. With the tower count still several days ahead of expected levels, drift gillnet fishers were given another 8-hour period that would start at 9:30 a.m. on June 30.

The June 30 harvest of 440,000 sockeye salmon was half the catch of the previous day. Though inriver test fishing indices were about the same as those on the previous day, it was apparent that the rate of escapement was about to decrease. Indeed, on July 1, inriver test fishing indices dropped by 70% to an average of only 57 points and no drift fishing was scheduled for that day. Set gillnet

fishers, however, fished the whole day, but harvested only 21,000 sockeye salmon, which did not affect the overall setnet percentage of the catch. With an increase in inriver test fishing indices on the early morning tide of July 2 and the escapement past the tower still well ahead of schedule, a 4-hour period was scheduled for drift gillnet fishers on the afternoon's tide. Set gillnet fishers fished continuously.

Harvest for July 2 was approximately 133,000 sockeye salmon and was well below the recent 20-year average of 806,000 for this date. Drift gillnet fishers caught 120,000 sockeye salmon and set gillnet fishers harvested only 13,000 fish. Inriver test fishing indices declined during the afternoon's tide and the daily tower count dropped to under 10,000 fish. Drift fishing was closed as scheduled and stayed closed through July 3. Set gillnet fishers continued fishing as their harvest percentage remained unchanged.

Set gillnet fishers harvested approximately 135,000 sockeye salmon on July 3. This was the largest set gillnet harvest on record for this date and the fourth largest single day harvest for set gillnet fishers ever. The district's total sockeye salmon harvest had reached 4.5 million fish. The set gillnet proportion of the harvest increased from 9% to 12%. The tower count was still several days ahead of schedule and an aerial survey on the afternoon of July 3 revealed a strong showing of fish from Low point to Coffee Point. The drift fleet had fished only 4 hours of the last six tides and with the latest abundance information, a 4½ -hour drift period was scheduled to start at 2:00 a.m. July 4.

According to 5 AAC 06.359 EGEGIK RIVER SOCKEYE SALMON SPECIAL HARVEST AREA MANAGEMENT PLAN, Egegik commercial fishers were advised at the 8:00 p.m. announcement on July 3, that the 48-hour notification period for the closure of the area between Loran C line 45135 and 45110 had begun. The inriver test fish index on the morning of July 4 averaged 833 index points, and was the strongest escapement indicator since June 25. At 9:00 a.m. the second drift period for the day, a 7 ½ -hour fishing period, was announced to start at 1:30 p.m.

The July 4 harvest totaled approximately 795,000 sockeye salmon which was the fifth largest harvest on record for this date. Set gillnet fishers took approximately 183,000 sockeye salmon, their largest single day harvest ever. Inriver test fishing indices continued to increase, and an estimated 170,000 fish entered the Egegik River on July 4. At 8:00 p.m., another 7 ½ -hour drift fishing period was announced for July 5. Set gillnet proportion of the total harvest was 14%, but in anticipation of fishing time for drift gillnet fishers, set gillnet fishers were allowed to remain fishing.

The July 5 harvest totaled 353,000 sockeye salmon. Set gillnet harvest remained high with approximately 80,000 sockeye salmon caught, increasing the setnet proportion of the total harvest to 15%. The tower count increased to approximately 750,000 sockeye salmon. Inriver test fishing indices for July 5 averaged 302 index points, resulting in an estimated 135,000 fish in the river. With the lower end of the BEG range assured, and the large numbers of fish estimated to be in the river on the last four tides, drift gillnet fishers were allowed fishing time on the next two tides. A 5-hour and 7-hour period were scheduled for July 6. Commercial fishers in the Egegik District were also informed that starting at 12:30 p.m., on July 6, the district would be configured at the 45110 line because of the concern that escapement into the Kvichak River would fall short of the BEG.

The July 6 harvest was approximately 190,000 fish with set gillnet fishers harvesting about 32,000 or 17% of the total. Inriver test fish indices declined, as did the tower counts. Total escapement was still about three days ahead of expected levels, however. Tower counts added to the estimated number of fish present in the river gave a total sockeye escapement of approximately 900,000 fish.

Two 5-hour drift fishing periods, one on each tide, were scheduled for July 7. Set gillnet fishers remained in the water.

The July 7 harvest was only 94,000 fish and was about one fifth of the average for that date. Set gillnet harvest was approximately 22,000 or 23% of the total. The setnet proportion of the daily harvests remained high because setnet sites on the outside beaches had little competition from drift gillnet vessels restricted by the 110 line. With the total set gillnet harvest approximately 1% above their allocation, it was announced at 8:00 p.m., July 7, that the setnet fishery would close at 1:00 p.m. on July 8. The set gillnet fishery was closed for the first time since June 25. A 5-hour fishing period for drift gillnet fishers, starting at 6:00 p.m., July 8, and a 10-hour period for set gillnet fishers starting at 5:30 a.m., July 9, were also announced.

The July 8 harvest was very low with only about 47,000 sockeye salmon taken, and it was one of the lowest harvests for this date in the last 20 years. Set gillnet harvest dropped to about 8% of the day's total with only 3,800 sockeye salmon harvested. Harvest on July 9 was also low with set gillnet fishers taking only about 4,000 fish in their 10-hour period. Tower counts declined to under 7,000 sockeye salmon per day for the last three days, but inriver test fish indices increased on the evening tide of July 9 and on the morning tide of July 10. With set gillnet harvest still ahead on their allocation, a 5-hour drift gillnet only period was scheduled for 6:30 a.m., July 10.

The drift gillnet harvest was reflective of the increasing movement of sockeye salmon into the Egegik River as indicated by the increasing indices of the inriver test fishery. The drift harvest for the 5-hour period on July 10 was approximately 197,000 sockeye salmon, which was 43% under the recent 20-year average for this date of 348,000. The 20-year average fishing time for July 10 was, however, 15¼ hours compared to the 5-hour period allowed in 2000. The harvest of 197,000 on July 10 was also significantly larger than any July 10 harvest from 1960 to 1983, where catches averaged 64,000 sockeye salmon for periods that averaged 21 1/2 hours.

The district's total sockeye harvest had reached approximately 6.2 million fish after the 5-hour period on July 10. A 9-hour set gillnet-only opening was announced to start at 8:00 p.m. on July 10 and a 5-hour drift gillnet only period was set to start at 7:00 a.m. on July 11. Reported set gillnet harvest for July 10 was approximately 30,000 fish, with 122,000 fish reported for July 11. The July 11 drift gillnet harvest was approximately 140,000 sockeye salmon. The set gillnet harvest of 122,000 on July 11 was the largest recorded for this date. The drift gillnet harvest was also higher than any harvest on July 11 prior to 1983. Inriver test fishing revealed a steady movement of numerous sockeye salmon into the Egegik River on July 10 and July 11 with an estimate of 79,000 and 62,000 fish, respectively, entering the river on each of those days. The next fishing period for set gillnet fishers, a 9-hour period, was scheduled to start at 8:30 p.m. on July 11. For drift gillnet fishers, another 5-hour period was scheduled for 7:30 a.m., July 12.

Setnet sockeye harvest for July 12 was approximately 70,000 fish, bringing the season's total setnet harvest to 1.1 million or approximately 16.6% of the district's total harvest. Drift gillnet fishers harvested approximately 47,000 sockeye salmon. The setnet harvest was the fourth largest on record for this date. If the setnet harvest of 1.1 million constituted 16% of the total harvest, then the drift fleet's harvest was over a million fish under the allocated value. A drift gillnet fishing period was therefore announced for the morning of July 13. Through July 12 the tower count was 917,000 sockeye salmon, with an additional 125,000 sockeye salmon in the river bringing the total escapement to approximately 1.04 million.

The July 13 harvest was not very high with only 48,000 sockeye salmon harvested. The recent 20-year average sockeye harvest for this date was 215,000. The tower escapement count was 950,000 sockeye salmon as of 6:00 p.m., July 13, and an additional 100,000 fish were estimated in the river. Another 5-hour drift gillnet only period was scheduled for July 14.

The July 14 harvest was also low with only 40,000 sockeye salmon harvested. Average harvest for this date was approximately 200,000 sockeye salmon. At the present catch rate it became apparent that the drift fleet harvest would not reach the allocated value by July 17, and set gillnet fishers were advised that they would remain closed until 9:00 a.m. on July 17. Four fishing periods were scheduled for drift gillnet fishers between July 15 and July 17. Harvests remained low with catches averaging only about one fifth of the average. As a result, drift gillnet fishers received only 84% of the 7 million harvest up to the 17th of July. The imbalance in allocated harvest between setnet and drift gillnet groups was 140,000 fish. At 9:00 a.m. Monday, July 17, the fishery reverted to its fall fishing schedule of 9:00 a.m. Mondays until 9:00 a.m. Fridays.

Sockeye salmon landings in the district continued throughout July and into August, reaching a preliminary seasonal cumulative total of about 7,103,700 fish. The counting towers ceased operation on July 17 and the final escapement count totaled 1,032,000 sockeye salmon (Table 9). This was approximately 6% under the midpoint of the BEG range. The escapement sex ratio was 53% males to 47% females.

The age composition of the 2000 Egegik District sockeye run was as follows:

<u>Age Group</u>	<u>Catch</u>	<u>Escapement</u>	<u>Total</u>
1.2	5%	8%	6%
2.2	18%	25%	19%
1.3	39%	31%	38%
2.3	38%	35%	37%
Other	<u>0%</u>	<u>1%</u>	<u>0%</u>
Totals			100%

Most of the sockeye salmon run (57%) were age 2.2 and 1.3 fish, which came from the 1995 escapement of 1.28 million fish. The second largest component (37%) were age 2.3 fish that came from the 1994 brood year which had an escapement of 1.97 million. Egegik District commercial fishers harvested 87% of the Egegik inshore sockeye run, which was 5% above the recent 20-year average of 83%. There were several peaks and valleys in the harvest and escapement. Peak harvest dates were June 25, 28, and 29, and July 4 with over 700,000 sockeye salmon landed on each of those days. Peak tower count dates were June 25, 26 and 27, and July 5 and 12 with over 60,000 sockeye salmon counted on each of those days. The peak catch rate for drift gillnet fishers was 67,000 sockeye salmon per hour on June 29, and for set gillnet fishers it was 14,300 sockeye salmon per hour on July 11. During the emergency order period, June 16 to July 17, a total of 192 hours were fished in the district by drift gillnet fishers or 26% of the 744 available hours. For set gillnet fishers, 372 hours or 50% of the available time was fished. This compares to 196 hours for drift gillnet fishers and 318 hours for set gillnet fishers fished in 1999. Peak drift gillnet effort was around 700 vessels from June 24 to June 29.

A total of 23 buyers operated in the district this season, which was three more than the previous two seasons. Sockeye salmon harvest was not particularly large on any given day, but there was some concern by some setnet buyers about being able to keep up with the harvest on July 4. Set gillnet

fishers harvested approximately 135,000 sockeye salmon on July 3 and 183,000 on July 4. The July 4th harvest was the largest single day set gillnet harvest on record for the Egegik District.

In summary, the 2000 salmon season in the Egegik District was very productive with the eleventh largest harvest on record. For set gillnet fishers it was their fifth largest harvest on record. Drift gillnet fishing time between June 23 and July 17 was 22% below average for the last ten years, but set gillnet fishing time was 51% above their average and the most time allowed since 1983.

Ugashik District

The 2000 inshore sockeye salmon run to the Ugashik District was approximately 2.2 million fish, or 49% below the forecast of 4.3 million (Table 12). It was the third time in the last five years that the Ugashik inshore run was significantly smaller than the forecast. For the 2000 season, it was the worst negative deviation from forecast of any of the districts in the Bay. It was the third worst inshore run for the district in the last 20 years, beaten only by the dismal returns in 1997 and 1998. The commercial sockeye salmon catch of approximately 1.5 million fish was the sixth smallest harvest in 20-years. The sockeye salmon escapement to the Ugashik River was approximately 620 thousand fish and was 24% over the lower end of the BEG range. Comparable inshore returns over the last four cycles, dating back to 1980, have ranged from 2.9 to 7.5 million fish with an average of 5.1 million. The 2000 run of 2.2 million was 57% below the average for the last four cycle years.

The preseason forecast for the Ugashik District suggested a harvest of 3.4 million sockeye salmon, which would have been the seventh largest harvest in 20 years. Accordingly, commercial fishers were advised that fishing in late June after the 23rd was possible, with good indications of sockeye salmon abundance within the district. Inriver test fishing started on June 24 and district test fishing began on June 25. With the potential for fishing time in late June, there was some interest in the Ugashik District, but only 12 drift vessels decided to start their season on June 24 in the district .

Initial landings occurred in the district on June 12 with only a few sockeye and chinook salmon landed. During the week of June 19, effort and sockeye catches increased, and by 9:00 a.m., June 23, the cumulative district harvest was approximately 84,000 sockeye salmon, and 830 chinook salmon. There were also about 7,200 chum salmon taken. The 2000 sockeye salmon harvest through June 23 was 62% above the recent 10- year (1990 to 1999) average of 52,000 fish.

Inriver test fishing, operating about three miles upstream of Ugashik Village, started on June 24 and provided a daily estimate of sockeye salmon passage into the lower part of the Ugashik River. Over the next three days, inriver test fishing documented about 6,000 fish entering the Ugashik River. However, District test fishing on June 25 revealed indices of over 500 points at two locations, Smoky Point and South Spit, which are in the middle of the district. District test fishing on June 26 also showed a fair abundance of fish at South Spit. With a relatively small fleet size and an expected surplus of 3.4 million fish, an 8-hour period was announced for the drift fleet to start at 5:30 a.m. on June 27. Because set gillnet harvests accounted for less than 1% of the total harvest at this time, set gillnet fishers received a 24-hour period starting at the same time.

The June 27 sockeye salmon harvest was approximately 43,000 fish, 15% of this harvest, or 6,500 fish, being represented by 29 set gillnet deliveries. This raised the proportion of the harvest taken to date by the set gillnet fishers to approximately 5%. The fisheries closed as scheduled and more district test fishing was scheduled for June 28. District test fishing results suggested a dramatic

increase in abundance on the 28th, with indices ranging from 138 to 1487 and with an average of 527. Large indices of 724 and 517 resulted from test fishing well inside the district along the beach between Muddy Point and Pilot Point. The largest index, 1487 points, came from fishing the ebbing tide at Smoky Point. The next commercial fishing period for set gillnet fishers was scheduled to start at 7:00 p.m. June 28 and to last 24 ½ hours. A 10-hour period was scheduled for drift gillnet fishers to start at 7:30 a.m. on the morning of June 29.

The June 28 setnet harvest was approximately 6,800 sockeye salmon, and the reported setnet harvest on the 29th was about 17,000 fish. A hundred drift gillnet fishers caught approximately 208,000 sockeye. The set gillnet proportion of the season's total harvest was approximately 8%, drift gillnet fishers took approximately 92% of the catch. Inriver test fishing indices increased slightly from the previous days and averaged 174 points on June 29, translating into 10,000 fish and bringing the cumulative estimate of fish in the river to approximately 18,000. Both fisheries closed as scheduled and district test fishing was scheduled for June 30.

District test fishing results for June 30 revealed large numbers of fish in the river upstream of the district markers. A high index of 1103 points resulted from a test drift at the mouth of the Dog Salmon River just downstream of Ugashik Village. Inriver test fishing, upstream from Ugashik Village, averaged 747 index points for June 30 and indicated that an additional 43,000 sockeye were safely upstream of the Ugashik Village fishery. The proportion of the harvest taken by setnetters was approximately 8% and 92% for drift gillnet fishers. Setnetters were given a 37-hour period that started at 9:30 a.m. on July 1.

The July 1 harvest was approximately 8,700 sockeye salmon, with 12,000 fish being harvested on July 2. The set gillnet proportion of the harvest increased to about 13 percent. Inriver test fishing indices rose dramatically with an average of 1271 points for July 1 and 1785 points for July 2. The cumulative estimate of fish in the river through July 2 was about 220,000. District test fishing indices were fairly low for July 1 and 2 though indices rose for the northern outer part of the district on July 2. This location was close to the area where large numbers of fish were observed prior to the movement of high numbers of fish into Ugashik River on June 30 and July 1. A 25-hour set gillnet period and a 10-hour drift gillnet period were announced to start at 11:30 a.m. July 3.

The July 3 harvest was approximately 325,000, of which drift gillnet fishers harvested about 97%. The setnet season's cumulative proportion of the harvest dropped to about 8%. This was the third largest harvest on record for the Ugashik District for this date, and well above the recent ten and twenty year averages of 198,000 and 281,000 sockeye salmon. Inriver test fishing still showed substantial movement of fish into the river, revealing a 1380 index average for July 3. The Ugashik tower count of sockeye salmon for July 3 was 58,800, about 8 days ahead of the expected level for this date. It was the largest count for this date on record. Setnetter opportunity was extended until 2:30 p.m., July 6, and drift gillnet fishers were given another 10-hour period scheduled to start at 12:30 p.m. on July 4.

The July 4 harvest was half the catch of July 3rd with a reported 160,000 sockeye salmon taken. There were approximately 198 drift and 49 set gillnet deliveries. This harvest was 12% below the 20-year average for July 4 of 181,000. The total sockeye catch for the district to date was approximately 878,000 fish, which was well above the 20-year average harvest of 211,000 through July 4. Escapement was also well ahead of the expected level, with 68,000 counted by the towers on July 4, bringing the cumulative escapement count to 127,000. Escapement was 9 days ahead of the expected level. The July 4 tower count was also the largest ever recorded for that date. In only three

years in the last twenty, have tower counts in the first few days of the season come remotely close to those found for 2000. Strong early tower counts were also observed for the 1985, 1989 and 1996 seasons, for which the total inshore sockeye runs to the Ugashik system were 7.5, 4.9, and 5.1 million fish, respectively. In addition to the large escapement past the tower, approximately 200,000 sockeye salmon were estimated to reside in the river. Though inriver test fishing indices were declining, and averaging only 178 index points on July 4, the next fishing period for drift gillnet fishers, a 7-hour period, was scheduled for 1:30 p.m. July 5.

The July 5 harvest was approximately 220,000 sockeye salmon and was the fifth largest recorded on this date. The drift fleet had grown to over 200 vessels and drift gillnet fishers took about 97% of the day's catch. The setnet cumulative harvest dropped to 7% of the season's total. Opportunity for set gillnet fishers was extended until further notice, but no opening was scheduled for the drift fleet as inriver test fishing and tower counts were declining. District test fishing was planned for July 6.

District test fishing on July 6 provided indices averaging 172 index points, and inriver test fishing results fell to an average of only 30 index points. Set gillnet harvest was 11,000 sockeye salmon and was considered low, considering the lack of competition from drift gillnet fishers. The tower counts for July 5 and 6 were 40,000 and 11,000, respectively. Set gillnet fishers continued fishing for the next six days until July 12, when the proportion of total harvest attributed to setnet fishing reached about 11%. Both setnet and drift gillnet fishers subsequently waited for abundance to increase. District test fishing occurred daily but never provided indices averaging more than 300 points. From July 7 to July 15, daily inriver test fishing indices ranged from 21 to 440 points with the estimate of fish in the river ranging from 2,000 to 30,000 sockeye salmon. By July 7, it was determined that the inriver indices overestimated 100,000 fish, dropping the cumulative escapement estimate to 180,000 fish. This discovery removed the possibility of drift fishing in the near future. The Ugashik River fish per index (fpi) dropped from 58 to 31 on July 7. Tower counts averaged 8,000 fish per day from July 7 to July 15 with a range of 2,000 to 23,000. The recent 10-year average escapement for this period is 84,000 fish per day. The total tower count through July 15 was 250,000 sockeye salmon.

On July 14, district test fishing results averaged 614 index points with two drifts providing around 3800 points each. On July 15, district test fishing revealed that the fish observed in the outer district were making their way into the river. High indices were observed at the district's inner boundary and just upstream of it. Given the magnitude of the indices and the location of their origin, it was projected that at least the lower end of the sockeye BEG range, 500,000 fish, would be reached, and an 8-hour drift period and a 25-hour set gillnet period were scheduled for July 16.

The July 16 opening was fairly productive with about 330,000 sockeye salmon harvested. There were some water-marked fish in the catch, indicating that fish had been milling in the district for some time. Drift gillnet fishers took approximately 89% of the catch. Set gillnet fishers increased their season's total proportion of the harvest to about 12%. The escapement past the tower totaled 268,000 sockeye salmon through July 16 and both fisheries closed as scheduled. The emergency order (EO) period was extended beyond 9:00 a.m., July 17, to keep the fishery closed.

Tower escapement counts increased on July 17, 18, and 19 and brought the cumulative escapement to 481,000. The minimum escapement level was achieved on July 20 when 33,500 sockeye salmon passed the counters. Inriver test fishing operated through July 20 and district test fishing made its last drifts on July 21. Inriver test fishing indices averaged about 1100 points on each of the last three days indicating that about 40,000 fish per day had entered the river. None of the district test fishing results in the final days were very high and averaged less than 100 points per day. Commercial

fishers were advised that the fishery would probably be closed for an extended period. The set gillnet proportion of the harvest was 12% or 2% above their allocation and set gillnet fishers were advised that they would likely no longer fish as long as the district was under EO.

Because the test fishing projects had been terminated for the season, the Ugashik fleet was advised that the department may use them for brief fishing periods during the week of July 24 to gauge run-strength. By Tuesday, July 25, the tower count reached 594,000 sockeye salmon and a 5-hour period for drift gillnet fishers was scheduled to start at 4:00 p.m.

Catches for the July 25 opening were low with 1,700 sockeye salmon harvested by approximately 32 drift vessels. The fishery closed as scheduled. Tower counts declined before the project stopped counting after July 27. With the Ugashik River run about 97% complete, the small drift fleet was allowed a 41-hour period starting at 6:00 a.m., Thursday, July 27, to allow some harvest opportunity on sockeye salmon destined for the King Salmon and Dog Salmon Rivers. The district would then open with the fall fishing schedule for both gear groups starting at 9:00 a.m. on Monday, July 31.

The final Ugashik River sockeye escapement count was 620,000 fish (Table 9). The sockeye salmon escapement sex ratio was 49% males to 51% females.

At the end of June 1 through July 28 season, setnetters had caught 12.6% and the drift fishers 87.4% of the total harvest. To achieve the established allocations, approximately 40,000 fish in the set gillnet catch would have had to have been harvested by the drift gillnet fleet.

During the EO period, between June 24 and July 17, setnetters fished a total of 322 hours, while drift gillnetters fished a total of 53 hours. Between July 25 and July 28 drift gillnet fishers were allowed 46 more hours of fishing time, but the sockeye runs were virtually complete by then. Only about 3,000 sockeye salmon were caught during the 46 hours of fishing. For setnetters, this was the largest amount of fishing time allowed in 17 years. For drift gillnet fishers, it was the second lowest amount of fishing time allowed in over 20 years.

Sockeye escapement counts to the two major Ugashik River tributaries of the Dog Salmon and King Salmon Rivers were 5,500 and 12,900 sockeye salmon, respectively, bringing the Ugashik drainage sockeye salmon escapement total to 638,000 fish. The peak counts at the counting tower occurred on July 3 through July 5 and July 17 through July 20. Approximately 167,000 and 247,000 sockeye salmon were tallied in those two periods, respectively

The age composition of the 2000 Ugashik District sockeye salmon run was as follows:

<u>Age Group</u>	<u>Catch</u>	<u>Escapement</u>	<u>Total</u>
1.2	7%	17%	10%
2.2	8%	7%	8%
1.3	69%	70%	69%
2.3	15%	6%	12%
Other	<u>1%</u>	<u>0%</u>	<u>1%</u>
Totals	100%	100%	100%

The Ugashik District fishery harvested approximately 71% of the sockeye return to the district in 2000 which was slightly above the 20-year (1980 to 1999) average of 67 percent. Peak catch per hour occurred on July 16 for drift gillnet fishers,

A total of 16 buyers operated in the district during the season, three less than last year. Nearly all of the catch was tendered to other districts for processing. There were no reported instances of a lack of processing capacity during the season.

Nushagak District

The 2000 Nushagak District sockeye salmon inshore return of 8.54 million was 56% above the preseason forecasted return of 5.49 million fish (Table 12). The commercial harvest for the Nushagak District reached 6.4 million sockeye. The 2000 sockeye harvest replaced 1999 as the second largest harvest in the history of the fishery (Table 3). The 2000 Nushagak sockeye harvest was approximately 59% above the preseason projected harvest of 4.05 million.

Following are descriptions of the 2000 commercial fishing season in each portion of the Nushagak District. The 2000 Nushagak District Outlook informed users that with the low chinook salmon forecast a directed commercial chinook salmon fishery was not expected. The management plan for the 2000 season was to have the fleet on short notice late June or early July. This strategy for sockeye salmon fishing was to limit early fishing in the district in an attempt to allow early Nushagak fish to pass through the district into the river; then respond to any movement of sockeye into the Wood River with openings in the WRSWA. Commercial opening in the district would follow as Nushagak River sockeye escapement progresses.

Wood River Special Harvest Area:

On the morning of June 26, the cumulative sockeye escapement past the Wood River counting towers was within a half-day of the 1 million point goal curve while the Nushagak River sockeye escapement was 3 days behind the 235,000 OEG minimum curve. Test fish indices the morning of June 26 from the lower Wood River were exceeding 5,000 index points while at the Bradford Point marker below Kanakanak, the index was above 7,000 index points. The fishery had been placed on short notice effective 7:00 a.m. that morning. The first opening in the WRSWA was announced at 12:00 noon to begin at 6:00 p.m., June 26. The WRSWA was open for 9 days closing at 3:00 p.m. on July 5. Due to the allocation plan, the openings in the WRSWA were mostly 24 hours for set gillnets and shorter periods for drift gillnets. The WRSWA reopened at 12:00 noon on July 13 for 7 days until 12:00 midnight on July 20. Slightly more than sixteen days of fishing were allowed in the WRSWA in 2000. Harvest was over 1.2 million sockeye. Final sockeye escapement past the Wood River counting towers reached 1.3 million fish (Table 3).

Nushagak Section

Commercial periods began in the Nushagak Section on June 28. Both gear types fished actively, but with fishing time separating gear groups to meet the allocation plan percentages. The Nushagak drift sockeye harvest percentage had started out ahead of Nushagak Section set gillnets due to the early openings in the Igushik section. Between July 1 and July 10, daily drift period duration decreased to a low of 4 hours. All fishing stopped on July 10 to achieve some additional escapement in the Wood River. Commercial fishing resumed with a 7-hour period for set gillnets at 10:00 a.m. on July 12. Commercial fishing continued with both gear types on the evening flood after an aerial survey revealed a strong showing of sockeye in the Wood River and increasing passage rates at Wood River tower. Commercial openings continued daily through July 26 when buying operations closed in the Nushagak District. Combined drift and set gillnet sockeye harvest from the Nushagak

Section reached 4.92 million fish. Final sockeye escapement past sonar counters at Portage Creek was 404,000 fish which exceeded the OEG minimum of 235,000 sockeye (Table 4).

Igushik Section:

Based on reports of strong, early subsistence catches along Igushik Beach, and elevated inriver test fish indices on June 18 and 19, the first commercial opening for both gear types in the Igushik Section was allowed on June 21. The Igushik Section then reopened for both gear types on June 26 (12-hour periods for drift, continuous fishing for set gillnets) and was open continuously through June 29. Daily sockeye escapement passing the Igushik River counting towers had declined to a few thousand fish on June 29 with the cumulative escapement leveling out under 100,000 fish or half of the midpoint goal. Commercial fishing closed as scheduled at 11:00 p.m., June 29 to allow additional sockeye salmon escapement into the Igushik River. After a closure spanning two tides (26 hours), an opening for set gillnets was announced to begin at 1:00 a.m. on July 1, after the test fish project in the lower river showed an increase in the daily index. Drift gillnets were included in the Igushik Section openings beginning at 8:00 p.m., July 1. Continuous fishing for both gear types occurred from July 1 through July 26 when buyers left the district. Set gillnet sockeye harvest for the Igushik Section reached 293,000 fish, while the cumulative sockeye escapement for the Igushik River was 413,000 fish (Table 3).

The Nushagak District Commercial Set And Drift Gillnet Sockeye Salmon Allocation Plan adopted by the Alaska Board of Fisheries in November 1997 was in effect for the third year. The plan specifies an allocation of 74% of the sockeye harvest to the drift gillnet gear type, while 26% of the sockeye harvest is allocated to the set gillnet gear type. These percentages are based on 20-year historical averages. The 26% specified for the set gillnets in the Nushagak District is further subdivided geographically, with an allocation of 20% of the harvest for Nushagak Section set gillnets, and 6% of the sockeye harvest to be taken by Igushik Section set gillnets. The Wood River Special Harvest Area fishery received the same allocation percentages as the district, 74% drift and 26% set gillnet. In March of 2000, the calculation period for the Nushagak District sockeye allocation plan was modified to end July 17, instead of September 30 as originally adopted.

Nushagak District Sockeye Allocation Plan Performance					
Year	Nushagak Drift	Nushagak Section Set	Igushik Section Set	Wood River Drift	Wood River Set
Allocation %	74	20	6	74	26
1998	72	23.5	4.5	76	24
1999	69.5	24	6.5	78	22
2000	79	15	6	68	32
3 yr. Average	73.5	20.8	5.7	74	26

There are several proposals of importance in the Nushagak District. Other than the allocation plan, there are two issues of concern that are the focal point of most proposals and management actions in the Nushagak District. These issues are inextricably linked, and in fact are contained in the same management plan. The two issues are the Wood River Special Harvest Area (WRSHA) and the OEG minimum goal for the Nushagak River.

The Wood River Special Harvest Area Management Plan has been modified each year since it was adopted. Some of the modifications were brought to the Board of Fish by stakeholders, and some were proposed by the Department. The Department feels that the WRSHA now functions as the tool

that the Board, the Department, and the stakeholders intended it to be. Two factors have contributed to this improved performance of the WRSHA; (1) The concurrent opening language was removed in March of 1999, allowing the Wood River to be opened independent of the Nushagak District; (2) Opening times are adjusted relative to tide height to increase the efficiency of the gear. This improved performance was noticed this season when the number of days the WRSHA was open decreased from 20+ days (1998, 1999) down to slightly over 16 days; and unlike previous years, these days were not consecutive. The WRSHA during the 2000 season was open 9 days, closed for a week, then reopened for 7 days.

In March of 1999, the Board of Fish adopted the OEG minimum goal of 235,000 sockeye in the Nushagak River as part of the Wood River Special Harvest Area Management Plan.. This OEG was adopted to be in effect for the 1999 and 2000 seasons, and then to “sunset” January, 2001. The basis for setting this OEG minimum for the Nushagak River below the low end of the BEG range (340,000 – 760,000 sockeye) was stated as “economic relief” to the local permit holders after the relatively low harvests occurring in 1997 and 1998. The Nushagak District sockeye harvest has increased to near record levels in 1999 and 2000. The Department did not support the setting of an OEG minimum goal for the Nushagak River lower than the BEG range in 1999, and does not support reinstatement of that OEG as proposed. With the improved performance and efficiency of the WRSHA allowing harvest of surplus Wood River sockeye, the Department feels we now have the ability to manage for the Biological Escapement Goal (BEG) ranges in both the Wood and the Nushagak River systems. The “Yield Analysis” model report, along with the “BEG Review” report presented to the Board by Department staff will provide additional data and analysis for the Board to review on this issue.

Togiak District

The Togiak District 2000 inshore sockeye salmon return of 1,184,000 was 71% above the preseason forecast of 692,000 (Table 12). Sockeye harvest for the district totaled 794,000 fish, which is second highest to the 1988 record catch of 822,000. Escapement into Togiak Lake was 312,000 sockeye salmon, which is 55% over the upper end of the BEG range (Table 12). Total sockeye escapement in the Togiak River drainage for 2000 was 352,000 fish. An additional 38,000 sockeye were estimated in the Kulukak River and other streams in the Togiak District.

Commercial fishing began on June 19 in the Togiak District. Weekly fishing periods were reduced to 48-hour openings during the last two weeks of June for the conservation of chinook salmon. Throughout the 2000 season the regular weekly schedule was reduced in the Kulukak Section by 24 hours. This reduction in the weekly fishing schedule is a management response to increased effort to the Kulukak Section and concern for the much smaller sockeye run in the Kulukak River. All other sections were open for at least the regular weekly fishing schedule after July 1. Commercial catches were not reported for the Cape Peirce, Osviak or Matogak Sections during the 2000 season.

The sockeye salmon fishery is managed in accordance with the Togiak District Salmon Management Plan (TDSMP). The TDSMP calls for an increased weekly schedule of five and one half days per week (132 hours) between July 1 and July 16 in the Togiak River Section; four days per week is the normal schedule. Sockeye harvest and escapement through the first week of July were above average, but there was still some concern about the run being early and weak. The weekly fishing period in the Togiak River Section was allowed to close as scheduled on July 8. Catches in the week of July 10 continued to be above average and escapement counts at the Togiak River tower were

well above the BEG curve. The regularly scheduled fishing period in the Togiak River Section was extended on July 14 continuing fishing until the next opening. A record 40,000 sockeye passed the towers on July 19, pushing the escapement over the upper end of the BEG range.

After achieving the midpoint goal for the Togiak River, fishing was extended in the Togiak River Section for the maximum allowable period of 48 hours in subsequent weeks. The re-registration restrictions were waived on July 21 to allow additional drift and set gillnet effort to enter the Togiak District. This was three days early and was the earliest allowable under the TDSMP. Catch rates dropped quickly at the end of July and several buyers left the area. Fishing in the district closed on August 16, after all processors ceased buying. Operation of the counting towers, which began on July 4, ceased on August 1 after three consecutive days of counts below 1% of the total escapement. The final tower count on the Togiak River system was 312,000 sockeye salmon, which is well above the upper management range of 200,000 (Table 9).

There are two proposals specific to the Togiak District commercial fishery. Proposal 64 seeks to lower the biological escapement goal and establish an optimum escapement goal. The BEG is set by the ADF&G staff and is based on historical data and maximum sustainable yield.

Proposal 68 deals with the regulations pertaining to the placement of set gillnets in specific areas of the Togiak District. Some sections of the beach in the Togiak District, because of beach morphology, make setnet sites difficult and dangerous. Togiak setnet permit holders in these areas fish illegally under current regulations. This proposal would allow nets to be set in a safe and legal manner.

CHINOOK SALMON

The Bristol Bay total commercial catch of 23,000 chinook salmon was the lowest in the past 20 years (Table 14). Approximately 12,000 chinook salmon or slightly more than 50% of Bristol Bay harvest was taken in the Nushagak District. There were no directed chinook commercial fishing periods. Chinook salmon were taken incidentally during directed sockeye commercial periods.

The commercial chinook salmon fishery in the Nushagak District had only one 6-hour opening allowed in the last two seasons. The 2000 preseason forecast for chinook salmon returning to the Nushagak River was 101,000 fish (90% age 5 and older), which was 35% below the most recent five-year average for actual returns (156,000 chinook salmon). Total run has declined from a high in 1998 of 226,000 fish to a low of 78,000 fish in 1999.

Nushagak River chinook salmon are managed in accordance with the Nushagak/Mulchatna Chinook Salmon Management Plan. This plan directs the commercial fishery to be managed for an inriver goal of 75,000 chinook salmon, while the sport fishery is to be managed for a guideline harvest of 5,000 chinook salmon if the projected inriver return is between 65 - 75 thousand fish. Based on the forecast for 2000 and the inriver goal, 26,000 chinook salmon were projected to be available for harvest. This surplus was expected to be taken in the subsistence fishery, with approximately 8 - 10 thousand chinook salmon normally taken on Dillingham beaches, and incidentally during the sockeye salmon fishery, where another 10 - 15 thousand chinook salmon are usually taken. No directed commercial chinook salmon fishery was expected and none occurred. Twelve thousand chinook salmon were commercially harvested during the

2000 sockeye salmon fishery. This was only 18% of the recent 5-year average harvest of 67,000 fish. Nushagak River chinook salmon escapement was estimated to be 56,372 fish using sonar at Portage Creek. Total run for Nushagak River chinook in 2000 was estimated at approximately 75-80 thousand fish, which was similar to 1999, but approximately half of the recent 5-year average of 156,000 chinook salmon.

The 2001 chinook salmon forecast for the Nushagak River is 118,000 fish; a slight increase from 2000, but probably not sufficient surplus to support a directed chinook salmon fishery. Several proposals before the Board are focused on modifying the Nushagak/Mulchatna Chinook Salmon Management Plan; although the language in the plan regulating the commercial fishery is clear, language covering regulatory action in the sport fishery seems to have more ambiguity and will need review.

The 2000 chinook salmon harvest in the Togiak District was 8,000 fish (Table 6). These fish were taken incidentally to the directed sockeye fishery. Department aerial surveys indicated the 10,000 chinook salmon goal was achieved in the Togiak River

The Egegik District chinook salmon harvest totaled approximately 1,123 fish, or 55% below the 1980 to 1999 (20-year) average of 2,477 chinook salmon. Aerial surveys were conducted in the Egegik and King Salmon River systems to provide escapement indices for chinook salmon. The resulting counts totaled 560 chinook salmon. Chinook escapement indices were below average in all but one index stream. The chinook salmon index was 51% below the 20-year average.

The commercial chinook harvest in the Naknek/Kvichak District was below average with approximately 900 fish harvested (Table 6). Chinook salmon escapement indexes were also below average in 2000.

The Ugashik District harvest of 972 chinook salmon was 70% below the 20-year (1980 to 1999) average of 3,230 fish. Ugashik chinook salmon escapement indices were also below average. An aerial survey count of 1,324 chinook salmon was 71% below the 1980 to 1999 average.

The 2000 chinook salmon harvest from the Togiak District was approximately 8,000 fish. This was about 23% below the district's recent 10-year average of 10,300 chinook salmon. The Togiak River chinook salmon escapement was approximately 10,000 fish.

CHUM SALMON

The total Bristol Bay commercial catch of 343,000 chum salmon was 70% below the 20-year average of 1.1 million (Table 14). It was the smallest chum salmon catch since 1997 and the tenth consecutive year with a harvest below one million fish.

The Egegik District chum harvest of approximately 38,000 fish was 63% below the recent 20-year average of 103,000. The Egegik District chum salmon count was 86% below average. The Ugashik chum salmon harvest of approximately 38,000 fish was about half the average harvest.

Ugashik District chum salmon escapement indices were half the average with a cumulative drainage count of 15,800 fish.

The Togiak District recorded the largest harvest of 141,000 chums. Compared to the recent 20-year average chum salmon catches by district, the 2000 chum harvests in all districts were substantially below average.

Escapements were average to below average in all of the districts. Chum escapements to the Togiak, Naknek/Kvichak, Egegik and Ugashik Districts are estimated with aerial surveys, whereas the Nushagak River chum escapement is estimated with sonar.

PINK SALMON

Bristol Bay pink salmon return in greater abundance during even-numbered years. In 2000 the total Bristol Bay commercial catch of 57,000 pink salmon was 94% below the 20-year average of 1.0 million (Table 14). The Nushagak District is historically where the majority of the pink salmon are harvested. In 2000 gear restrictions were in place for the conservation of pink salmon. During the directed coho salmon season 111,000 pink salmon were harvested incidentally. In the Naknek/Kvichak District 19,000 pink salmon were harvested and in the Egegik District less than 100 fish. Pink salmon harvest in the Ugashik District was reported at only two fish.

COHO SALMON

In 2000, the total Bristol Bay commercial catch of coho salmon was 127,000 fish, which is above the ten-year average but less than the 20-year average (Table 14). Nearly 85% of the coho harvested in Bristol Bay came from the Nushagak District.

The 2000 coho salmon run to the Nushagak River was relatively strong. The majority of the coho salmon return in 2000 was produced from 182,000 spawners in 1996. The parent-year spawning escapement was double the biological escapement goal of 90,000 fish. However, production from recent years has averaged around 1 return-per-spawner. With this return-per-spawner ratio as a minimum, there was expected to be at least 60 – 70 thousand coho salmon available for a directed coho salmon fishery.

During the 2000 season, the last buyer left the Nushagak District on July 26 and then commercial fishing closed for several days. The Department was notified that a processing company with a market for coho salmon was returning to the Nushagak District beginning July 31. With coho salmon escapement in the Nushagak River staying ahead of the 100,000 fish inriver goal curve, commercial fishing was reopened for both gear types in the entire Nushagak District from July 31 through 12:00 noon, August 21. Coho salmon harvest for the 2000 season exceeded 109,000 fish (Table 6). The cumulative escapement for coho past the Portage Creek sonar was estimated at 173,000 or 73% above the inriver goal of 100,000 coho salmon.

The Egegik District coho salmon harvest of 13,300 fish was well below the recent 20-year average of 39,000 fish. However, interest in coho fishing was minimal this season with less than ten drift vessels and 12 set gillnetters fishing in August.

The Ugashik District coho salmon harvest of 1,300 fish was well below the 20-year average of 27,300 fish. There was very little commercial effort on Ugashik coho salmon this season with no landings reported after August 15.

Aerial surveys were conducted in the Egegik District and Ugashik District coho salmon streams. A survey flown of the Egegik system resulted in an index of 4,870 coho salmon. The coho salmon index represents the total count for several tributary streams of Becharof Lake and it was 15% above the 1997 to 1999 average count of 4,220.

The coho salmon escapement index count of 4,400 fish for the Upper and Lower Ugashik Lakes was 83% above the average count for 1999, 1998 and 1997 of 2,400 coho salmon.

Weather prevented coho salmon surveys in other districts.

2001 FORECAST

SOCKEYE SALMON

The forecast for the sockeye salmon return to Bristol Bay in 2001 is the sum of individual predictions for nine river systems (Kvichak, Branch, Naknek, Egegik, Ugashik, Wood, Igushik, Nushagak-Mulchatna, and Togiak) and four age classes (ages 1.2, 1.3, 2.2, and 2.3)(. Table 13)

A total of 24.3 million sockeye salmon are expected to return to Bristol Bay in 2001. This prediction is 40 percent lower than the previous 10-year mean (40.8 million) and 37 percent lower than the previous 20-year mean (38.6 million) returns. Runs are expected to exceed spawning escapement goals for all systems. A return of 24.3 million sockeye salmon can be expected to produce a total harvest of 17.0 million fish if all escapement goals are met.

The 2001 inshore harvest is expected to be 15.6 million sockeye salmon. A harvest of this size would be 43% smaller than the previous 10-year mean harvest of 27.6 million (range is 10.0 million to 44.3 million) and 38% less than the previous 20-year mean of 25.5 million (range is 10.0 million to 44.3 million). An additional 1.4 million Bristol Bay sockeye salmon can be harvested during June in the Shumagin Islands and South Unimak fisheries under the current Alaska Board of Fisheries management plan (8.3% of the total projected Bristol Bay sockeye harvest of 17.0 million).

Data from the 1978-2000 return years (1972-1997 brood years) were used to forecast the 2001 sockeye salmon return to Bristol Bay. While the number of returning adults produced from each spawner showed a dramatic increase across all 9 stocks beginning with the 1978 return year (\geq 1972 brood year), poor sockeye salmon returns in 1996 (4 year-old fish only), 1997, and 1998 suggest that the Bay might be entering a period of lower productivity, more similar to the pre-1978 return year era. However, fish from the 1996-1998 return years reared in the ocean when temperatures were above average, whereas cooler-than-average ocean temperatures characterized the pre-1978 return year period. In addition, there has been no consistent statewide signal in salmon productivity despite recent anomalous returns. Recent ocean temperature data and the returns to Bristol Bay in 1999 and 2000 suggest that returns in 2001 may be more characteristic of the period 1977-1995.

The greatest source of uncertainty in the 2001 forecast is in predicting the returns of 2-ocean (ages 1.2 and 2.2) fish. This is due to an absence of jacks (one ocean fish, the siblings of the 1.2s and 2.2s returning in 2001) in the 2000 return. Without jacks, it is impossible to use a sibling model for predicting returns of 2-ocean fish. Therefore, we used typically less reliable models that incorporate escapement or smolt data.

Forecasting the return of age-1.3 fish to the Kvichak is also problematic. The exceptionally low number of age-1.2s returning in 2000 was outside the bounds of recent historical data, essentially invalidating the sibling model. An alternative model used escapement and return data to forecast 1.0

million age-1.3 fish to the Kvichak, nearly twice that estimated from the out of range sibling model. A similar situation occurred in the prediction of age-2.3 fish for Ugashik where the low number of age-2.2 fish returning in 2000 invalidated the sibling model. We chose a model incorporating smolt data with a resultant forecast of 0.3 million age-2.2 fish.

The greatest uncertainty is with the forecasted total returns for Kvichak (2.9 million) and Ugashik (2.2 million). We do not know why Bristol Bay sockeye salmon returns in 1996-1998 were poor and whether decreased production will persist in the near future. The 1999 and 2000 Bay-wide returns (41 and 30 million) suggest that the poor returns in 1996-1998 were anomalies. However, we still have insufficient evidence to conclude that the 1977-95 production will continue. We are actively working with scientists inside and outside the department to develop better techniques for forecasting sockeye salmon returns to Bristol Bay.

CHINOOK SALMON

The 2001 Nushagak District chinook salmon forecast is for a total run of 118,000 chinook. The Nushagak inriver run goal is 75,000 chinook salmon, which provides for a biological escapement goal of 65,000 spawners and an additional harvest of 10,000 chinook salmon by upriver subsistence and sport fisheries.

Age composition of the forecasted run is <1% (0.4 thousand) age-1.1, 16% (19 thousand) age-1.2, 40% (47 thousand) age-1.3, 41% (49 thousand) age-1.4, and 2% (2.5 thousand) age-1.5. The 2001 forecasted run of 118 thousand chinook salmon is 31% less than the previous 20-year mean run of 172 thousand and 23% less than the most recent 10-year mean run of 154 thousand. The projected harvest of 43 thousand chinook salmon is 50% less than the previous 20-year mean harvest of 86 thousand and 44% less than the most recent 10-year mean harvest of 77 thousand. The 2001 forecast represents the 5th smallest run and harvest in the previous 20 years and 3rd smallest run and harvest in the last 10 years.

Poor production from recent brood years is expected to continue for 2001 returns. The 2000 return and harvest were the smallest since at least 1979 (prior to which, only incomplete data are available). Chinook spawners from brood years 1994-1996 yielded one-third to one-half as many age-1.2, -1.3, -1.4 fish in 2000 as were produced on average during the previous 10-years. Poor recruitment from these brood years suggests relatively low returns of age-1.3, -1.4 and -1.5 fish (siblings of the fish that returned in 2000) in 2001.

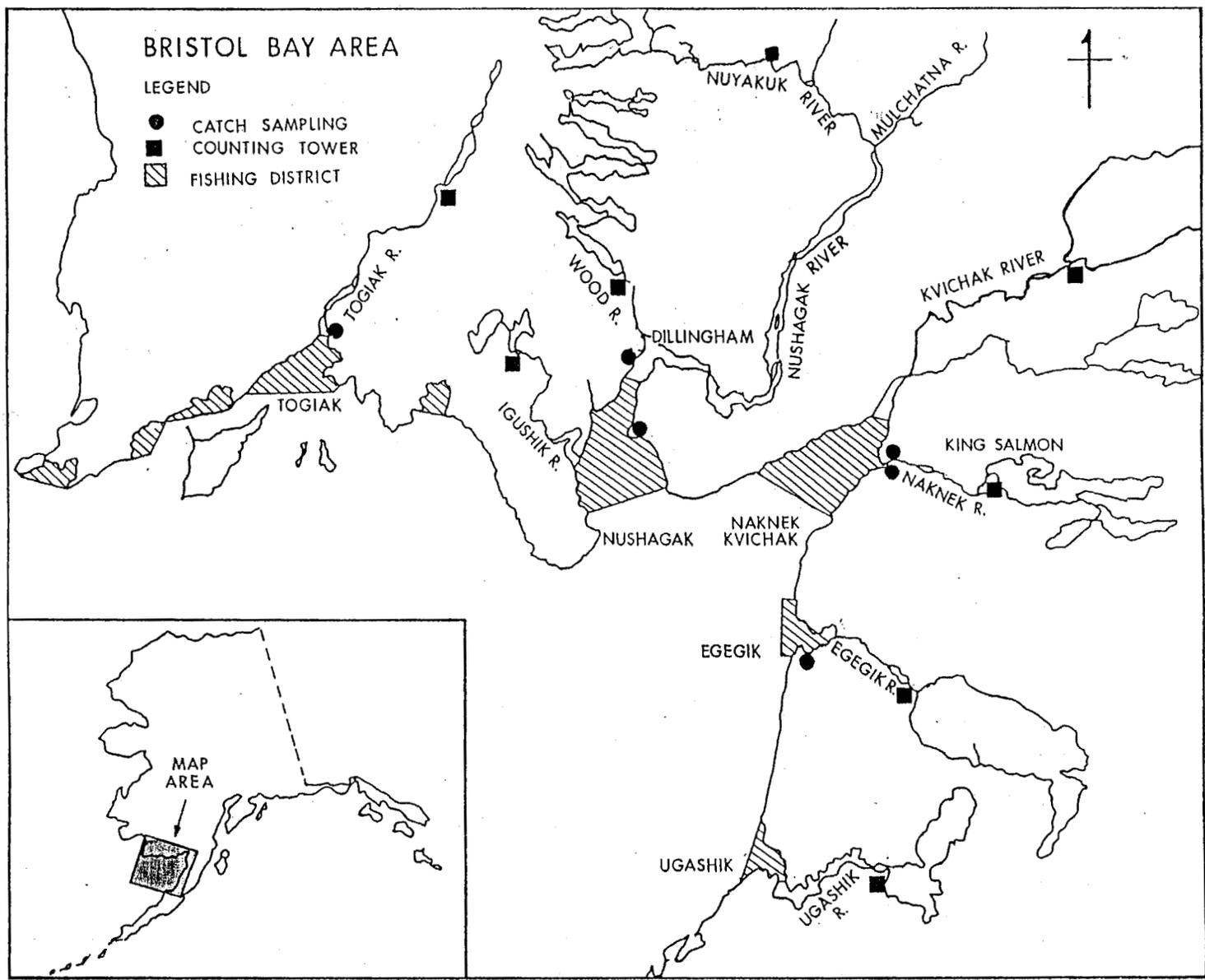


Figure 1. Bristol Bay major river systems and commercial fishing districts.

Table 1. Inshore commercial harvest and escapement of sockeye salmon, by river system, in thousands of fish, Bristol Bay, 1998.

District and River system	Commercial Harvest	Escapement ^a	Total Inshore Return
NAKNEK-KVICHAK DISTRICT:			
Kvichak River	1,069	2,296	3,365
Branch River	145	252	397
Naknek River	1,381	1,202	2,584
Total	2,595	3,750	6,346
EGEGIK DISTRICT	3,529	1,111	4,640
UGASHIK DISTRICT	730	925	1,655
NUSHAGAK DISTRICT:			
Wood River	2,145	1,756	3,901
Igushik River	355	216	571
Nushagak River	490	459	949
Total	2,991	2,431	5,421
TOGIAC DISTRICT			
Togiak River	113	175	
Other	77	40	
Total	190	215	405
TOTAL BRISTOL BAY	10,036	8,432	18,467

^a Tower counts plus aerial surveys. Egegik escapement includes King Salmon River drainage and Shosky Creek; Ugashik escapement includes King Salmon and Dog Salmon Rivers; Togiak catch is Togiak River Section only and Togiak escapement includes the tower counts, and lower river and tributaries aerial survey estimate.

Table 2. Inshore commercial harvest and escapement of sockeye salmon, by river system, in thousands of fish, Bristol Bay, 1999.^a

District and River system	Commercial Harvest	Escapement ^b	Total Inshore Return
NAKNEK-KVICHAK DISTRICT:			
Kvichak River	6,392	6,197	12,589
Branch River	553	464	1,017
Naknek River	1,997	1,625	3,622
Total	8,942	8,286	17,228
EGEGIK DISTRICT	7,423	1,728	9,151
UGASHIK DISTRICT	2,270	1,658	3,927
NUSHAGAK DISTRICT:			
Wood River	4,411	1,512	5,924
Igushik River	1,181	437	1,618
Nushagak River	671	312	983
Total	6,263	2,261	8,525
TOGIAC DISTRICT			
Togiak River	345	196	580
Other	39		
TOTAL BRISTOL BAY	25,282	14,129	39,411

^a Preliminary data.

^b Tower counts plus aerial surveys. Egegik escapement includes King Salmon River drainage and Shosky Creek; Ugashik escapement includes King Salmon and Dog Salmon Rivers; Togiak catch is Togiak River Section only and Togiak escapement includes the tower counts, and lower river and tributaries aerial survey estimate.

Table 3. Inshore commercial harvest and escapement of sockeye salmon, by river system, in thousands of fish, Bristol Bay, 2000.^a

District and River system	Commercial Harvest	Escapement ^b	Total Inshore Return
NAKNEK-KVICHAK DISTRICT:			
Kvichak River	1,027	1,828	2,855
Branch River	282	451	733
Naknek River	3,373	1,375	4,748
Total	4,682	3,654	8,336
EGEGIK DISTRICT	7,104	1,032	8,136
UGASHIK DISTRICT	1,532	638	2,170
NUSHAGAK DISTRICT:			
Wood River	3,973	1,300	5,273
Igushik River	1,392	413	1,805
Nushagak River	1,064	404	1,467
Total	6,429	2,117	8,545
TOGIK DISTRICT			
Togiak River ^c	727	352	
Other	67	38	
Total	794	390	1,184
TOTAL BRISTOL BAY	20,541	7,831	28,371

^a Preliminary data.

^b Tower counts plus aerial surveys. Ugashik escapement includes King Salmon and Dog Salmon Rivers; Togiak escapement includes the tower counts and lower tributaries aerial survey estimate.

^c Togiak section catch only

Table 4. Inshore commercial salmon harvest by district and species, in thousands of fish, Bristol Bay, 1998.

District	Sockeye	Chinook	Chum	Pink	Coho	Total
Naknek-Kvichak	2,595	2	82	11	2	2,692
Egegik	3,529	0.8	29	0.7	30	3,590
Ugashik	730	0.3	8	0.3	13	752
Nushagak	2,991	117	209	7	23	3,347
Togiak ^a	113	14	67	6	59	
Other	77					336
Total	10,036	134	395	25	127	10,716

^a Catch is Togiak Section only.

Table 5. Inshore commercial salmon harvest by district and species, in thousands of fish, Bristol Bay, 1999.^a

District	Sockeye	Chinook	Chum	Pink ^b	Coho	Total
Naknek-Kvichak	8,942	1	273		0.3	9,216
Egegik	7,423	0.6	75		12	7,511
Ugashik	2,270	2	71		2	2,345
Nushagak	6,263	11	120		3	6,397
Togiak ^c	345	11	109		3	507
Other	39					
Total	25,282	26	648	0	20	25,976

^a Preliminary data.

^b Pink salmon return to Bristol Bay in even-years.

^c Catch Togiak section only.

Table 6. Inshore commercial salmon harvest by district and species, in thousands of fish, Bristol Bay, 2000.^a

District	Sockeye	Chinook	Chum	Pink	Coho	Total
Naknek-Kvichak	4,682	0.9	53	19	1	4,756
Egegik	7,104	1	38	0	12	7,155
Ugashik	1,532	1	38	0	1	1,572
Nushagak	6,429	12	111	37	109	6,698
Togiak ^b	727	8	141	1	3	947
Other	67					
Total	20,541	23	381	57	126	21,128

^a Preliminary data.

^b Catch is Togiak section only

Table 7. Salmon escapements in thousands of fish, by river system and species, compared with escapement goals and ranges, Bristol Bay, 1998.

Species / River System	Actual	Midpoint of Range	Management Range	Percent Deviation ^a
Sockeye Salmon				
Kvichak	2,296	2,000	2,000 - 10,000	15%
Branch	252	185	170 - 200	36%
Naknek	1,202	1,100	800 - 1,400	9%
Egegik	1,111	1,100	800 - 1,200	1%
Ugashik	891	850	500 - 1200	5%
Wood	1,756	1,000	700 - 1,200	76%
Igushik	216	200	150 - 250	8%
Nushagak	459	550	340 - 760	-17%
Togiak	154	150	100 - 200	3%
Total	8,337	7,135	10,560 - 16,100	17%
Chinook Salmon				
Nushagak				
Total	117	75	50 - 100	56%
Chum Salmon				
Nushagak	300			
Togiak	31			
Total	331			
Coho Salmon				
Nushagak	105	100		
Togiak	8	50		-84%
Kulukak	4	15		-73%
Total	117	165		80%

^a Percent deviation = (actual minus goal) \ goal X 100. Negative numbers indicate the percent below the goal.

Table 8. Salmon escapements in thousands of fish, by river system and species, compared with escapement goals and ranges, Bristol Bay, 1999.

Species / River System	Actual	Midpoint of Range	Management Range	Percent Deviation ^a
Sockeye Salmon				
Kvichak	6,197	6,000	6,000 - 10,000	3%
Branch	464	185	170 - 200	151%
Naknek	1,625	1,100	800 - 1,400	48%
Egegik	1,728	1,100	800 - 1,200	57%
Ugashik	1,652	850	500 - 1,200	94%
Wood	1,512	1,000	700 - 1,200	51%
Igushik	446	200	150 - 250	123%
Nushagak	312	550	340 - 760	-43%
		235	OEG Minimum	72%
Togiak	156	150	100 - 200	4%
Total	14,092	11,370	10,660 - 16,400	24%
Chinook Salmon				
Nushagak				
Total	62	75	50 - 100	-17%
Chum Salmon				
Nushagak	242			
Togiak	23			
Total	265			
Coho Salmon				
Nushagak	35	100		
Togiak	1.3	50		-97%
Kulukak	0.4	15		-97%
Total	36.7	165		-44%

^a Percent deviation = (actual minus goal) \ goal X 100. Negative numbers indicate the percent below the goal.

Table 9. Salmon escapements in thousands of fish, by river system and species, compared with escapement goals and ranges, Bristol Bay, 2000.

Species / River System	Actual	Midpoint of Range	Management Range	Percent Deviation ^a
Sockeye Salmon				
Kvichak	1,828	6,000	2,000 - 10,000	-70%
Branch	451	185	170 - 200	144%
Naknek	1,375	1,100	800 - 1,400	25%
Egegik	1,032	1,100	800 - 1,200	-6%
Ugashik	620	850	500 - 1,200	-27%
Wood	1,300	1,000	700 - 1,200	30%
Igushik	413	200	150 - 250	107%
Nushagak	404	550	340 - 760	-27%
		235	OEG Minimum	72%
Togiak	312	150	100 - 200	108%
Total	7,735	11,135	5,560 - 16,410	-31%
Chinook Salmon				
Nushagak Total	56	75	50 - 100	-25%
Chum Salmon				
Nushagak	141			
Togiak	N/A			
Total	141			
Coho Salmon				
Nushagak	173	100		73%
Total	173	100		

^a Percent deviation = (actual minus goal) / goal X 100. Negative numbers indicate the percent below the goal.

Table 10. Sockeye salmon preseason forecast compared to total inshore run, by river system, in thousands of fish, Bristol Bay, 1998. ^a

District and River system	Preseason Forecast	Actual Inshore Run ^b	Percent Forecast Error ^c
NAKNEK-KVICHAK DISTRICT:			
Kvichak River	8,880	3,365	-62%
Branch River	350	397	13%
Naknek River	3,407	2,584	-24%
Total	12,637	6,346	-50%
EGEGIK DISTRICT	8,620	4,640	-46%
UGASHIK DISTRICT	3,235	1,655	-49%
NUSHAGAK DISTRICT:			
Wood River	3,056	3,901	28%
Igushik River	1,055	571	-46%
Nushagak River	1,175	949	-19%
Total	5,286	5,421	3%
TOGIAC DISTRICT			
Togiak River	466	288	-38%
Other		117	
TOTAL BRISTOL BAY	29,778	18,350 ^d	-38%

^a The inshore run data does not include the 1998 False Pass/Alaska Peninsula forecast or actual harvest of Bristol Bay sockeye salmon.

^b District catch, tower counts plus aerial surveys. Egegik escapement includes King Salmon River drainage and Shosky Creek; Ugashik escapement includes King Salmon and Dog Salmon Rivers; Togiak includes the tower counts plus aerial survey estimate of lower river and tributaries.

^c Percent Error = (Actual Inshore Run minus Preseason Forecast) \ Preseason Forecast X 100.

^d Total run does not include other smaller systems in the Togiak District.

Table 11. Sockeye salmon preseason forecast compared to total inshore run, by river system, in thousands of fish, Bristol Bay, 1999. ^a

District and River system	Preseason Forecast	Actual Inshore Run ^b	Percent Forecast Error ^c
NAKNEK-KVICHAK DISTRICT:			
Kvichak River	11,500	12,589	9%
Branch River	400	1,017	154%
Naknek River	2,800	3,622	29%
Total	14,700	17,228	17%
EGEGIK DISTRICT	3,600	9,151	154%
UGASHIK DISTRICT	1,400	3,927	181%
NUSHAGAK DISTRICT:			
Wood River	3,300	5,924	80%
Igushik River	700	1,618	131%
Nushagak River	900	983	9%
Total	4,900	8,525	74%
TOGIK DISTRICT			
Togiak River	300	541	80%
Other		39	
TOTAL BRISTOL BAY	24,900	39,372 ^d	58%

^a The inshore run data does not include the 1998 False Pass/Alaska Peninsula forecast or actual harvest of Bristol Bay sockeye salmon.

^b District catch, tower counts plus aerial surveys. Egegik escapement includes King Salmon River drainage and Shosky Creek; Ugashik escapement includes King Salmon and Dog Salmon Rivers; Togiak escapement includes the tower counts plus aerial survey estimate of lower river and tributaries.

^c Percent Error = (Actual Inshore Run minus Preseason Forecast) \ Preseason Forecast X 100.

^d Total run does not include other smaller systems in the Togiak District

Table 12. Sockeye salmon preseason forecast compared to total inshore run, by river system, in thousands of fish, Bristol Bay, 2000. ^a

District and River system	Preseason Forecast	Actual Inshore Run ^b	Percent Forecast Error ^c
NAKNEK-KVICHAK DISTRICT:			
Kvichak River	9,454	2,855	-70%
Branch River	422	733	74%
Naknek River	5,158	4,748	-8%
Total	15,034	8,336	-45%
EGEGIK DISTRICT	7,929	8,136	3%
UGASHIK DISTRICT	4,270	2,170	-49%
NUSHAGAK DISTRICT:			
Wood River	3,231	5,273	63%
Igushik River	1,515	1,805	19%
Nushagak River	744	1,467	97%
Total	5,490	8,545	56%
TOGIK DISTRICT			
Togiak River	692	1,079	-85%
Other		105	
TOTAL BRISTOL BAY	33,416	28,266 ^d	-15%

^a The inshore run data does not include the 2000 False Pass/Alaska Peninsula forecast or actual harvest of Bristol Bay sockeye salmon.

^b District catch, tower counts plus aerial surveys. Egegik escapement includes King Salmon River drainage and Shosky Creek; Ugashik escapement includes King Salmon and Dog Salmon Rivers; Togiak escapement includes the tower counts and lower river and tributaries aerial survey estimate.

^c Percent Error = (Actual Inshore Run minus Preseason Forecast) \ Preseason Forecast X 100.

^d Total run does not include other smaller systems in the Togiak District.

Table 13. Sockeye salmon preseason forecast of total run, escapement goals and expected harvest of major age classes by river system, in thousands of fish, returning to Bristol Bay, 2001.

District and River system	Thousands of Sockeye Salmon Forecasted Production by Age Class				Total	Spawning Goal	Total Peninsula Harvest	Inshore Harvest	
	1.2	2.2	1.3	2.3					
NAKNEK-KVICHAK DISTRICT:									
Kvichak River	975	788	1,003	119	2,885	2,000	885	73	812
Branch River	270	72	127	29	498	215	283	23	260
Naknek River	429	620	1,196	537	2,782	1,100	1,682	140	1,542
Total	1,674	1,480	2,326	685	6,165	3,315	2,850	237	2,614
EGEGIK DISTRICT	663	3,084	990	2,883	7,620	1,100	6,520	541	5,979
UGASHIK DISTRICT	480	871	586	294	2,231	850	1,381	115	1,266
NUSHAGAK DISTRICT:									
Wood River	1,610	1,982	1,478	69	5,139	1,100	4,039	335	3,704
Igushik River	155	39	995	49	1,238	225	1,013	84	929
Nushagak River	98	6	1,322	6	1,432	550	882	73	809
Total	1,863	2,027	3,795	124	7,809	1,875	5,934	492	5,442
TOGIAK DISTRICT	112	25	296	33	466	150	316	26	290
TOTAL BRISTOL BAY	4,792	7,487	7,993	4,019	24,291	7,290	17,001	1,411	15,591

Table 14. Historical commercial salmon harvest by species, in thousands of fish, Bristol Bay, 1980-2000.

Year	Sockeye	Chinook	Chum	Pink	Coho	Total
1980	23,762	96	1,301	2,203	348	27,710
81	25,603	237	1,505	7	314	27,666
82	15,104	253	921	1,492	620	18,390
83	37,372	199	1,632	0	128	39,331
84	24,710	102	2,023	3,366	575	30,776
1985	23,703	120	1,068	0	163	25,054
86	15,776	94	1,227	401	182	17,680
87	16,069	75	1,529	0	65	17,738
88	13,990	45	1,469	955	202	16,661
89	28,735	40	1,258	0	240	30,273
1990	33,523	34	1,058	497	103	35,215
91	25,821	30	1,290	0	118	27,259
92	31,880	69	921	500	192	33,562
93	40,462	86	838	0	73	41,459
94	35,224	141	895	90	175	36,525
1995	44,266	99	979	0	50	45,394
96	29,559	86	872	38	125	30,680
97	12,159	76	307	0	50	12,592
98	10,036	135	396	25	126	10,718
99 ^a	25,282	26	648	0	20	25,976
1980-99 Ave.	25,652	102	1,107	957 ^b	193	27,533
1980-89 Ave.	22,482	126	1,393	7,653 ^b	284	25,128
1990-99 Ave.	28,821	78	820	230 ^b	103	29,938
2000 ^a	20,541	23	381	57	126	21,128

^a Preliminary totals.

^b Only even-numbered years used in calculation.

Table 15. Estimated exvessel value of the commercial salmon catch by species, in thousands of dollars, Bristol Bay, 1980-2000.^a

Year	Sockeye	Chinook	Chum	Pink	Coho	Total
1980	\$76,118	\$1,881	\$2,738	\$2,173	\$1,392	\$84,302
1981	\$120,907	\$5,557	\$4,106		\$1,461	\$132,031
1982	\$68,122	\$6,088	\$2,145	\$1,111	\$3,199	\$80,665
1983	\$129,900	\$2,853	\$3,216		\$337	\$136,306
1984	\$94,681	\$2,158	\$4,040	\$2,414	\$3,072	\$106,365
1985	\$115,402	\$2,188	\$2,218		\$923	\$120,731
1986	\$135,689	\$1,819	\$2,522	\$207	\$826	\$141,063
1987	\$130,847	\$1,912	\$2,594		\$314	\$135,667
1988	\$168,586	\$891	\$4,418	\$1,171	\$1,792	\$176,858
1989	\$173,963	\$609	\$2,029		\$1,186	\$177,787
1990	\$198,897	\$520	\$1,752	\$508	\$582	\$202,259
1991	\$103,750	\$328	\$1,807		\$499	\$106,384
1992	\$190,368	\$1,029	\$1,359	\$222	\$767	\$193,745
1993	\$152,034	\$1,131	\$989		\$257	\$154,411
1994	\$138,007	\$1,190	\$1,043	\$15	\$650	\$140,905
1995	\$183,262	\$1,272	\$1,240		\$129	\$185,903
1996	\$139,208	\$788	\$615	\$7	\$254	\$140,872
1997	\$61,728	\$689	\$200		\$150	\$62,767
1998	\$62,948	\$1,116	\$294	\$8	\$521	\$64,887
1999	\$109,495	\$186	\$438		\$38	\$110,157
20 Year Avg	\$127,696	\$1,710	\$1,988	\$712	\$917	\$132,703
1980-89 Avg.	\$121,422	\$2,596	\$3,003	\$1,415	\$1,450	\$129,178
1990-99 Avg.	\$133,970	\$825	\$974	\$127	\$385	\$136,229
2000	\$80,331	\$172	\$236	\$17	\$363	\$81,119

^a Value paid to fishermen. Derived from price per fish or pound times commercial catch.

^b Includes even-years only.

The Alaska Department of Fish and Game administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility, or if you desire further information please write to ADF&G, P.O. Box 25526, Juneau, AK 99802-5526; U.S. Fish and Wildlife Service, 4040 N. Fairfax Drive, Suite 300 Webb, Arlington, VA 22203 or O.E.O., U.S. Department of the Interior, Washington DC 20240.

For information on alternative formats for this and other department publications, please contact the department ADA Coordinator at (voice) 907-465-6077, (TDD) 907-465-3646, or (FAX) 907-465-6078.