# PRINCE WILLIAM SOUND MANAGEMENT AREA

# SALMON REPORT TO THE BOARD OF FISHERIES

By:

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## TABLE OF CONTENTS


| | Page |
|---|---|
| LIST OF TABLES | iv |
| LIST OF FIGURES | v |
| PRINCE WILLIAM SOUND SALMON FISHERIES | |
| *Management Area Description* | 1 |
| *Coghill District (Prior to July 21)* | 1 |
| **Preseason Outlook and Harvest Strategy** | 1 |
| **Season Summary** | 2 |
| *Unakwik District* | 5 |
| **Season Summary** | 5 |
| *Eshamy District* | 5 |
| **Preseason Outlook and Harvest Strategy** | 5 |
| **Season Summary** | 6 |
| *General Purse Seine Districts* | 7 |
| **Preseason Outlook and Harvest Strategy** | 7 |
| **Season Summary** | 8 |
| Chum Salmon | |
| All Districts | 8 |
| Pink Salmon | |
| All Districts | 9 |
| Eastern District | 10 |
| Southeastern District | 11 |
| Southwestern District | 11 |
| Northern District | 12 |
| Montague District | 13 |
| Coghill District | 13 |
| Coho Salmon | |
| Eastern District | 14 |
| Coghill District | 14 |
| **Conclusions and Recommendations** | 15 |
| **SUBSISTENCE** | 16 |
| *Eastern and Southwestern Prince William Sound Fisheries* | 16 |

## LIST OF TABLES

**Table** **Page**

Table 1. Pink Salmon Stock Composition to PWS Fisheries and Broods ... 17

Table 2. Commercial salmon harvest by species, all gear and districts combined, Prince William Sound, 1971-1999 ..... 18

## LIST OF FIGURES

**Figure** **Page**

Figure 1. Prince William Sound and Copper/Bering River Districts . 19

Figure 2. Eastern District Common Property Contribution ..... 20

Figure 3. Southeastern District Common Property Contribution ..... 21

Figure 4. Southwestern District Common Property Contribution ..... 22

Figure 5. Northern District Common Property Contribution ..... 23

Figure 6. Montague District Common Property Contribution ..... 24

Figure 7. Coghill District Common Property Contribution ..... 25

Figure 8. 1999 Prince William Sound Common Property Catches ... 26

## PRINCE WILLIAM SOUND SALMON FISHERIES

*Management Area Description*

The Prince William Sound (PWS) management area encompasses all coastal waters and inland drainages entering the north central Gulf of Alaska between Cape Suckling and Cape Fairfield. This area includes the Bering River, Copper River and all of Prince William Sound with a total adjacent land area of approximately 38,000 square miles (Figure 1).

The salmon management area is divided into eleven districts that correspond to the local geography and distribution of the five species of salmon harvested by the commercial fishery. The management objective for all districts is the achievement of escapement goals for the major species while allowing for the orderly harvest of all fish surplus to spawning requirements. In addition, the department follows regulatory plans to manage fisheries and assist private non-profit (PNP) hatcheries in achieving cost recovery and broodstock objectives.

Six hatcheries contribute to the area's fisheries. Five are operated by the regional aquaculture association, Prince William Sound Aquaculture Corporation (PWSAC). The Gulkana Hatchery in Paxson augments the production of sockeye salmon to the Copper River. The Cannery Creek Hatchery located on the north shore of the sound, and the A.F. Koernig (AFK) Hatchery in the southwestern sound produce pink salmon, the Wally H. Noerenberg (WHN) Hatchery in the northwestern sound produces pink, chum, and coho salmon and the Main Bay Hatchery in the western sound produces sockeye salmon. Valdez Fisheries Development Association (VFDA) operates the Solomon Gulch Hatchery in Port Valdez and produces pink and coho salmon.

Gear for the salmon fishery includes purse seine, drift gillnet and set gillnet. Drift gillnet permits are the most numerous and are allowed in the Bering River, Copper River, Coghill, Unakwik and Eshamy Districts. Set gillnet gear is allowed only in the Eshamy District. Purse seine gear is allowed in the Eastern, Northern, Unakwik, Coghill, Northwestern, Southwestern, Montague and Southeastern Districts.

As an avenue for the commercial fishing industry to formally provide management recommendations to the department, representatives from area processing, gear groups, and aquaculture associations sit on an advisory body known as the PWS Salmon Harvest Task Force (SHTF).

*Coghill District (Prior To July 21)*

### Preseason Outlook and Harvest Strategy

The management strategy prior to July 21 (gillnet only fishery) is concerned primarily with the return of sockeye salmon to Coghill Lake and the return of chum salmon to the WHN Hatchery. Coghill sockeye salmon are managed for an escapement goal of 25,000, while hatchery chum salmon are managed to satisfy the allocation between the common property fishery and Prince William Sound Aquaculture Corporation's corporate escapement.

The forecast for the 1999 Coghill Lake sockeye salmon return was 72,800 fish of natural stock origin. In addition, PWSAC released pre-smolt into the lake in 1995, although they were expected to add very few fish to the return. There was no formal forecast completed for this component of the Coghill Lake return due to a lack of information on pre-smolt to adult survival for Coghill Lake sockeye salmon.

The department's point estimate for the WHN Hatchery chum salmon return was 2.4 million fish. PWSAC had a cost recovery plan in 1999 based on a revenue goal that sought to harvest $2.3 million from non-pink species. Due to the anticipated weakness of the sockeye salmon returns to Main Bay Hatchery as a result of the pipeline break a few years ago, PWSAC would lean heavily on the chum salmon return to WHN to achieve their non-pink revenue goal. Preseason estimates were that as many as one million chum salmon would be needed to help satisfy the revenue goal with an additional 127,000 fish needed for broodstock. The actual number harvested for corporate escapement would depend on the average size and the price per pound PWSAC received for their fish. Some of PWSAC's preseason contracts linked the price they would receive to the grounds price paid to commercial harvesters once the season opened.

The total harvest for both the common property and the corporate catch of chum salmon was 2.23 million fish which was close to the preseason forecast of 2.36 million fish. The common property harvest of early chum salmon was 1,310,559 fish. PWSAC harvested 775,552 chum salmon for sales, and the broodstock goal of 127,000 fish was achieved. The total commercial harvest of sockeye salmon in the district was 109,257 fish. The sockeye salmon escapement into Coghill Lake was 59,311 fish, exceeding the goal by nearly 34,311 fish. A total of 155,923 pink salmon were counted past the weir. Peak pink salmon passage occurred between July 30 and August 4, when 91,572 pink salmon crossed the weir during a six-day period.

**Season Summary**

For the Coghill District, the management strategy discussed at the March SHTF meeting indicated that, because of the weak Main Bay Hatchery returns in 1999, PWSAC's chum salmon cost recovery harvest would initially be allowed to proceed longer than in previous seasons. Front end loading the cost recovery harvest would allow the department to begin to assess the strength of the early portion of the chum salmon return and allow PWSAC to maximize revenue when values were high. For the past few years, a trigger of 15,000 - 20,000 cost recovery chum salmon was used to initiate common property harvesting in the Coghill District. This harvest level was typically achieved around June 12. In 1999, the cost recovery harvest area for PWSAC was expanded to include waters outside the Special Harvest Area (SHA) and inside of a line 0.5 mile seaward from Hodgkins Point to Esther Light. Some salmon appear to mill outside the Terminal Harvest Area (THA) and SHA for a period of time prior to moving close to the hatchery. Allowing the cost recovery harvest to occur outside the SHA would hopefully help maintain a higher quality harvest and speed up the pace of early cost recovery harvesting. The 1999 strategy for cost recovery harvesting was similar to 1998's by being aggressive on the early portion of the return and using two seine boats for harvesting. PWSAC began monitoring the return in late May but did not actually record a harvest until June 4. Due to the record number of three-year-old chum salmon that returned in 1998, a large component of age-4 salmon were expected to contribute heavily to the 1999 return. These younger aged chum salmon generally return later in the season than age-5 and age-6 chum salmon. Accurately forecasting the 1999 chum salmon return was complicated by PWSAC's having adopted a new rearing practice that appears to have successfully influenced chum salmon survivals. The large component of age-3 chum salmon in 1998 was likely due to PWSAC having reared the smolt to a much larger size prior to release. It remains unclear if the sibling relationship used to model previous forecasts would remain unchanged in light of new rearing strategies. If survivals are indeed enhanced, a large component of age-3 and age-4 chum salmon would likely be the result in 1999. PWSAC's forecast was less optimistic than the department's, anticipating a total return of 1.7 million fish. PWSAC was concerned that if they banked their cost recovery harvest on the later timed chum salmon, they would not meet their revenue goal if the younger age classes failed to materialize. In addition, the price of chum salmon tends to drop after early July, which would increase the number of fish PWSAC would need to meet their 1999 revenue goal. As a result, PWSAC was conservative in their management recommendations to the department,

preferring to manage the hatchery return based on their conservative forecast rather than risking their cost recovery on the later component of the return.

PWSAC began harvesting at WHN Hatchery on June 4. By the time of the first commercial opening on June 14, they had harvested 136,000 chum salmon, or 13% of their anticipated goal. The first commercial opening in the Coghill District attracted 127 drift permit holders who harvested 65,449 fish in a 24 hour period. Waters of the Coghill District south of 61°00.00 N. latitude were opened for the first period, and the sockeye salmon harvest was only 431 fish. In contrast, the first Coghill District opening in 1998 was on June 15 and saw a harvest of 115,875 chum and 358 sockeye salmon by 186 permit holders. This season, the Coghill weir was installed on June 5 and passed its first 7 fish on June 14. The anticipated cumulative Coghill weir escapement for June 14 was 161 sockeye salmon.

The second commercial opening occurred on June 18 for 12 hours in the same area as the first period. The time was reduced to improve the number of fish available for PWSAC's cost recovery harvest. Effort for the second period dropped to half that of the first period, due in part to the reduced time but also due to the continued high prices being paid in the Copper River District for sockeye salmon. The common property harvest was 55,693 chum and 310 sockeye salmon. PWSAC's June 15-17 harvest was 33,000 chum salmon, bringing them to approximately 25% of their non-pink salmon revenue goal. PWSAC felt that the age-4 and age-5 components of the return were weaker than forecast and wanted to maintain a conservative harvest strategy with the drift gillnet fleet. The third commercial opening occurred six days later on June 24 for 24 hours. The twice-weekly schedule of 24-hour openings had been disrupted, again to improve PWSAC's cost recovery prospects. The area within the Coghill District that was open to the drift gillnet fleet was reduced to waters south of 60°50.75 N. latitude in response to the low numbers of sockeye salmon that were in the harvest and at the weir at Coghill River. Cumulative weir passage on June 23 was 127 sockeye salmon versus an anticipated count of 3,215 fish. Effort rebounded from the previous period's decline, with 132 permit holders harvesting 132,000 chum and 2,322 sockeye salmon. The fourth period was for 12 hours and occurred on June 28. The harvest was 73,500 chum and 2,370 sockeye salmon by 111 permit holders. The open area for the fourth period remained the same as the third opening. PWSAC's corporate harvesting had begun to significantly improve after the third common property opening. By June 26, PWSAC had harvested 519,000 chum salmon, had received better than anticipated prices for their fish and had achieved approximately 68% of their non-pink salmon revenue goal.

Chum salmon run entry had significantly improved by the last week in June and it was clear that PWSAC would soon achieve their non-pink salmon revenue goal. Between June 27 and June 29 PWSAC harvested 232,525 chum salmon. PWSAC reached their non-pink salmon revenue goal on June 30. With strong run entry into the WHN Hatchery THA and SHA, and with PWSAC's terminal area harvesting almost complete, the department and PWSAC felt it would be necessary to quickly resume common property harvesting once PWSAC was finished harvesting. After polling processors that were buying chum salmon from the common property harvest, the department established a schedule of openings for the Coghill District. On June 30, a day-on, day-off schedule of 14-hour openings was announced beginning on Wednesday, June 30. The first 14-hour opening that same day provided relatively short notice to the drift gillnet fleet and deviated from the traditional Monday/Thursday schedule of openings. But because PWSAC was no longer harvesting in their SHA and would only be collecting broodstock fish, a quick resumption of common property harvesting was necessary to forestall putting too many chum salmon into the hatchery terminal area. Weir numbers at Coghill Lake were still below the anticipated as of June 30. Sockeye salmon escapement past the weir was 866 fish versus an anticipated count of 5,020 fish. Therefore, the open area for the scheduled fishing periods was restricted to the THA and waters within one nautical mile of the southern half of Esther Island. As Coghill Lake escapement improved, additional area would be opened. The every other day schedule was the predominant preference of area processors and was chosen to maintain quality for as long as possible. The evening opening on June 30 saw 84

permit holders harvest 41,269 chum and 2,523 sockeye salmon. To date, the common property harvest of sockeye salmon in the Coghill District stood at 8,000 fish. The next 14-hour opening occurred on July 2 when 60 permit holders harvested 40,810 chum and 2,897 sockeye salmon. On July 2, the daily passage rate had begun to improve at Coghill weir with 528 fish passing the weir. The sockeye salmon escapement at Coghill Lake stood at 1,643 versus an anticipated count of 6,699.

The third 14-hour period was scheduled for Sunday, July 4 from 8:00 a.m. to 10:00 p.m. The fishing period began as scheduled but was extended, and the entire Coghill District was opened when the weir crew at Coghill River reported that they had passed over 20,000 sockeye salmon in less than a 12-hour period. The department announced at 7:30 p.m. that the current 14-hour fishing period would be extended for 48-hours and that waters up to the mouth of the Coghill River would be open. The emergency order was issued on short notice in deference to the problems that Coghill Lake had experienced from over escapement in the 1980's, when multiple years of escapements exceeding 140,000 sockeye salmon had dramatically reduced the lake's productivity. Coghill Lake had recently benefited from a five-year fertilization project designed to restore its productivity. A significant over escapement had the potential to minimize these benefits, and the department decided that it was in the best interest of the resource to extend the current fishing period and minimize sockeye salmon escapement into Coghill River as quickly as possible. An extension of the ongoing fishing period would take advantage of the harvest and tendering capacity that was already in place in the Coghill District. A 24-hour opening was scheduled to begin the next morning in the Copper River District, and gillnet boats were in the process of departing the Cordova harbor for the Copper River flats. By announcing an extension on the evening of July 4, some of these boats could more easily elect to travel to the Coghill District, as a percentage of them did.

Between July 4 and July 6, 36,684 sockeye salmon passed the weir at Coghill River. During the 62-hour fishing period over the same dates, 36,861 sockeye and 103,287 chum salmon were harvested by 105 permit holders. Following the 62-hour period, the Coghill District was opened continuously using four alternating periods of 72 and 96-hours. This schedule was maintained until July 20.

Fishing effort steadily declined in the Coghill District, dropping from 115 drift gillnet permit holders during the July 6-9 period to 13 drift gillnet permit holders on July 20. Ironically, the reason for the decline in drift gillnet effort was partially a result of the record number of three year old chum salmon returning to WHN Hatchery. A significant buildup of chum salmon had begun to form in Lake Bay in front of WHN Hatchery. Gillnets deployed there would have been difficult to retrieve, and processors had begun to direct boats fishing for them to target bright fish away from the hatchery terminal area. While numerous high quality chum salmon were still available for harvesting outside the terminal area, harvesting further out would do little to alleviate the surplus that was forming in the hatchery SHA. In 1996 the Board of Fisheries, in response to previous surpluses of enhanced chum salmon that were not harvested, granted the department the authority to open the hatchery SHA to seine gear prior to July 21. On July 10, seiners were given permission to harvest excess chum salmon from the hatchery SHA that were not being adequately harvested by the drift gillnet fleet. Waters of the SHA were opened to seine gear for 6 hours every other day between July 10 and July 20. During these six 6-hour periods, seiners harvested 577,000 chum salmon. Processors offered relatively low prices for these fish from the SHA due to their reportedly low quality. However, processors that had previously been buying bright chum salmon from the gillnet fleet elected to fill tenders from the seine harvest in the terminal area. This action disenfranchised a number of gillnet permit holders who no longer had an outlet for their fish. As a result, drift gillnet effort declined rapidly after July 10 to only 13 permit holders on July 20. The drift gillnet fleet harvested 689,210 chum and 106,028 sockeye salmon in the Coghill District in 1999, while the seine fleet harvested 621,349 chum salmon. Peak gillnet effort occurred on June 24 when 132 permits were fishing. A total of 239 drift gillnet permit holders fished at least once in the Coghill District in 1999. Peak seine effort during the chum salmon harvest was 10 permit holders on July 10.

After July 4, the department elected to harvest sockeye salmon at the Coghill weir to further reduce the number of adults escaping into the lake. With the assistance of area processors, the department harvested 9,372 sockeye salmon at the weir. Proceeds from the sale of these fish were used to fund the operation of the Eshamy weir which has not been funded for the past two years, and for conducting upriver aerial surveys over the Copper River. In addition to the departments harvesting efforts, the sport fish bag limit at Coghill River was increased to 12 fish and a number of anglers were able to benefit from the strong return to Coghill Lake. While the sockeye salmon return to Coghill Lake was over twice the forecasted amount, the return to Eshamy Lake was only forecast to have a return of 38,000 fish with an escapement goal of 40,000. With the Coghill return being twice the forecasted amount, a weir at Eshamy River would be extremely helpful in managing the wild stock sockeye salmon return to that system. It is likely that an overly conservative management strategy would be employed in the absence of escapement information. If the return was above forecast, a conservative management would have resulted in lost opportunity for common property harvesters in that district.

*Unakwik District*

**Season Summary**

The 1999 Unakwik District harvest was 8,930 sockeye salmon with incidental harvests of chum and pink salmon. The sockeye salmon harvest exceeded the 10-year average harvest of 6,500. The Unakwik District opened June 24 on a schedule of two 24-hour periods per week, primarily targeting the sockeye salmon return to Miners Lake. On June 28, the schedule was changed to coincide with openings in the Coghill District. No changes were made to the concurrent fishing schedule until July 6 when the district reverted back to the customary schedule of two 24-hour periods per week. The last reported harvest occurred on July 9. On September 3, the Unakwik District closed for the season.

*Eshamy District*

**Preseason Outlook and Harvest Strategy**

The 1999 forecast of Main Bay Hatchery's sockeye salmon was approximately 140,000 fish. This total was composed of 8,600 fish of Eyak stock origin, 19,600 fish from the Coghill stock origin and 111,000 fish of Eshamy stock origin. The Eshamy wild stock return was forecast to be 38,000 sockeye salmon, 40,000 of which were needed for escapement. No wild fish were anticipated to be available for a common property harvest. The hatchery is switching back to a single stock facility and is eliminating both their Eyak and Eshamy brood.

PWSAC was planning to achieve their non-pink salmon revenue goal from their WHN Hatchery chum salmon production and using all of their Main Bay Hatchery Coghill stock for broodstock. Eyak stock production has generally been less than forecast and would likely not be harvested. If PWSAC were to successfully achieve their non-pink salmon revenue goal with chum salmon, the entire return of enhanced Eshamy stock would be made available for a common property harvest. However, with a relatively weak wild stock return projected to Eshamy Lake, it was unlikely that a general Eshamy District common property opening would occur in 1999. It was announced preseason that the department would potentially allow harvesting to occur in the northern half of the Crafton Island Subdistrict during the enhanced return of Eshamy stock to Main Bay Hatchery.

Following the loss of Exxon Valdez oil spill funding, the Eshamy weir has been funded by ADF&G test fish revenues. During the SHTF meeting in March, the department announced that the Eshamy weir

would again not operate unless new funds from a test fishery were secured. In 1998, the department had suggested that $28,000 in revenues for the Eshamy weir project could come from a bid process involving the harvest of sockeye salmon in the Copper River District. Lengthy discussion among members of the SHTF followed. Representatives to the SHTF decided that no test fish revenues should be generated from any of the Area E salmon fisheries. Without funding, the Eshamy weir did not operate in 1998, and it appeared likely it would not operate in 1999. However, unanticipated revenues were secured from the July sockeye salmon harvest at Coghill weir that procured enough funds to operate the Eshamy weir in August.

By season's end, the common property harvest of sockeye salmon was 160,410 fish. The hatchery broodstock goal for Coghill sockeye salmon was achieved, and surplus Coghill stock and the entire Eshamy stock were harvested by the drift and set gillnet fleets.

**Season Summary**

Coghill broodstock began arriving at Main Bay Hatchery in mid-June. Once sufficient broodstock were estimated to be adjacent to the hatchery, the barrier seine would be installed and common property harvesting could commence. The barrier seine was installed on July 13 and the first common property opening occurred on July 15-16. A schedule of two 36-hour periods per week was maintained the entire season, which ended September 7. The scheduled openings between July 16 and August 12 included waters north of the anadromous stream marker on the north side of Loomis Creek. This boundary effectively kept Eshamy Bay closed while allowing the drift and set gillnet harvesters room to target the enhanced Coghill and Eshamy stocks returning to Main Bay Hatchery. Beginning August 12, only waters of the Main Bay Subdistrict were opened. The reduced area was in response to the low escapement at Eshamy weir during the peak of the wild stock return. The alternating gear zone was included in the openings after August 8 once the Coghill broodstock entered freshwater and the barrier seine was removed.

The peak harvest period occurred on August 2 when 25,029 sockeye salmon were harvested by 18 set gillnet and 42 drift gillnet permit holders. In total, 21 set gillnet and 104 drift gillnet permit holders participated in the Eshamy District harvest in 1999. Preliminary coded wire tag data indicated that, as late as the August 5-6 fishing period, Main Bay's Coghill stock was still contributing 36% of the sockeye salmon harvest. The remainder were enhanced Eshamy stock. No wild stock fish could be accounted for with coded wire tag data during that period.

The Eshamy weir became operational on August 1. Only four sockeye salmon were passed that day and few fish were seen milling in the river's estuary. The weir was kept in until September 16 and the total escapement at season's end was 27,057 sockeye salmon, 32,756 pink and 194 coho salmon. An unknown number of sockeye salmon may have entered the lake in July prior to the weir's installation. Historic run timing would estimate that approximately 8,000 sockeye salmon would enter the lake in July, but it is believed unlikely that this many fish were present early in the season. Periodic reports from anglers and Eshamy residents did not indicate that numerous fish were present in Eshamy lagoon during July.

*General Purse Seine Districts*

**Preseason Outlook and Harvest Strategy**

The general purse seine districts include the Eastern, Northern, Unakwik, Coghill, Northwestern, Southwestern, Montague and Southeastern Districts. The Prince William Sound Management and Salmon Enhancement Allocation Plan (5 AAC 24.370) closes the Southwestern District prior to July 18. The plan

also closes the Coghill District to purse seine gear prior to July 21, except under the Wally Noerenberg Hatchery Management Plan (5 AAC 24.368(f)), the Esther Subdistrict may be opened to seine gear to prevent deterioration of fish quality of the harvestable surplus of chum salmon that is not being adequately harvested by the drift gillnet fleet. Beginning July 21, both purse seine and drift gillnet gear are allowed in the Coghill District. Seine gear is allowed in the district as long as the harvestable surplus is predominantly pink salmon by number. Fishing periods in all districts are established by emergency order.

The general purse seine districts are managed to achieve wild pink and chum salmon escapement goals by district and allow for the orderly harvest of surplus wild and hatchery stocks. Escapement of pink and chum salmon is tracked through the season by weekly aerial surveys of 209 index streams. Management to achieve hatchery corporate escapement goals is accomplished by opening and closing subdistricts near the hatcheries. Subdistrict openings are also utilized to target the fleet on hatchery stocks when wild salmon escapement is weak.

The Valdez Fisheries Development Association's (VFDA) Solomon Gulch Hatchery has a stock of pink salmon that peaks in early July and a run of coho salmon that begins in August. All of VFDA's enhanced production returns to the Solomon Gulch Hatchery in Port Valdez, with the exception of a small run of coho salmon that returns to Boulder Bay near the Village of Tatitlek.

The PWSAC pink salmon stocks peak in mid-August. Their pink salmon return to Cannery Creek, WHN and A. F. Koernig (AFK) Hatcheries. A moderate run of coho salmon at WHN Hatchery is incidental to the late pink salmon fishery. The outlook for the general purse seine fishery in 1999 was for a total return of 32.7 million pink salmon composed of 26.1 million hatchery and 6.6 million wild stock pink salmon (60% PWSAC, 20% VFDA, 20% wild). The forecasted common property fishery harvest was 19.6 million pinks with an additional 11.7 million slated for corporate escapement and 1.4 million needed for wild stock escapement. The wild stock chum salmon forecast called for a total return of 610,000 fish with an escapement goal of 225,000. The forecast for enhanced chum salmon in seine districts was 310,000 fish returning to a remote release site in the Montague District.

When the Prince William Sound Salmon Harvest Task Force (SHTF) met prior to the fishing season, seine representatives on the task force reviewed changes to the fishery being considered for the 1999 season and made recommendations on management strategies to incorporate these anticipated changes. Strong statewide return forecasts, poor market conditions, catch limits, and low prices caused a great deal of concern over the potential for a successful seine season. There was significant concern preseason that above average returns of pink salmon could exceed processor's interest in purchasing PWS pink salmon. Seine effort the last few seasons has been greatly reduced due to the anticipated low prices. The SHTF felt that the remaining seiners would likely concentrate their fishing effort and target hatchery returns where high volume harvests could occur. With a strong wild stock pink salmon forecast and a reduced seine fleet, the department agreed to open a majority of the Eastern District during seine periods targeting the pink return to Solomon Gulch Hatchery. This would help to relieve congestion in the Valdez Narrows Subdistrict where a majority of the VFDA return has traditionally been harvested. The department also agreed to fish earlier in the Southwestern District if the early wild stock returns indicated a strong wild stock run.

VFDA's 1999 Annual Management Plan for the Solomon Gulch Hatchery called for their pink salmon return to be managed to meet a $2.8 million revenue goal. Fish determined to be surplus to the association's needs would be made available for common property harvesting. In 1999, two processors had contracts to purchase VFDA's cost recovery salmon. The cost recovery fishermen had contracts that required them to fish only on days when there was no common property fishery. Two processors operating at full capacity in 1999 would improve VFDA's prospects for efficiently achieving their cost recovery goal and allow for more timely common property openings targeting surplus enhanced fish. However, without having the ability to cost recovery fish every day because of catcher boat contracts, it was determined that the best

management strategy would be to allow VFDA to reach approximately 33% of their revenue goal prior to the start of a common property fishery. This strategy would accomplish three goals: 1. It would allow VFDA to reach their revenue goal in a timely fashion; 2. It would allow the department to assess the strength of the hatchery run and; 3. It would allow early run wild stocks to escape into their natal streams.

According to PWSAC's annual management plans, the corporate escapement goal for pink salmon was based on broodstock needs of approximately 900,000 fish and a revenue goal of $3.7 million. The department would collectively manage the pink salmon returns to WHN, Cannery Creek and AFK Hatcheries to achieve the goal. Fish estimated to be surplus to the corporation's needs would be made available for a common property harvest. PWSAC's contract seiners were required to fish every day that fish were available for harvest so no attempt would be made to get a large percentage of the cost recovery complete before allowing a common property fishery to occur.

## Season Summary

Chum Salmon

*All Districts*

The wild and enhanced chum salmon returns to PWS were strong and the areawide chum salmon harvest set a record in 1999. Seiners were able to target wild chums in the Eastern and Southeastern Districts and enhanced chum salmon returns in the Montague, Southwestern and Coghill Districts. This year was the first time that all age classes of chum salmon returned to the Port Chalmers remote release site in the Montague District. The harvest of just over 600,000 fish was twice the forecasted number. A fishing schedule of two periods per week was initiated on June 2. Sixty-hour fishing periods began on Wednesdays at 8:00 a.m. with a 12-hour closure on Friday nights followed by an 84-hour open period beginning on Saturdays at 8:00 a.m. This schedule was maintained through July 16. Additional fishing periods of shorter duration and smaller area occurred after that date to harvest surplus enhanced chum salmon and protect arriving wild stock pink salmon. This year was the first year that chum salmon returned to the AFK hatchery from two years of stocking in what was an attempt to establish a chum salmon return at that facility. At the time of stocking, PWSAC hoped to be able to cost recover most of the adults and take eggs for their Port Chalmers remote release site. After two years of stocking, that program was abandoned, but the adults still remain to return. Common property periods were announced inside the AFK Hatchery Special Harvest Area (SHA) on July 20, 22, and 25, which were concurrent with other district openings, to harvest the three year old chum salmon that had built up at the hatchery as these fish were beyond PWSAC's cost recovery needs. A total of 7,000 chum salmon were harvested at that location which was twice the preseason forecast. The return of chum salmon to the WHN Hatchery came in just below the preseason forecast of 2.4 million adults. This was the first year that the Board of Fisheries (BOF) approved change in the WHN Hatchery Management Plan was utilized that allowed seiners to harvest enhanced chum salmon in the Esther Subdistrict for the purpose of preventing deterioration of fish quality of chum salmon not being adequately harvested by the drift gillnet fleet. Concurrent with the common property pink salmon fishery that opened July 10 in the Eastern District, a 6-hour period of common property purse seine fishing was allowed in the SHA of the WHN Hatchery to harvest surplus chum salmon prior to the deterioration of fish quality. These surplus chum salmon had not been harvested by the gillnet fleet. Ten seine permit holders harvested approximately 151,000 chum salmon in that 6 hour period. The complete lack of gillnet effort for chum salmon inside the WHN Hatchery SHA during the remaining opening periods warranted continued fishing by the seine fleet for surplus chum salmon. Six hour seine fishing periods opening concurrently with the Eastern District occurred inside the WHN Hatchery SHA every other day from July 10 until July 21, after which time purse seine gear became a legal gear for the entire district as pink salmon become the target species. Overall, wild stock chum salmon escapement exceeded the escapement goal in the Eastern, Northern and Southeastern Districts by 147%, 12% and 63%. These three districts comprise 68% of the expected chum salmon

escapement goal. The other districts failed to achieve the expected goals, but on a sound wide basis, the chum salmon escapement was 50% over the goal. The escapement of 1999 was the fourth highest escapement since 1965 and continues a trend of increasing escapements since 1995. It is possible that the chum salmon escapement in 1999 was greater in many of the PWS districts, but because of the overwhelming number of pink salmon, it was extremely difficult to see and enumerate these chum salmon during aerial surveys in streams where both species occurred.

## Pink Salmon

### *All Districts*

The number of pink salmon that returned to Prince William Sound was much larger than the 32 million fish forecast and resulted in an all time high single season harvest of 45.0 million fish (Table 1). The previous high single season harvest was in 1990 when 44.2 million pink salmon were harvested. The returning adults in 1999 were smaller than previous years with the average weight being approximately 3.0 pounds. An estimated 7.0 million wild stock pink salmon contributed to the commercial common property and cost recovery fisheries based on otolith recoveries. Approximately 98% of the wild stock harvest occurred in the commercial common property fishery. The ratio of enhanced pink salmon to wild pink salmon in the 1999 total commercial common property harvest is estimated to have been 3.6:1. An estimated 2.4 million pink salmon escaped into Prince William Sound index streams to spawn which ranks as the fifth highest escapement since 1960. Approximately 52% (139 permit holders) of the Area E salmon purse seine permit holders made at least one delivery during the 1999 season.

Aerial surveys to assess early chum and pink salmon escapements in the Eastern and Northern Districts began in late-June. In July, surveys began in all other seine districts. Similar to the 1998 season, most fishing effort was directed at the migration corridors used by hatchery fish. Open areas in the Eastern and Southeastern Districts outside these migration corridors were fished heavily this season during the lull between the early and late hatchery runs. Once the late run hatchery stocks started to arrive, these districts were abandoned for the more productive hatchery corridors even though large numbers of surplus wild stock pink salmon were still available for harvest. Processor imposed limits on the number of pounds of salmon each fisherman could deliver went into effect in late July and early August, which restricted the harvest of both hatchery and wild stock pink salmon. The peak effort occurred on August 12 and 14 when 126 permit holders delivered fish. The Southeastern District's pink salmon index escapement was 156% above the escapement goal and the Eastern District was 48% above its goal. In the Northern/Unakwik Districts, escapement was 68% above the escapement goal. The Northwestern and Coghill Districts were 37% and 5% below their respective midpoint escapement goals. However, weir counts at Coghill River (a glacial system) had significantly higher pink salmon escapement numbers than were observed during routine aerial surveys. Pink salmon escapement past the Coghill River weir, located one mile upstream from the river mouth, exceeded 155,000 fish versus the season aerial count of 141,500 pink salmon for the entire system. However, the Coghill District did exceed the lower range threshold of the escapement goal. The Southwestern District was 41% above its escapement goal for the season. The Montague District was 135% above its escapement goal and the Eshamy District finished the season 21% above its pink salmon escapement goal. Common property seine openings took place in every district except for the Northwestern District with most of the seine harvest taking place in those districts with high concentrations of enhanced fish. Despite commercial fishing in the Southwestern District earlier than last year and liberal district wide openings in wild stock areas, wild stock escapements met or exceeded the escapement goals in all, but the Northwestern District. The processor limits on their seine fleets in August restricted the catch during the peak of the late run season and resulted in large surpluses of hatchery pink salmon in the terminal areas. Wild pink salmon in excess of escapement needs were also left as a result of these limits.

*Eastern District*

VFDA began their corporate escapement harvesting on June 28 at the Solomon Gulch Hatchery using nine seine boats in their cost recovery fleet. The 1999 pink salmon revenue goal for VFDA was $2.8 million. Based upon their sales contract with Peter Pan Seafoods and Northern Victor Seafoods, VFDA required approximately 13.5 million pounds of pink salmon to meet their revenue goal. Initial harvests were tracking about one week behind the anticipated run entry curve, and the average weight of pink salmon being harvested was approximately 3.1 pounds. It was not until July 5 before VFDA had attained 32 percent of their revenue goal. The percentage of female pinks in the sales harvest at this time was roughly 23%, indicating that the return was running about one week late. The first seine fishery in the Eastern District was announced for July 6 and included a majority of the Eastern District. A total of 717,000 pink salmon were harvested in a 12-hour period with nearly all the effort targeting the hatchery return.

VFDA resumed corporate sales harvesting on July 7 and continued until the next common property opening on July 10. The second 12-hour opening saw 77 permit holders harvest 937,000 pink salmon. Otolith samples recovered from these harvested pink salmon indicated that 100% of the catch was hatchery produced. After July 10, common property seine openings were every other day for 12 hours except for three 36-hour periods at the end of July and early August. Beginning August 25, the district was put on a schedule of two openings per week of 60 hours and 84 hours duration. Purse seine harvest on early pinks peaked with 91 permit holders harvesting 1,487,000 pink salmon on July 16. Purse seine effort in this district peaked on July 20 when 98 permit holders fished. Due to weak early wild stock escapements into Galena and Jack Bays, closed waters for these bays had been increased starting with the first common property fishery opening in July and remained that way for most of the season. VFDA had harvested approximately 98% of their revenue goal by July 25 and ceased selling salmon to their contract buyers. Common property purse seine fisheries starting on July 26 and continuing until August 8 included the western half of Port Valdez. Only a few processors would allow their boats to fish for pink salmon inside Port Valdez at this time because of quality concerns. The Solomon Gulch Hatchery eventually reached 100% of their revenue goal by salvaging the roe from 116,000 excess pink salmon and 5,770 coho salmon during and after their egg-take operations. It is estimated that nearly 14.8 million adult pink salmon were produced by the Solomon Gulch Hatchery in Valdez in 1999. The Eastern District closed on September 17 and did not open again for the season. Over 12.3 million pink salmon and nearly 107,000 chum salmon were harvested by the common property fleet from this district. The pink salmon catch composition by period for this district is in Figure 1.

*Southeastern District*

Wild stock pink and chum salmon escapements in some areas of the Southeastern District improved rapidly by the middle of July. Large numbers of pink salmon were observed during aerial surveys traveling along the shoreline in this district. A common property fishery was announced to open concurrently with the Eastern District on July 16. No effort occurred in this area during this open period. Open periods continued concurrently with the Eastern District, but no effort occurred until July 22 when two permit holders fished. Effort increased after this date, peaking on August 6 when 25 permit holders landed approximately 275,000 pink salmon. Otolith samples indicated that nearly 100% of the pink salmon caught in this district were wild stock (Figure 2). Only one delivery occurred from this district after the August 10 opening as processors directed their fleets to fish in other districts where they believed the quality of the fish would be higher. No further harvest occurred after August 16. Over 914,000 pink salmon and 83,000 chum salmon were harvested from this district. This district closed for the season on September 3.

*Southwestern District*

The initial opening in the Southwestern District on Tuesday, July 27 coincided with the openings in four other districts. The Fish and Game research vessel "Montague" had been recovering otoliths from pink salmon entering the Southwestern District since July 23. The samples indicated that approximately half of the fish entering the district were hatchery produced. Since one vessel could not indicate the volume of fish entering the district, a common property fishery was allowed. The Point Elrington and San Juan Subdistricts and the AFK Hatchery Terminal Harvest Area (THA) were opened. Only seven seine boats fished in the Southwestern District on the first opening harvesting approximately 65,000 pink salmon. Otolith recoveries indicated that 42% of the fish caught were wild stock, 22% were VFDA hatchery fish and 37% were PWSAC produced. The majority of the fleet remained in the Eastern and Southeastern Districts fishing VFDA enhanced stocks and wild stocks. The small effort allowed additional fishing time in the Southwestern District to get a better estimate of the volume of fish entering the district, so another 12 hour period occurred on July 29. A total of 26 permit holders fished in the Southwestern District during the second open period harvesting 157,000 pink salmon. Otolith data collected from the second open period indicated that 58% of the catch was wild stock, 14% was VFDA enhanced stock and 28% was PWSAC enhanced stock. The high percentage of wild stock fish in the harvest, and the increased effort created some concerns over achieving wild stock escapement in the Southwestern District streams. Fishing was halted in the district for three days to allow additional wild stock escapement into the district.

The next 12-hour common property fishing period occurred on August 2. A total of 372,000 pink salmon were harvested by 41 permit holders. Otolith samples collected from this fishing period indicated that 56% of the catch was wild stock, 3% was VFDA enhanced stock and 41% was PWSAC enhanced stock. It was apparent that the proportion of PWSAC produced pink salmon in the catch was starting to increase. Another fishing period occurred on August 4 to establish a trend in volume and stock composition. The catch of 517,000 pink salmon by 40 permit holders indicated that large numbers of fish were beginning to enter the district. Otolith recoveries from this fishing period indicated that the catch contained 29% wild stock, 1% VFDA enhanced stock, and 70% PWSAC enhanced stock. An aerial survey in the Southwestern District on August 2 indicated that wild stock escapements were still less than anticipated, so fishing was again halted for three days after the August 4 period to allow additional wild stock fish into the district.

On August 1, PWSAC started their cost recovery operations in the AFK Hatchery SHA which was four days later than last year. PWSAC's cost recovery operations were only at 11% of the revenue goal on August 8 when they were expecting to be at 31%. PWSAC's cost recovery operations were behind the calendar date schedule that had been set pre-season, but the female percentage in their sales harvest indicated that the return was about seven days late in its timing as was the case with the earlier VFDA Hatchery return. The returning pink salmon were also much smaller than last year with an average weight of approximately 2.7 pounds. PWSAC sold about 3.1 million pink salmon in their cost recovery operations at the AFK Hatchery.

The common property fishery resumed on August 8 with just the San Juan and Point Elrington Subdistricts open for 12 hours. The August 10 opening in the Southwestern District included only the Point Elrington Subdistrict which would allow more pink salmon to enter into the AFK Hatchery SHA and THA. An aerial survey on August 9 showed improvement in the escapement in some areas of the Southwestern District. With escapements improving and the peak of the return approaching, additional area was opened on August 12 where escapements were at expected levels for this date. The peak harvest of 1,089,000 pink salmon occurred for this district on the August 12 opening. Otolith samples indicated that this catch was composed of 16% wild stock and 84% of PWSAC hatchery pink salmon. Processor imposed catch limits prevented this catch from going higher, as most fishing vessels had reached their catch limit by early afternoon.

As the season entered into its peak, some processors were unable to supply PWSAC with tenders to purchase their contracted pink salmon. As a result, a buildup of fish began to occur in the THA. Starting with the August 16 fishing period, the AFK Hatchery THA was opened to the common property fleet to prevent a deterioration of fish quality. Peter Pan Seafood's and North Pacific Seafood's last day buying pink salmon from the common property fleet was on August 20. Several other processors quit buying pink

salmon in rapid succession at this time, with only two processors buying from the common property seine fleet during the August 26 open period. Large surpluses of pink salmon began building at all of the PWSAC hatcheries as well as many wild stock systems at this time. PWSAC continued to cost recover pink salmon until August 31. One processor returned later in the season and salvaged the salmon roe from some of the surplus fish in the SHA. It is estimated that about 1 million surplus hatchery pink salmon were not harvested at this hatchery. This district closed for the season on September 28 with over 9.5 million pink salmon caught by the common property fleet. The catch composition of the common property harvest is found in Figure 3.

*Northern District*

The eastern side of the Northern District opened concurrently with the Eastern, Southeastern, and Coghill Districts on July 25. An estimated 6 seiners harvested approximately 23,000 pink and 1,800 chum salmon in this district with a majority of the harvest occurring in the most easterly area where the VFDA enhanced pink salmon were concentrated. Otolith samples indicated that 63% of the harvest from this period was VFDA enhanced pink salmon and 6% was from PWSAC's Cannery Creek Hatchery, the remaining 31% were wild stock. Common property fishing periods occurred every other day after the first open period with the area open being adjusted to target the returning hatchery pink salmon from the Solomon Gulch Hatchery or PWSAC's Cannery Creek Hatchery. By July 31, the pink salmon catch was composed of 56% PWSAC enhanced fish, 8% of VFDA enhanced fish and 36% wild stock. Fishing effort was now concentrated around Payday Point at the entrance of Unakwik Inlet, where the Cannery Creek Hatchery is located. PWSAC began their cost recovery operations on August 4 at the Cannery Creek Hatchery which was about one week later than last year. On August 8, the area open to fishing was changed to include the central portion of the district, including approximately half of Unakwik Inlet to target fishing effort on the PWSAC pink salmon return to Cannery Creek Hatchery and to shift effort from hatchery coho stocks entering Port Valdez. On August 11, PWSAC decided that they would do most of their cost recovery at the WHN and AFK Hatcheries and to allow the common property fishermen to harvest the majority of the Cannery Creek pink salmon return. The open waters in the Northern District were changed on August 12 to allow fishing in Unakwik Inlet up to the hatchery THA to harvest surplus hatchery pink salmon. The peak harvest occurred on August 12 when 50 permit holders landed 734,000 pink salmon. The stock composition of this harvest was 93% PWSAC enhanced and 7% wild stock pink salmon.

The Perry Island Subdistrict of the Northern District was opened on August 10 to the common property fleet. Pink salmon were starting to arrive at the WHN Hatchery in the Coghill District in large numbers, but many had not entered the THA or SHA where they could be harvested by the cost recovery fleet. In order to slow down the numbers of fish entering the Esther Subdistrict without jeopardizing the cost recovery operation at the WHN Hatchery, the Perry Island Subdistrict was opened, but the Esther Subdistrict remained closed. This strategy had the desired effect of slowing the run entry into the WHN Hatchery. The use of this strategy is hampered by the PWS Management and Salmon Allocation Plan (d)(3)(C) which states that the Perry Island Subdistrict shall be closed when the Esther Subdistrict is closed to achieve corporate escapement goals and broodstock needs. The Esther Subdistrict did open on August 14. In years of very large returns, opening the Perry Island Subdistrict at times when the Esther Subdistrict is closed allows the harvest of pink salmon milling in the area which improves the quality of the harvest further into the season in the northern areas, especially around the WHN Hatchery.

PWSAC continued cost recovery operations on a smaller than normal scale at the Cannery Creek Hatchery harvesting about 2.1 million pink salmon. The average weight of these salmon was about 2.8 pounds. As with the other hatcheries, the female percentage in the cost recovery harvest was quite low initially, indicating that the pink salmon were seven to eight days late in their return timing. PWSAC finished their cost recovery harvesting on August 30. Waters of the Cannery Creek Hatchery THA and SHA were opened to the common property fleet on Sept. 2. Over 600,000 pink salmon were harvested by the common property fleet from the Cannery Creek Hatchery SHA and THA after that date. It is estimated that 1million

surplus hatchery pink salmon were not harvested this season. This district closed for the season on September 28 with over 4.9 million pink salmon harvested by the common property seine fleet. The catch composition of the common property harvest is found in Figure 4.

*Montague District*

Pink salmon escapements in the Montague District improved rapidly by August 1. A 12-hour fishing period occurred on August 4 which opened concurrently with the Coghill, Eastern, Northern, Southeastern, and Southwestern Districts. The peak harvest occurred on August 4 when nine permit holders delivered 118,000 pink salmon. Deliveries were made on the August 6 open period, but no further catch occurred after that period even though the district was open every other day and stream escapements were far above the goals set for that district. Very little effort occurred in this district since all of the processors had placed their fishermen on daily catch limits which were more easily obtained in areas where hatchery pink salmon were available. The Montague District closed to salmon fishing for the 1999 season on September 3 with over 189,000 pink salmon and 638,000 chum salmon harvested. Figure 5 shows the catch composition of the common property harvest.

*Coghill District*

The Coghill District became a dual gear area on July 21, allowing purse seiners access to enhanced pink salmon returning to WHN Hatchery and wild pink salmon returning to the district's streams. This season's sockeye salmon return to Coghill River was strong and met its spawning escapement goal on July 4. Pink salmon were also entering the Coghill River in large numbers. The strength of the wild salmon returns allowed the district to be managed more aggressively. The Coghill District, including the waters of the WHN Hatchery SHA and THA were opened to gillnet fishing through the evening of July 20. The district opened to purse seine gear at 12:01 a.m. on July 21, except that Bettles, Hummer and Pigot Bays remained closed to protect wild stock escapements. The Esther Subdistrict, including the waters of the WHN Hatchery SHA and THA, were opened to the common property fishery on an every other day schedule until July 29 at which time the Esther Subdistrict was closed to allow for corporate escapement. Some portions of the Coghill District continued to be opened for 12 hours on an every other day schedule with one 36 hour period occurring on July 29 and three additional 36-hour periods beginning on August 4 and ending on August 9. These open periods were allowed in order to harvest the surplus Coghill River wild stock pink salmon. Even though the district was open, very little effort occurred on the Coghill River wild stocks as the fleet was distributed in other districts where larger hatchery and wild stock returns could be found. Indeed the boats that were fishing in the Coghill district were concentrated along the boundary of the Esther Subdistrict where they could intercept hatchery bound pink salmon. Over 155,000 pink salmon passed through the Coghill River weir which is located about one mile upriver. The Esther Subdistrict reopened on August 14 to the common property fishery. The peak harvest and effort occurred on August 16 when 26 permit holders landed 525,000 pink salmon. Otolith recoveries from this harvest indicated that 98% of the pink salmon caught were PWSAC produced, the remaining 2% were wild stock.

PWSAC started their cost recovery operation at the WHN Hatchery on July 31 which was 10 days later than last year. As with the other hatcheries, the female percentages in their catch were quite low at the beginning of their cost recovery harvest, indicating that the run was about 10 days late in its arrival. The WHN Hatchery made the highest contribution to PWSAC's cost recovery operations with 3.8 million fish harvested. The average weight of these cost recovery fish was 2.8 pounds. The common property fleet was allowed back into the hatchery SHA on August 26. The cost recovery harvest at the WHN Hatchery was completed on August 27. Approximately 984,000 pink salmon were harvested by the common property fleet after the SHA was reopened. It is estimated that 500,000 pink salmon remained at this hatchery after all fishing ceased. Figure 6 shows the contribution to the common property fishery by period of the hatchery

pink salmon stocks. This district closed on September 28 with over 3.5 million pink and 1.3 million chum salmon harvested by the common property purse seine and gillnet fleets.

Coho Salmon

*Eastern District*

Starting on August 8, Port Valdez was closed to protect the coho salmon return to Solomon Gulch Hatchery and to provide reasonable separation between the sport and commercial harvesters targeting the enhanced coho return. A total of 68,250 coho salmon were caught by seiners in the Eastern District in 1999. A 60-hour opening in Port Valdez following the Labor Day weekend resulted in a harvest of 39,232 coho salmon by 11 permit holders. The Eastern District closed on September 17 with no additional open periods, as no harvest had been reported in the previous period and all the processors had ceased buying coho salmon in Port Valdez.

*Coghill District*

The coho return to the WHN Hatchery was much smaller than forecast. This hatchery did not have enough coho return to the facility to meet their broodstock needs. Catch information from fish tickets did not indicate that the hatchery produced coho salmon were intercepted during the pink salmon fishery. Less than 1,500 coho salmon were taken in the common property fishery in the Coghill District and approximately 500 coho salmon were captured as broodstock. The return was only about 13% of the forecast. The coho returns to this hatchery have been trending down for the past several seasons as fewer coho have been released. Recent hatchery remodeling resulted in a change to the coho salmon rearing program. Previously, coho salmon fingerlings were reared in a poor quality pond, now rearing occurs in a more efficient and sanitary raceway system. As a result, the total rearing capacity was reduced. Additional changes to the program may be needed if it is to continue.

## Conclusions and Recommendations

The department is currently working with fishing industry representatives to explore management options that can maximize utilization of the pink salmon resource while providing for corporate and wild stock escapement needs. After accounting for the wild stock escapement index, the hatchery broodstocks and the post season surplus that was not harvested, 1999's total return estimate for pink salmon is approximately 51.5 million fish. Despite this being the largest pink salmon harvest in PWS history (Table 2), the significant unused surplus of pink salmon clearly indicates that changes and improvements are needed before the PWS area can successfully experience another pink salmon return of this magnitude. The necessity of limiting harvests to match processing capacity during the peak of the return points to a potentially serious shortage of processing capacity for the PWS purse seine fleet. During years with large harvests statewide, pink salmon harvests in other regions clearly can have an influence on the conduct of the pink salmon fishery in PWS. PWS pink salmon have sometimes been exported to Kodiak or Southeast for processing. Fortunately, the lateness of the pink salmon return to the Kodiak Island area provided a window of opportunity for some companies to export pink salmon out of PWS for processing. One processor did import pink salmon from Southeast Alaska into PWS after they quit buying from the PWS fleet. In 1998, the opposite scenario occurred and pink salmon were imported into PWS from Kodiak for processing. Both years had a surplus of pink salmon remaining in PWS when the salmon fishery ended. With strong returns statewide this year, processors ended operations in PWS early citing quality concerns and the lack of tin for canning as the main reasons. It is estimated that over 2 million of the surplus enhanced hatchery produced pink salmon were

harvested for their roe by a few processors with the ability to dispose of the carcasses, but an estimated 2.8 million surplus enhanced fish were not harvested. In addition, the surplus escapement in the wild stock systems could also have been harvested if the capacity to process these fish was available.

In addition to recognizing the need for additional processing capacity in PWS, the department hopes to improve pink salmon utilization by broadening its ability to use otolith marks for improved forecasting and inseason management. With otolith marked fish, the risks to wild stocks associated with a harvest decision can be evaluated prior to a fishery being announced. Post fishery analysis can be used to further refine management. Stream escapements, commercial harvests, and migration routes can all be accurately characterized using otolith marks. As a management tool, otolith marks offer a great deal of useful information about wild and hatchery pink salmon interactions. Figure 7 provides the sound wide pink salmon contribution to the commercial catch based on otolith thermal marks.

Reliably forecasting the magnitude of the PWS return can assist local managers, hatchery operators and the fishing industry in sufficiently preparing for the coming salmon season. The commercial harvest of 45.0 million pink salmon in 1999 exceeded the forecasted harvest by 15.0 million fish. Major processors cited quality and a lack of tin as their reason for ceasing operations near the peak of the late pink return. Reliable statewide forecasts can help the entire industry identify and address where and if regional processing shortfalls are likely to occur. Traditional markets and outlets may be unwilling or unable to absorb consistent annual harvests of 100 million pink salmon from Alaska. Until this issue is addressed locally and statewide, post season surpluses comprised of late timed pink salmon are likely to result.

## SUBSISTENCE

Subsistence and personal use harvests continue to be minor by comparison to the commercial salmon harvest in the Prince William Sound management area. The largest subsistence and personal use fisheries occur on the upper Copper River, upstream of the regulatory markers above Haley Creek to Slana River which is covered in the Copper River management report.

*Eastern and Southwestern Prince William Sound Fisheries*

The Southwestern and Eastern subsistence permit program began in 1988. Residents of both Chenega Bay and Tatitlek are eligible for subsistence use permits in their respective areas. In 1991, a court ruling qualified all residents of Alaska for a subsistence permit in the Eastern or Southwestern areas. Permit holders are allowed to fish in these areas from May 15 until two days before the first commercial fishing period. Once the commercial fishing season is established, subsistence fishing may occur only during commercial fishing periods. Two days following the closure of the commercial fishery for the season, subsistence opens to seven day per week fishing until September 30 in the Southwestern and October 31 in the Eastern area for seven days a week.

Subsistence reports are not available at this time for PWS for 1999. The subsistence harvest in previous years has been composed of all salmon species. In 1997, in the Southwestern District , 5 permits were issued, primarily to residents of the village of Chenega. Only 4 permit holders reported having fished, reporting a total catch of 44 chinook, 193 sockeye, 110 pink, 272 chum and 30 coho salmon. In the Eastern District, 6 permits were issued with three reporting a harvest of 0 chinook, 107 sockeye, 45 coho, 0 pink, and 54 chum salmon. The total subsistence harvest for PWS in 1997 was 855 salmon. In 1998, in the Southwestern District, 4 permits were issued with three reporting a harvest of 13 chinook, 114 sockeye, 20 coho, 65 pink and 119 chum salmon. In the Eastern District, 11 permits were issued with 2 reporting a harvest of 0 chinook, 2 sockeye, 71 coho, 4 pink and 28 chum salmon. The total subsistence harvest for PWS in 1998 was 436 salmon.

# Table 1. Pink Salmon Stock Composition to PWS Fisheries and Broods

All Districts and all periods

| | Solomon Gulch | Cannery Creek | W.H. Noerenberg | A.F. Koernig | Wild | Total |
|---|---|---|---|---|---|---|
| CPF | 9,465,378 | 5,414,942 | 4,828,682 | 5,108,346 | 6,814,707 | 31,632,055 |
| Cost Recovery | 4,354,601 | 2,014,448 | 3,861,891 | 2,994,037 | 146,624 | 13,371,601 |
| Spawning Rack | 954,305 | 1,293,460 | 776,277 | 1,287,515 | 2,198 | 4,313,755 |
| Total | 14,774,284 | 8,722,850 | 9,466,850 | 9,389,898 | 6,963,529 | 49,317,411 |

| Year | Chinook | Sockeye | Coho | Pink | Chum | Total |
|---|---|---|---|---|---|---|
| 1971 | 3,551 | 88,368 | 30,551 | 7,310,964 | 574,265 | 8,007,699 |
| 1973 | 2,405 | 124,802 | 1,399 | 2,056,878 | 729,839 | 2,915,323 |
| 1974[b] | 1,590 | 129,366 | 801 | 448,773 | 88,544 | 669,074 |
| 1975 | 2,519 | 189,613 | 6,142 | 4,452,805 | 100,479 | 4,751,558 |
| 1976 | 1,044 | 112,809 | 6,171 | 3,018,991 | 370,478 | 3,509,493 |
| 1977 | 648 | 310,358 | 843 | 4,513,082 | 572,610 | 5,397,541 |
| 1978 | 1,042 | 222,083 | 1,495 | 2,913,721 | 485,147 | 3,623,488 |
| 1979 | 2,015 | 150,040 | 6,843 | 15,607,620 | 326,414 | 16,092,932 |
| 1980 | 189 | 189,816 | 2,952 | 14,157,057 | 482,016 | 14,832,030 |
| 1981 | 404 | 251,222 | 4,383 | 20,524,470 | 1,878,716 | 22,659,195 |
| 1982 | 255 | 1,055,099 | 24,362 | 20,396,222 | 1,335,368 | 22,811,306 |
| 1983 | 1,048 | 92,111 | 10,496 | 14,038,796 | 1,041,309 | 15,183,760 |
| 1984 | 489 | 311,955 | 12,420 | 22,086,806 | 1,201,842 | 23,613,512 |
| 1985 | 1,104 | 493,278 | 19,753 | 25,056,663 | 1,280,093 | 26,850,891 |
| 1986 | 1,330 | 488,715 | 12,277 | 11,407,271 | 1,683,049 | 13,592,642 |
| 1987 | 874 | 540,109 | 47,751 | 29,198,507 | 1,904,494 | 31,691,735 |
| 1988 | 1,037 | 183,572 | 75,709 | 11,817,323 | 1,832,114 | 13,909,755 |
| 1989 | 1,113 | 140,090 | 203,574 | 21,860,582 | 995,962 | 23,201,321 |
| 1990 | 447 | 58,497 | 234,525 | 44,163,479 | 959,838 | 45,416,786 |
| 1991 | 445 | 507,815 | 145,311 | 37,134,311 | 331,906 | 38,119,788 |
| 1992 | 1,475 | 780,932 | 202,311 | 8,635,448 | 328,568 | 9,948,734 |
| 1993 | 2,148 | 418,948 | 48,310 | 5,761,436 | 1,173,341 | 7,404,183 |
| 1994 | 1,376 | 334,183 | 121,518 | 36,874,188 | 1,039,095 | 38,370,360 |
| 1995 | 1,364 | 230,057 | 140,314 | 16,045,396 | 702,216 | 17,119,347 |
| 1996 | 700 | 606,525 | 172,448 | 26,036,570 | 2,077,996 | 28,894,239 |
| 1997 | 1,186 | 1,197,776 | 64,360 | 25,828,078 | 2,224,725 | 29,316,125 |
| 1998 | 2,013 | 365,591 | 74,105 | 28,664,281 | 1,266,887 | 30,372,877 |
| 1999 | 1,055 | 339,037 | 81,841 | 44,993,247 | 2,963,838 | 48,379,018 |
| Ten Year Average (1989-98 | 1,227 | 464,041 | 140,678 | 25,100,377 | 1,110,053 | 26,816,376 |

[a] Includes purse seine, drift gillnet and set gillnet catches from all P.W.S. fishing districts; Eastern, Northern, Unakwik, Coghill, Northwestern, Eshamy, Southwestern, Montague and Southeastern. Also includes hatchery sales harvests confiscated fish, donated and discarded fish catch, the surimi study fish, and special use educational permit catches.

[b] General purse seine season closed.

**Figure 1. Prince William Sound and Copper/Bering River Districts**

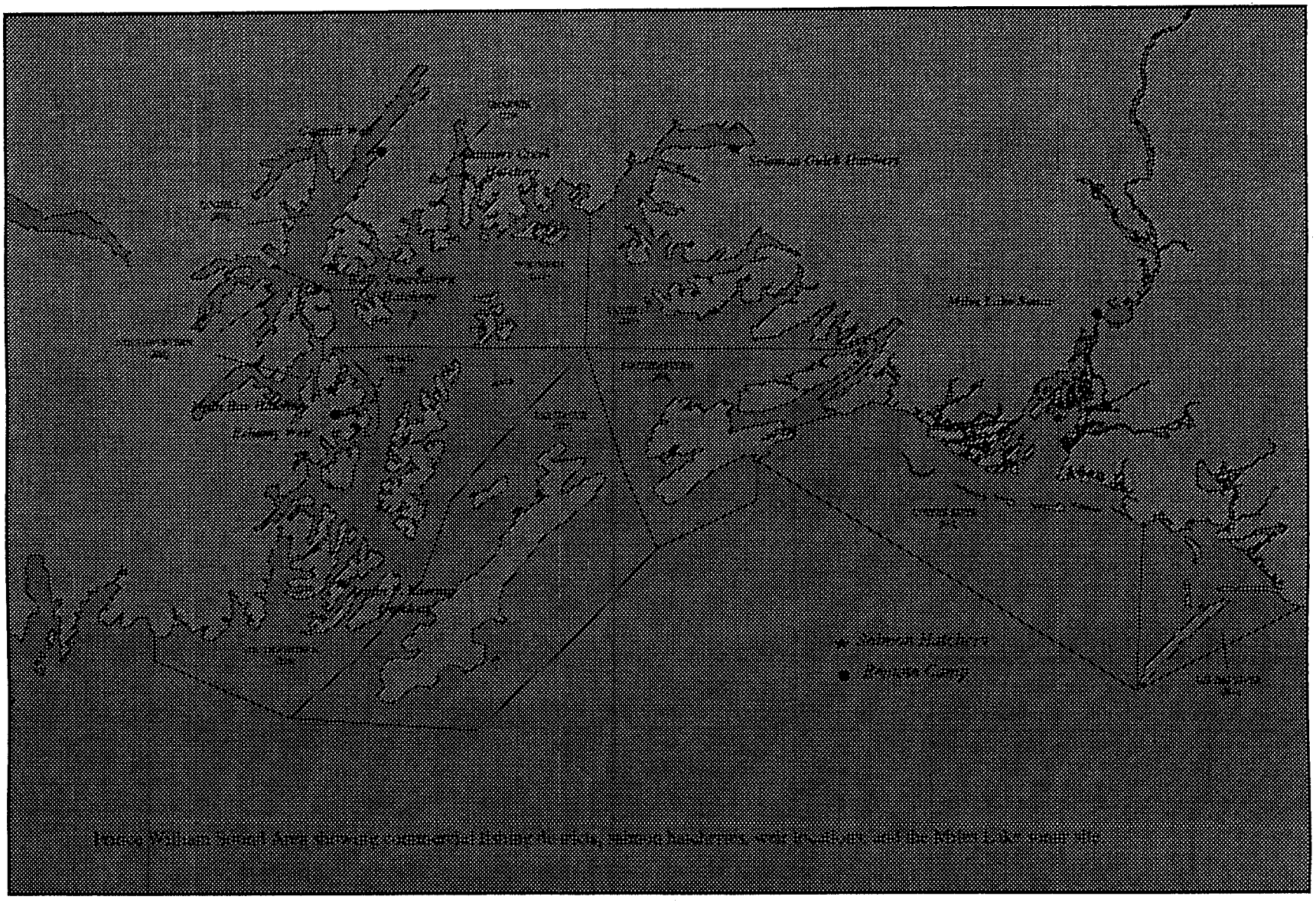

**Figure 2. Eastern District Common Property Contribution**

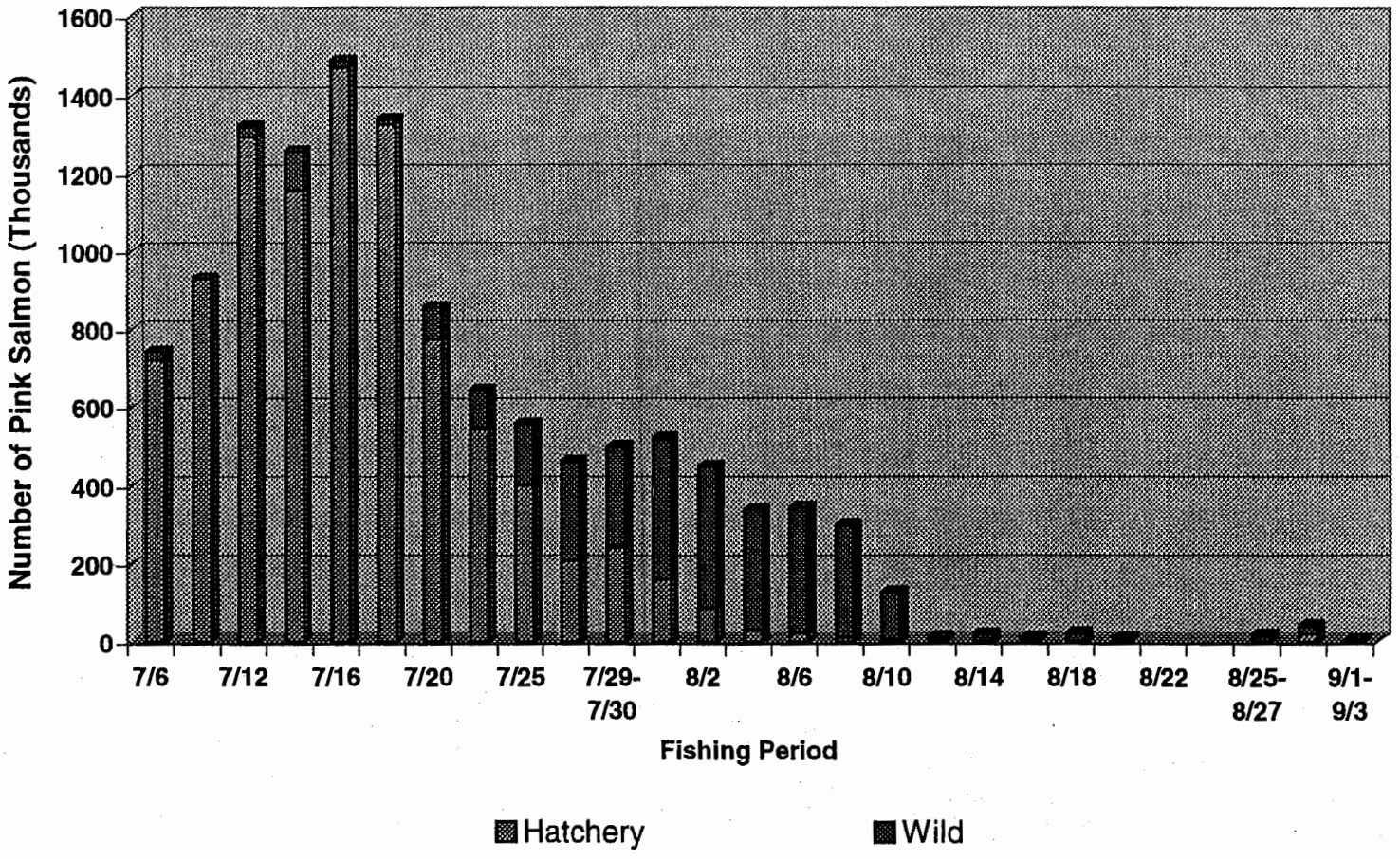

**Figure 3. Southeastern District Common Property Contribution**

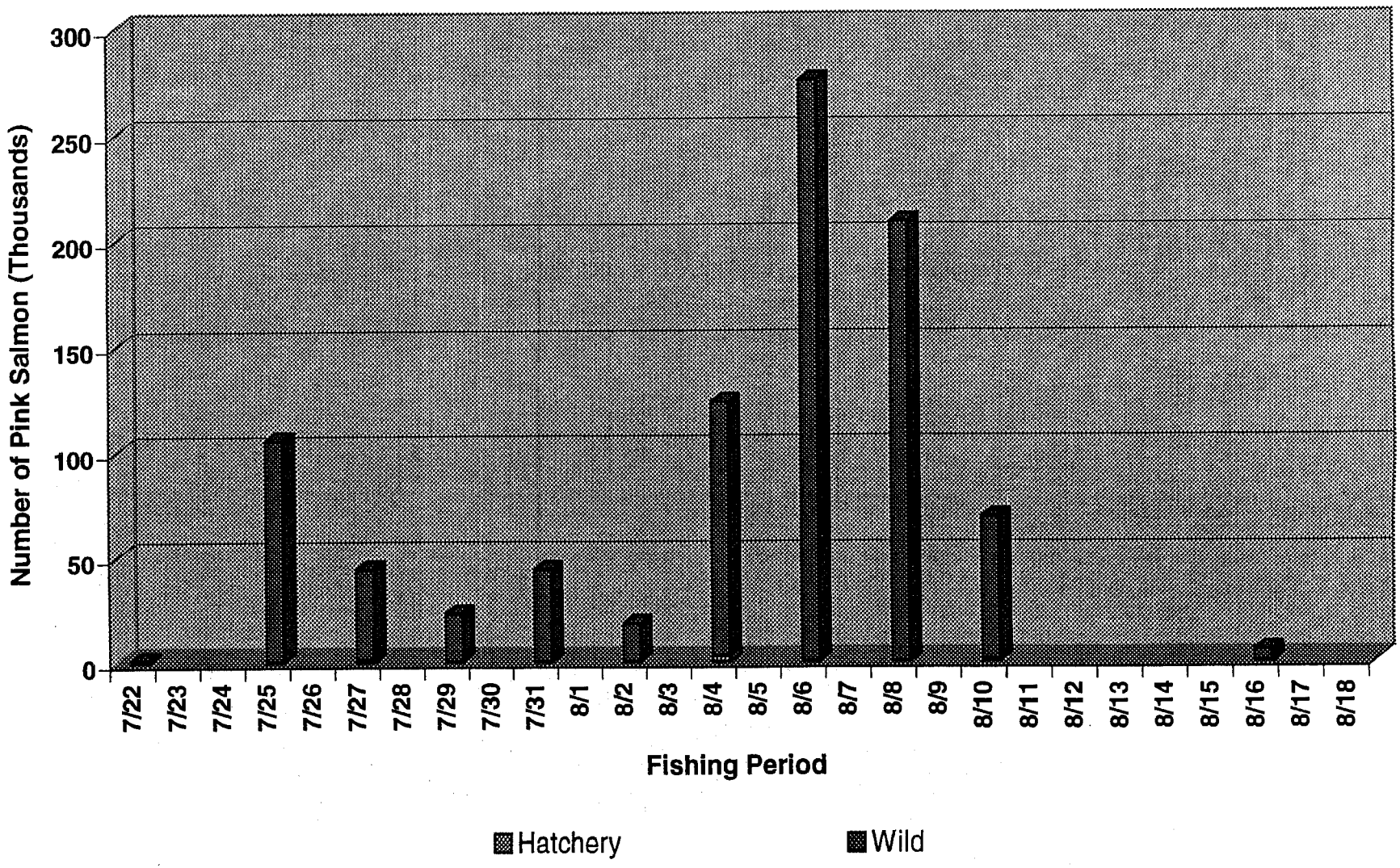

**Figure 3. Southwestern District Common Property Contribution**

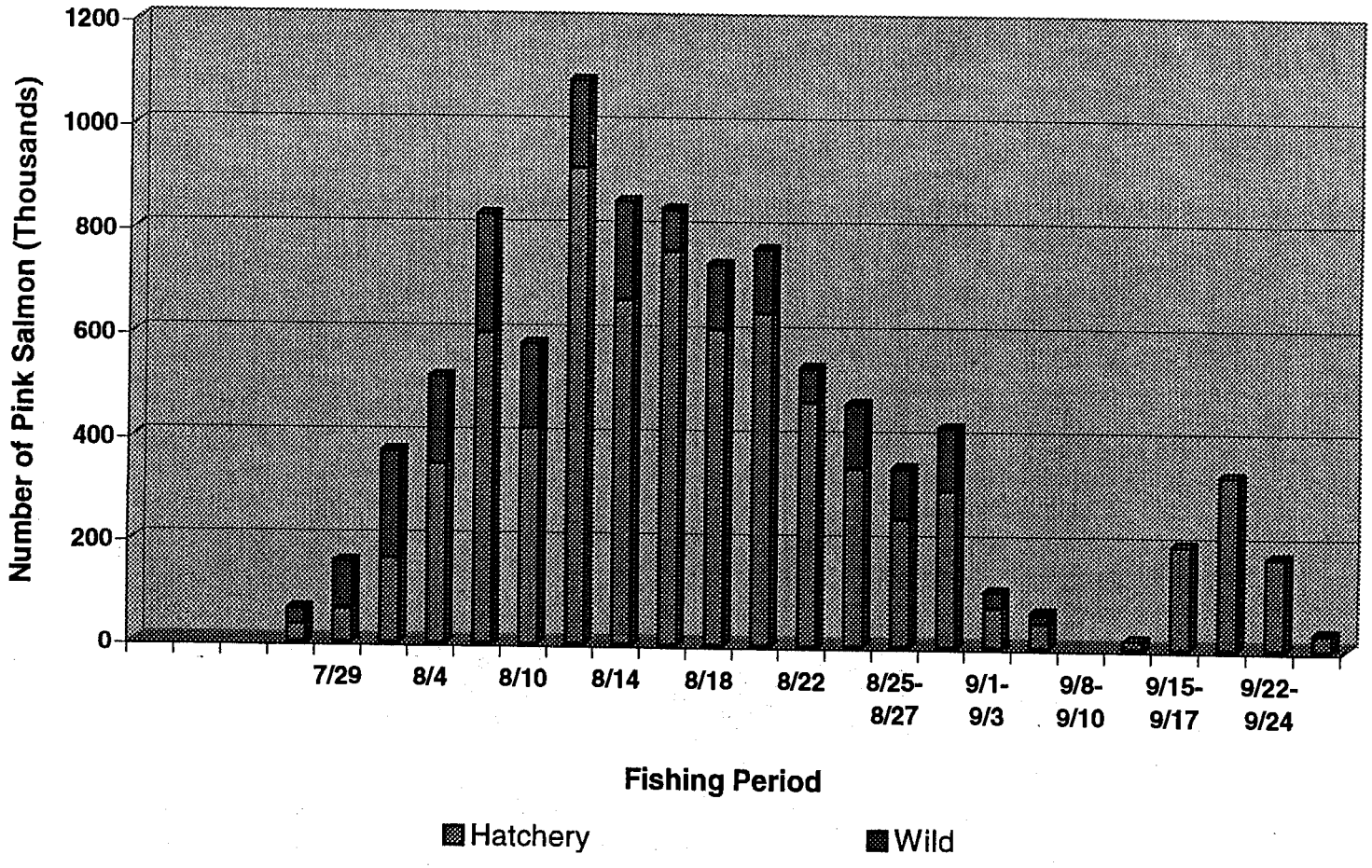

**Figure 4. Northern District Common Property Contribution**

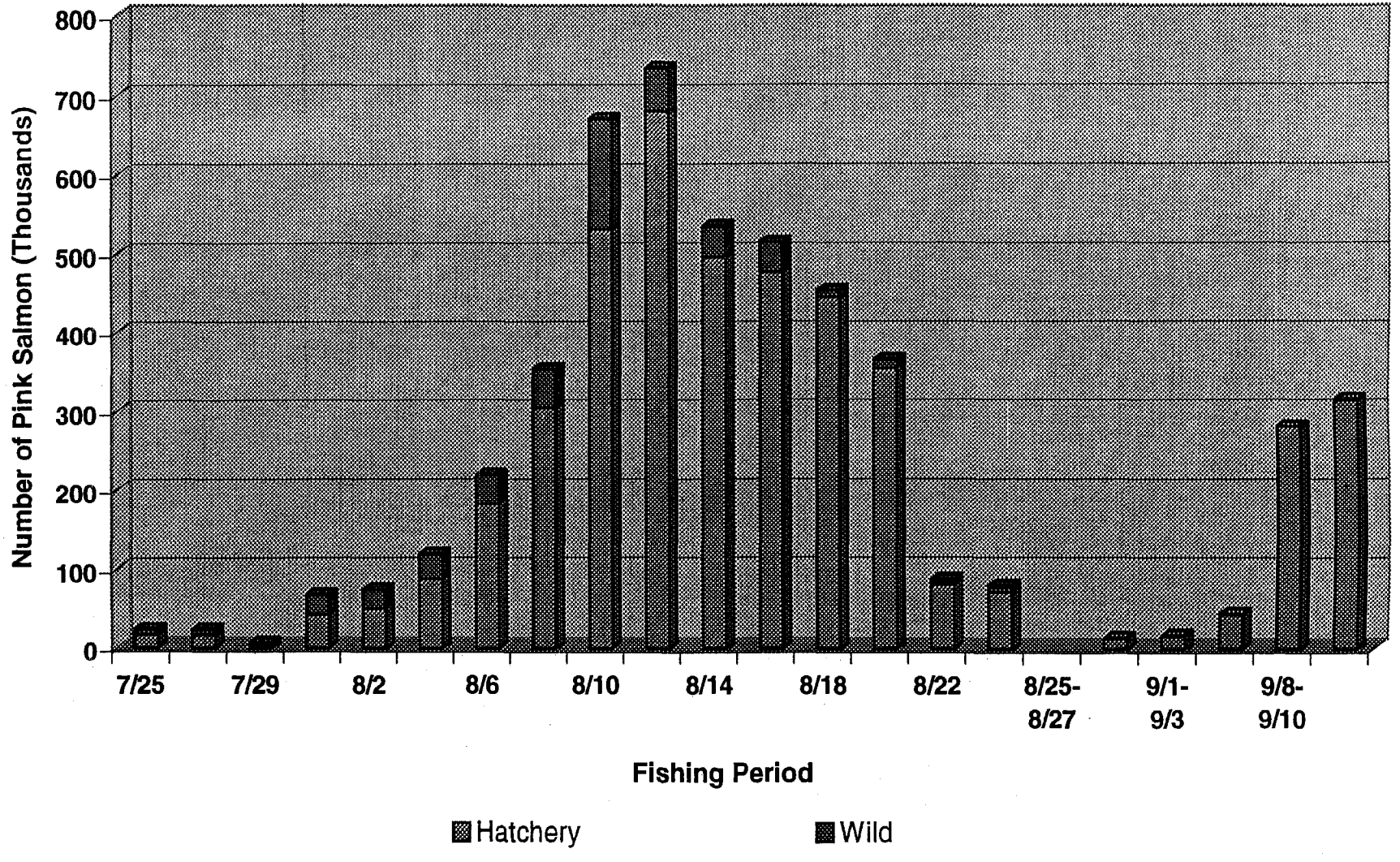

**Figure 5. Montague District Common Property Contribution**

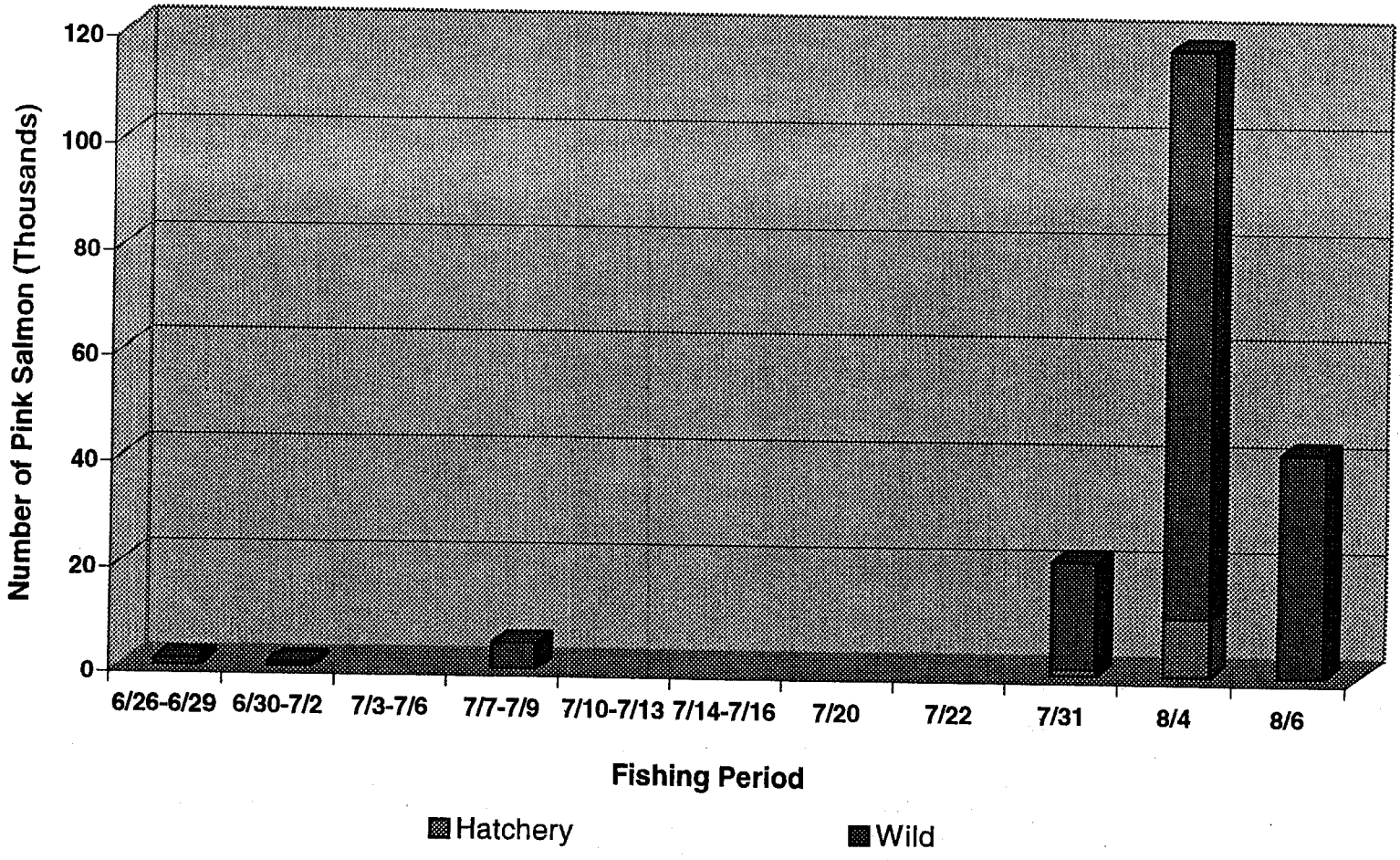

**Figure 6. Coghill District Common Property Contribution**

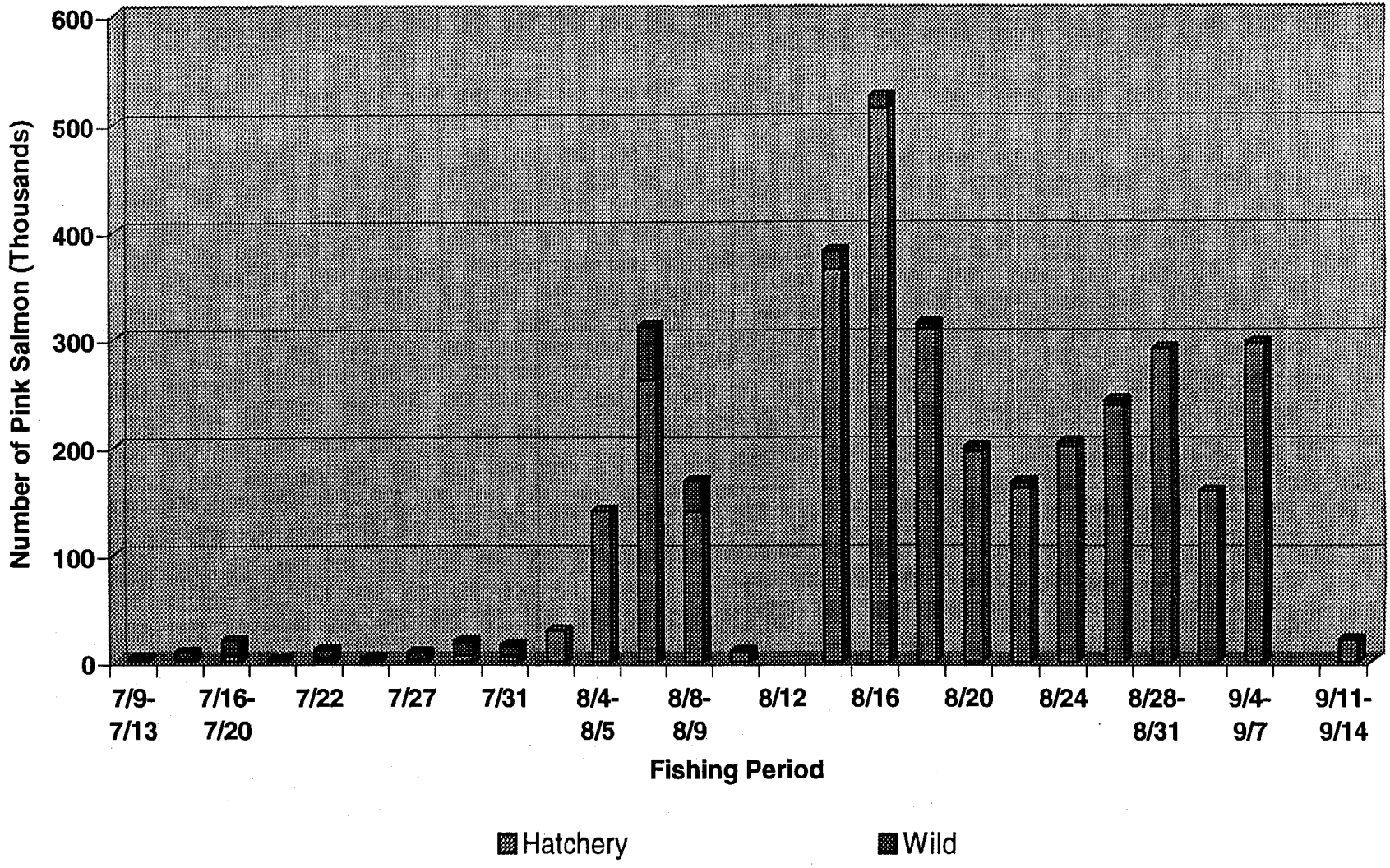

Figure 7. 1999 Prince William Sound Common Property Catches