

Prince William Sound Management Area  
1993 Annual Finfish Staff Meeting Notes

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## INTRODUCTION

The 1993 Prince William Sound annual finfish staff meeting was held at the Anchorage Regional Office from February 16 - 18, 1993. This annual meeting serves as a forum for area, regional and headquarters staff to coordinate and plan for the upcoming herring and salmon field seasons. This report is prepared to archive the salient points of the meeting.

## ATTENDEES

In attendance: Tim Baker, James Brady, Linda Brannian, Brian Bue Al Cain (Fish & Wildlife Protection), Paul Desjardin, Wayne Donaldson, Ken Florey, Steve Fried, Fritz Funk, Hal Geiger, Dennis Haanpaa, Kelly Hepler (Sport Fish Div.), Jeff Killip (Department of Law), Carol Peckham, Wayne Prigge, Tim McDaniel, Steve Moffitt, Steve Morstad, Ken Roberson, Nicki Scarzi (Sport Fish Div.) Dan Sharp, Sam Sharr, Ellen Simpson, Jim Vansant, John Wilcock, and Mark Willette.

## ASSIGNMENTS

- Brady - Submit statewide open pound proposal
- Add language to herring management plan proposal to change the threshold
  
- Funk - Project average weight for herring sac roe fisheries
- Provide new threshold level to Brady for herring proposal
  
- Simpson - Contact CFEC about specifying dive or handpick on wild kelp permits
- Draft Main Bay Subdistrict closed waters proposal
- Find the cost for Network version of Windows and let Sam know
  
- Killip - Obtain liability opinion from Liza McCracken
  
- Sharr - Will pay for the Windows software for the Network

## HERRING

The spawn deposition survey is no longer funded by oil. The Public Advisory Group recommended this project for funding, however the Oil Spill Trustees rejected the proposal. A summary of 1992 oil spill results were presented at the oil spill symposium (see oil spill symposium abstracts). There will be 11 herring reports submitted for publication in the Canadian Journal of Fisheries. Evelyn Biggs is working on project closeout. Final NRDA oil spill reports are in progress, however, Region II is trying to get allocations extended past February 28. Dick Kocan's reproductive impairment work will likely be the only herring project that is funded during the next oil year.

Tim Baker discussed differences in fecundity during 1992 over previous data. He noticed a decrease in egg size and an increase in number of eggs. The average number of eggs increased from 19,000 to 27,000/female. The difference occurs for all age classes. The size/egg is about 30 percent smaller. This could change survival of the young due to less yolk. If the 4-year recruitment cycle in 1996 is missing, it could be due to reduced egg size. Discussion followed on possible affects from prior egg retention.

Age-structured-analysis (ASA) will be the method of calculating the herring biomass for 1993. Fritz Funk indicated that ASA should not be used alone and that it would be best to have the spawn project back in 1994. The ASA model looks at biomass trends and makes use of all prior fishery and research data. The survival rate in the model is now 68 percent vs 64 percent used in previous years. The maturity schedule also changed with an earlier age of maturity and average weight was lowered. Fritz did forecast the herring biomass two ways, ASA projects 134,000 tons and spawn deposition 139,000 tons. A twenty percent exploitation equals 26,000 tons for all fisheries. Of all the data used for the ASA model, the 1989 spawn deposition data is an outlier.

Southeast Region does not want to share a spawn deposition project with Prince William Sound. Keeping divers calibrated is a problem for the department when the project does not proceed every year. Baker indicated that the number of calibrations can be reduced as calibration accounts for about 5% of the variance in the biomass estimate.

With the poor market for herring is it plausible to continue to do the spawn survey? James Brady asked about doing the spawn survey in part of the Sound one year and then the other portion the next. It was stated that this approach would raise the error of the estimate and knowing what proportion of the population was sampled was important.

The 1989 year class could be one of the smallest recruitment classes on record. This is probably due to the oil spill, i.e. deformed herring and associated impacts. The 1988 year class is huge. There does not appear to be any unusual mortality but there may be sublethal effects.

To provide the herring industry with an estimate of the likely average weight in the sac roe fisheries, Fritz will project average weight by gear type. Sam Sharr said there is a poor correlation of the food and bait fishery average size with the spring herring fisheries.

James Brady introduced Jeff Killip, Dept. of Law, and Sgt. Al Cain, Fish & Wildlife Protection. He now supervises B Detachment (Kenai ANC, Mat-Su and CDV).

Donaldson reviewed the management outlook and has sent a copy to the region. He is waiting for the region's blessing before sending out to the public. Florey suggests waiting until after the February 22 meeting to release outlook paper. Wayne indicated that the average size data Fritz had, showed that average sizes in the mid-80's were larger than present and that average weights this season may be on the low end of the range.

The record-a-phone and survey flights will be operational about April 1. The strategy will be similar to last year - aerial surveys and test fishing to identify an area with large average fish size and high roe maturity. The northeast area will be watched closely by both the seine and pound fleets.

Aerial surveys will require \$35,000. Wayne indicated that test fish revenue would probably only bring in \$30,000 at today's prices. James thinks that would be OK. Bid packets will go out with processor registration forms. As was done in 1991 and 1992 an EO will be issued to allow for subsistence spawn on kelp from April 1 through May 30.

John Wilcock will be on the R/V Montague during the season along with one or two other research staff. Ellen will summarize aerial survey results during the season. Florey indicated that there was a request from Bristol Bay to allow foreign processing this year, details are not available. Tim Baker and James Brady will be in Cordova for the season.

Al Cain indicated that the usual number of Fish & Wildlife personnel will be in the sound during herring season. He will try to import Mike Fox for a week to help out with pound enforcement.

Concerning the wild spawn-on-kelp fishery it is too early to know which species will have a market this year, recently Fucus was in demand. Ellen put together a packet of information for wild harvesters. Average income per permit last year was about \$1,000. Ellen indicated that for fucus the woody stem was not marketable. If harvesters are required to cut fucus it will slow down the fishery and produce a good quality product that will result in less trimming after harvest. Trimming also leaves some part of the plant that tends to capture water and aid regeneration and protect the substrate. In PWS we don't have the luxury to rotate harvest areas like Togiak does because the area that receives heavy spawn is limited.

CFEC sells more wild harvest permits than are actually used. For management purposes, staff would like to know if a permit holder will be diving or handpicking. If CFEC established two gear types, Ellen could tell how much effort there was for each portion of the fishery. Another alternative would be to only require divers to register (typically only 50). There was a petition

last year to place this fishery under limited entry by the divers. Ellen will contact Chris Kelley to see if CFEC will specify dive or handpick on the permit.

The R/V Julia Breeze won the pound fishery vessel charter bid for \$885/day. Steve Morstad expects the charter to last about 18 days. Some groups have indicated that they may not participate due to low projected value. Both Slim & Tom Vania will be on the grounds prior to the start of the fishery. This year there will be no warnings, all tickets.

Can a person of average intelligence estimate the quantity of fish in a pound? This is the basis that should be applied for overutilization. When asked how to deal with small vs large joint liability violations, Al Cain responded that resource damage violations are serious and their division will take stronger action on these. Staff received two conflicting opinions regarding joint liability for a double pound (two permit holders in one pound) provided by Dave Berry and Gene Cyrus. Berry said that there was no problem if both sign a statement signifying joint liability. Cyrus says that it will not be valid if questioned in court. Al Cain said that you can not hold an operator liable for actions of another. The state would have to show negligence.

The pounders argument to all this is "what's the problem other herring fisheries go over their allocation". Slim says there is a trend away from double to single pounds. The department will need a written opinion soon to get the 1993 permits completed. Jeff Killip will talk to Liza McCracken.

Staff decided to allow one more year of grace for double pounds. The board proposal should be for single pounds with the double pound section bracketed. By this fall we will have the legal opinion and possibly a court case (from this year's fishery) for the board meeting.

Concerning criteria for opening the pound fishery, Slim did not want to state specific criteria, however, an acceptable biomass and roe maturity were important factors. Some pound kelp from last year was tested for mercury and showed high levels of lead and was denied acceptance to Korea.

Florey indicated that we may want to consider a proposal to describe an open pound (statewide open pound proposal). At this point the staff's herring proposals were reviewed.

Fritz Funk recommends that we update the threshold harvest level for PWS based on Zie Jeng's work. James Brady will be responsible for adding a proposal to change the threshold. Fritz will provide the new threshold level.

Slim would like to redo the hatching success and mortality study. He has finished the RIR for the 1991 pound research. James will finalize the Herring BOF proposals before the deadline. He will return a final copy to Cordova.

Herring AWL sampling will proceed with the same protocol and sample size as last year. With no spawn deposition survey, samples will come from R/V Montague, Tim Baker will assist. Each sample takes about four hours to process and another 3.5 hours for aging. Sam may be able to help age scales. Without oil spill funding, sampling will be tight but doable.

## HEADQUARTERS REVIEW

Florey does not see many changes concerning the FRED/Commercial Fisheries merger other than one division one director, until the legislature actually cuts funding for the department. Florey wants comments from the area office staff on reorganization.

Pre-audits indicate an operating budget of \$4.7 million for the region. Of this \$0.5 million is in test fish funds and \$27,000 in buoy stickers.

The budget was balanced by using the vessel fund, \$61,000, and the herring violation money, \$43,000. The Cordova office will receive a 486 computer for the fish ticket system. Both Simpson and Morstad will be able to attend the training academy at Sitka.

The new groundfish-rockfish management plan allows EO authority to shut down directed rockfish fishery & allow bycatch to continue to eliminate wastage. Lingcod management now has a biological season according to mating & nest guarding period. The minimum size limit is 35 inches. Wayne asked if Bill Bechtol would prepare a chart to show openings by gear type vs species.

Statewide BOF proposal #353 was adopted concerning marker locations. The Board did not adopt proposal #354 regarding the datum change. This was based on F&WP testimony that some areas of the state do not have new datum charts.

The Board of Fisheries is now conducting subsistence findings. In most areas they are readopting previous regulations. Deferred subsistence proposals are 1) Continuous fishing in Eshamy, Jackpot & west shore of Green Island with 75 fathoms of gillnet. 2) Set aside Tatitlek Narrows as exclusive use area. Department opposed to both these proposals.

The Dept. of Administration is in the process of reclassifying the Field Office Assistants (FOA's) into Administrative Clerks (I-V). Currently FOA's are range 10's. At this time no decision has been made with respect to range.

Regarding impending staffing changes, Florey indicated the need to find out how much money we have. People affected need to be notified two weeks in advance. Layoff lists are being requested for FB III, FB II & FB I. No statewide positions should be filled until we know the status of layoffs.

## COPPER/BERING RIVER

Marker bid expected to come in at \$4-5,000. Due to VanCleave Lake dumping last September, Slim expects the major channel will be 27-mile so sandbars near markers will change. This year Slim will get GPS coordinates for each marker.

The Copper River forecast was completed by Roberson. John Wilcock will take over this function next year (sockeye and chinook). To obtain the enhanced component of the forecast will require considerable coordination with staff in Glennallen. Roberson will document forecast methods in an RIR.

Staff will not announce the first period in March, rather will wait and assess breakup and announce the opening about May 10. Likely opening around May 17 or 20th. Twelve hour periods have become more common in recent years. The lower than average king escapement in 1992 is deemed acceptable as long as it is a one year occurrence. Two years in a row of weak king escapement is unacceptable. The average exploitation rate of 80 percent indicates they can not withstand two consecutive years of weak escapement.

In the Bering River District, Slim is contemplating a slightly earlier opening perhaps on the 14th.

During the coho season Slim wants 2-24's while the Task Force wants one 48-hour period/week. Processors tend to support the 24's for quality reasons.

Escapement surveys will occur once/week. During the coho season he may need to fly twice/week. Sport Fish wishes to tag along when possible. If there are sport fish closures we need to post markers on the road (Copper River Highway).

Concerning the upper Copper aerial survey program Sport Fish will continue flying the Gulkana as kings are a big issue. Discussion centered on how many of the smaller systems should the department fly? Will sockeye surveys be conducted? Roberson indicated that surveys were an integral part of the forecast and that it only takes \$6,000 to complete the sockeye aerial surveys if you are doing the chinook surveys already. Commercial Fisheries will not fly surveys. Sport Fish Division will have to fly them out of Glennallen. Commercial Fisheries pays for issuing and compiling the upriver subsistence and P.U. permits (roughly 650 permits).

The crew at Miles Lake elected to defer overtime to compensation time in FY 92 which created a deficit of \$6k for FY 93. To operate the sonar site an annual DNR and Habitat permit is required. Gary Thomas of the PWS Science Center would like to investigate the use of Biosonics gear on the Copper River.

The camp equipment will be taken to the site utilizing a SnoCat chartered from Valdez. George Lavasseur (Valdez D.O.T.) is a silent partner in the SnoCat business which raises some suspicion as the department always waits for D.O.T. to open the road.

Copper River AWL sampling will utilize an FB I, Tech III, and Intern IV. There will be no sampling on the upper Copper, except personal use fishery scales are used as age composition for the forecast. The number of escapement sampling trips on the delta will be partially determined by the need to sample PWS chums.

The Gulkana Hatchery white paper has not been adopted as policy, however it was decided to meld that paper into the Gulkana Basic Management Plan that is in progress.

## HATCHERY ISSUES

### Regional Planning Team (RPT) Review

James Brady reported on the status of the RPT Phase 3 plan that is nearing completion. Appendix 8 details the Phase 3 goals. The key element of these goals is the achievement of optimum production by blending wild and hatchery production. PWSAC wants to increase production then back off to achieve optimization. Others in the RPT have different ideas. However, all agree that there is a point of diminishing returns. James feels that we must maintain the wild stock returns while trying to maximize economic returns. We need to use evaluation programs to push the envelope of management of mixed wild stock and hatchery returns. The RPT is working on production recommendations now. Appendix 10 is PWSAC's production and planning committee's recommendations. These are in line with the PWSAC allocation policy. The graph and table in Appendix 8, compares historic wild stock and hatchery harvest rates. The wild stock harvest rate will be lower than shown on the graph with Sam's new escapement information. But even with the best effort we make to segregate hatchery fish, the fishery will still harvest some wild stocks. If there are insufficient returns to meet wild stock escapement objectives, we'll still harvest some wild stocks, for example, in 1988, only the subdistricts were open that year and wild stock pinks were still intercepted in the fishery. The Legislative Hatchery Subcommittee made a proposal to the RPT to set production recommendations as production caps. This would entail another key project review process. It is difficult to find areas of the sound that fit all the genetic, harvest management and other requirements for remote releases. This document will be a guide for PNP's and set upper limits for production. The next step is the public review of the draft of the Phase 3 plan by April.

Slim Morstad wanted to know if the Gulkana increases are a done deal. He felt the increases made no sense if upriver escapements are a problem. Kelly Hepler and Sam Sharr disagreed about the usefulness of a production cap. Sam felt the cap was meaningless if the department couldn't manage current production. James pointed out that we don't have any caps now and with this plan in place we will at least have some. We must require the PNP to pay for any evaluation programs and new increments of production. Sam felt the production goals were asinine and immoral. Lengthy discussion ensued. Donaldson believed that once a production goal is in place, it's difficult to accept a lower production, for example the situation we now have with Main Bay Hatchery. Florey said that the state is in a financial bind and wants to unload hatcheries. This process will be easier if the state can guarantee production but economics will dominate. A cap would be a new idea for hatchery production. It's not realistic to stop production; The best we can hope for is to 'bend' production in the right direction. James felt strict production approval is a safeguard and that the RPT has come a long way in dropping areas for new production increments.

Tim McDaniel supported transferring chum production to Montague Island but they don't want it, so that's production that won't happen. Ken believes we're

fighting a defensive battle. James commented that if another PNP group comes in with a screwball plan then we'll have the mechanism to turn them down. He feels that the process, the checklist and remote release criteria is the most important part of the plan, not the production goals. Wayne worries that it will be a tough battle with increasing pressures to increase production. Ken believes that the ADF&G must remain realistic to remain in the process.

Ken Florey asked how do you counter the argument that escapement wasn't achieved before significant hatchery production. Donaldson pointed to CFOS data that indicates that the environment was less productive then, and now we may be in a similar situation but with increased hatchery production we may have a double whammy on wild stocks. Sam Sharr thinks that escapement for those years probably was achieved if you look at the true escapement. There is a range around the index number and a reduced number of surveys in some years contributed to escapement below the index.

#### CWT Briefing Paper

This was an assignment from Bob Clasby (Appendix 9). It's an offshoot of Hal Geiger's white paper. The paper's topics include quality issues, terminal area management and the consequences of losing the CWT program. Wayne Donaldson commented that some alternatives were: 1) To reduce hatchery production, 2) To increase corporate escapement to fund the program, and 3) To secure long-term funding though operational budget.

Later in the meeting Bob Clasby sent an E-mail message regarding the CWT White Paper. He needed to know what PWS inseason management strategies will be with and without the CWT project.

#### Production and Planning and the Main Bay Hatchery Consensus Document

The priority 1 projects for Main Bay Hatchery evaluation must be funded (Appendix 11). The priority 2 projects would be nice but they're not essential. PWSAC will decide at the March 20 general board meeting if they will endorse the plan. This could be funded by increasing the amount of cost recovery revenue. Ken Florey suggested that PWSAC dedicate a certain percentage of that revenue for evaluation programs. Tim McDaniel felt the department needs a mandate from Juneau on who should pay for evaluation programs. James suggested that it may be appropriate for the department to go to the Board of Fisheries with a proposal. Tim McDaniel felt that we'd better get a consensus from PWSAC first. Wayne Donaldson stated that we need the CWT program for management of hatchery return (30/70 split) inseason. Ken Florey commented that we must convince these people that it is in their best interest financially to fund these programs.

Mark Willette said the PWSAC production plan will be on the March board meeting agenda. This includes the PAR for the chum release at Montague, the sockeye remote release plan for Barry Arm and the creation of an essentially a new facility, by doubling the size of WNH. Mark detailed the production increases from his handout (Appendix 10); They are the same as in the RPT Phase 3 Plan.

### Annual Facility Management Plans

Ellen Simpson gave a summary of the PWS hatchery facilities annual management plans. VFDA's Solomon Gulch Hatchery will be managed by tracking a revenue curve this year. Their revenue goal will be between 1.5 and \$2.3 million for 1993. Sam's forecast of 3.4 million pinks agrees closely with VFDA's forecast. Given this level of return, VFDA can expect to harvest between 1.6 and 2.5 million pinks for cost recovery. This would result in a CPF contribution of between 1.8 and 900,000 fish. This will probably change, as they have submitted a 5-year plan with a \$2.8 million revenue goal to Cordova District Fishermen United. If this is the case, they may need to take the entire return in cost recovery. VFDA has also decided that the chum return is a priority over the coho return. The department would manage for chum brood stock in the Port.

Aggregate management will occur again this year for the Coghill stock return to MBH and the Esther chum return, if the chum return is weak or slow to move into the SHA. This worked out well last year. Also, the \$420,000 Gulkana operating costs will be added to the sockeye cost recovery goal at Main Bay. This equates to approximately 46,667 sockeye. The pink cost recovery harvest at AFK, CCH, and WNH will be the same as last year. PWSAC's cost recovery policy states that no more than 30% of the hatchery return be taken for hatchery escapement. If the pink return comes in as forecast approximately 5,116,741 fish will be harvested for cost recovery. Their budget will be approved at the March 20 board meeting. The chinook and coho returns to WNH will be managed for the CPF; No cost recovery will be directed on these stocks, although some will be taken incidental to the chum and pink cost recovery.

### Tag Application and Quality Control

Both PWSAC and VFDA are applying CWT tags this year. Mark Willette will do his best to get out to the hatcheries and quality control tag application by trying to get rides with other flights as he has no money of his own. He will try to educate hatchery managers in CWT data use and impress upon them the importance that tagged fish are representative of the entire population by accurately estimating the number of untagged fish and ensuring the tagged to untagged fish ratio is the same for each species at each facility. He will also instruct hatchery personnel how to enter tag data into the CWT database. Appendix 12 gives the numbers of tagged fish at each release site. Mark says quality control is a full time job; One and one-half months of general fund money is allocated for quality control. Tim McDaniel asked why it is necessary to tag coho and chinook. Mark replied that they would be used to measure interception in the Copper River fishery. Mark has started preparing agreements with the PNP's and there are problems with the tag recovery budget.

### Otolith Mass Marking

An otolith mass marking proposal Mark submitted to ASTF was shot down by an ADF&G reviewer. Mark would like to resubmit the proposal again this year. The project

would examine otolith banding patterns in PWS and determine catch sampling needs. The results would supply some needed answers before proceeding with a large scale project. The negative comments about the proposal were mainly that it concentrated on fishery management strategies and that it should have had greater involvement of senior ADF&G scientists. Otolith marking may be cheaper and better than CWT.

## ENFORCEMENT ISSUES

### Eshamy Closures

Al Cain, acting Attachment B Commander, was present for this portion of the meeting.

Wayne Donaldson explained that stream closures, created by emergency order, in the Main Bay Subdistrict, only take effect after July 7, during the pink return. He wanted to know if it was appropriate to take this to the Board of Fisheries to formalize them in regulation. The Thomas case in Eshamy Bay pointed to inconsistencies in the ADF&G stream closure policy. James Brady agreed that a proposal was appropriate and directed Ellen Simpson to draft the proposal.

### Miscellaneous Issues

Salmon seiners have an area to test their gear near Cordova; The gillnetters can lay out their gear in the harbor. F&WP or the department should be notified prior to testing gear.

Enforcement will only be present at field announced hatchery openings; They won't be present for timed hatchery openings.

F&WP has submitted 3 proposals to the Board of Fisheries. The first one addresses the line at Hook Point. The line should be due south from Hook Point. The second would require drift gillnets to be 60 fathoms away from set nets in the Eshamy District. The regulation now reads 50 fathoms, creating an imaginary line where a drift gillnet could be set. This has created an enforcement problem. The third proposal would eliminate the word "intentionally" from "intentionally staked" with regard to drift gillnets.

Al Cain will try to get Mike Fox up from Ketchikan for at least a week for the pound fishery. Jim Cockrell wants to spend more time with the wild harvest.

Slim Morstad suggested that a DA be dedicated to fish and game issues. Al Cain agreed that this was a good idea and that it was something to work towards. He felt that there are DA's that have the right qualifications. Two DA's would be needed; one for the Peninsula and one for the Southcentral Region. Ken Florey indicated he would send a memo to Commissioner Rosier if Al Cain would do the same to his commissioner.

Wayne Donaldson recapped the 1992 violations. Discussion then centered on the fate of the enforcement vessel the Burton. The Burton will go to Bristol Bay this year and the Balena will come to PWS. This is only for one year. F&WP is using whalers in Cook Inlet. Al Cain indicated that the PS2 could be put in the water if Slim needed it.

## SALMON OIL SPILL PROJECTS

### Escapement Survey Results

Sam Sharr reported results from his work comparing weir counts with aerial escapement estimates. His goal is to determine true escapement levels in PWS. He briefly explained the 'area under the curve' technique used to estimate index escapement, where  $E$ =escapement,  $A_n+A_{n+1}+\dots$ = area under the curve from aerial escapement surveys, and  $S$ =stream life.

$$E = \frac{A_1 + A_2 + A_3}{S}$$

The traditional value used for stream life has been 17.5 days. This is based on work done in the '60s in Olsen Bay. Sam's oil spill work indicates that this figure may be different in the western sound and may vary as the season progresses. He found that generally, pinks have a shorter stream life in intertidal creeks and at the end of the season. Fish also spend some time milling at the mouth of streams. Sam's 1992 data corrects for this.

Sam outlined four sources of error in estimating escapement: 1) The distribution and frequency of surveys, 2) Observation error, 3) Incorrect stream life, and 4) Estimating the unsampled portion of the population.

Sam feels the distribution and frequency of aerial surveys has been pretty good in PWS. Three factors are important to minimize bias in the distribution and frequency of surveys: 1) Missing beginning or ending points. 2) Failure to stratify changes in abundance, and 3) Not flying enough surveys.

Observation error affects the value in the numerator of the escapement equation. The two components of this error are observer bias and method bias. By comparing weir passage data with aerial counts Sam was able to estimate both observation error and method error. If an observer can consistently estimate a given number of fish we can correct for this. If shotgun effect then can't correct for. Sam has tested the current observers using weir data to correct for this bias. Method bias incorporates the limitations of aerial surveys. Fish can't be seen through foliage and stream cover. Aerial observers always underestimate the true numbers of fish in a stream. Although they come closer in even years when there is more intertidal spawning.

Sam used this data to correct aerial survey estimates for survey bias for the 10 weir systems for the years, 1990 through 1992. Correcting for only observer bias adjusted the aerial survey escapement estimates to 60%, 35%, and 73%,

respectively, of the actual escapement for those years. Combining observer bias with the correct stream life adjusted the aerial estimates to 99%, 112%, and 107% of the actual escapement.

The proportion of unsurveyed streams to surveyed streams is the highest in the Southwestern District. To enumerate escapement in unsurveyed streams, a set of streams were randomly selected and surveyed for one year.

Sam feels that these studies will change how we look at wild stock escapements, exploitation rates, and spawner recruit relationships.

### Pink Salmon Weirs

Dan Sharp presented information collected from the pink weir project including straying information. Pink salmon outmigrants were coded wire tagged in proportion to the total number of outmigrants. A total of 240,000 tags were applied and the tagged to untagged ratio varied from 1 in 3 to 1 in 15. As part of the project, non-weir streams located close to the weir streams were surveyed regularly on foot and CWT's were retrieved from carcasses. Streams located on migration routes received more hatchery pink salmon strays than systems at the heads of bays. Mark Willette asked if strays are as fit as wild fish? He suggested that Sport Fish Division should get a NSF grant; this is pretty basic stuff. Dan also reported that based on tagging data, 700 MBH Coghill stock escaped past the Eshamy weir.

### Run Reconstruction

Hal Geiger presented some preliminary results from Bill Templin's run reconstruction work. His results reenforce the widespread belief that pink salmon mostly enter the sound through the straights and passes in the Southwestern District and then move through the sound counterclockwise. The average transit time from entry into the sound to the fish's natal stream is 2 weeks, using the radio tagging data from 1992. One fish took 11 days to move from the Southwestern District to Port Valdez. The run reconstruction work also estimates the exploitation rate on pink salmon in the Coghill District to approach 90%. Other areas in the sound only experience a 70% exploitation rate.

### Other Projects

Mark Willette plans to submit a proposal to ASTF to recover CWT juvenile pink salmon with the goal of developing improved forecasting techniques using growth rates. Also, this is information hatcheries could use to evaluate rearing and release strategies. This study will compare growth rates of fry to temperature and plankton abundance. As returning adults, growth rates will be compared to survival rates.

## VESSELS

Wayne indicated that the communication equipment is great but we should have a back-up SSB. Last herring season the SSB went down.

Both Jim Vansant and Paul Desjardin went over their sailing schedule for the 1993 season (Attachment 15). F&WP asked if the Pandalus could be on standby in case they needed it for the Cook Inlet sockeye fishery, no funds just a freebie. Florey said the Pandalus would not standby.

Wayne would like to schedule the Montague for late July early August for the seine fishery as he did in 1992. It worked out well in 1992 (good response from the fleet) but with changes in this years management plan not sure what implication the boat has. Most of the fishing will occur in the hatchery sub-districts. If the Montague is needed Jim would like to schedule in the time, NMFS has also asked for some boat time this year.

Jim summarized the CFOS/CTD information collected during his monthly trips (Attachment 14). Jim said after next year there is no money to continue the CFOS buoy so if we feel this is important information we need to find funding. Florey asked how much. Jim said, roughly \$10k to \$13K. Sam indicated he has been using the information for forecasting but would like to examine the food abundance information, but at this time temperature seems to be the driving force for pink returns.

### Markers

The department is submitting a proposal to clean-up the typos in the closed waters section in the Salmon Regulation booklet. Jim Vansant has been locating the typos and making the necessary changes and giving that information to Ellen for her to incorporate into the proposal. Ellen will also go out this spring on the marker trip to collect lat. long. coordinates for those markers in doubt.

## SALMON FISHERY

Ellen indicated that the AMR should be completed by March 30.

Sam discussed the 1993 forecast mentioning the use of CFOS data. He expects a moderate run of wild pinks to the sound and hatchery returns to be average to slightly below average. Sam's and Jeff Olsen's (PWSAC) forecast are similar. Sam also predicts a moderate pink return for VFDA. The Coghill wild sockeye forecast is greater than last year. The escapement goal is 25,000 sockeye. The wild chum forecast indicates a weak return and no harvestable surplus.

### Preseason Outlook Paper

The Salmon Outlook paper has a completion date of April 1. One of the major changes for 1992 is delaying the announcement of the Copper River opening. Staff felt that last year with the late spring the Copper River opening should have been delayed until the following week. Hopefully, the final meeting of the SHTF will be March 18 and all will sign the plan so that can be included in the outlook paper.

Wayne thought that at the March 18 SHTF meeting Hal could come up and give a presentation of his tagging study and run reconstruction model. It would also be a good idea for Dan Sharp, Carol Peckham and Sam Sharr to give their presentations on the CWT, straying, and escapement information. Sam thought the best place for the presentations would be at the PWSAC board meeting. Mark Willette indicated that Saturday and Sunday were booked but didn't know what was planned for the workshop. James will contact John McMullen about scheduling. Sam wants Jim Seeb to attend the Board meeting in case of genetic questions.

Wayne listed off all the SHTF recommendations that were discussed this winter (Appendix 16).

One of the big issues is the allocation of fish between the setnet and gillnet groups in the Eshamy District. At this time, the setnet harvests have exceeded the 1% allotment. PWSAC will be addressing this at the board meeting in March and several proposals will be submitted to the BOF this winter.

The Coghill sockeye return is expected to exceed the 25,000 escapement goal for Coghill Lake. If Coghill is on tract but Esther chums are poor, commercial fishing in the Coghill District would be allowed. Fishing could occur north of an east west line in Port Wells for Coghill bound sockeye.

The first Eshamy District opening is planned for June 17 in the entire district. Around July 8 to 10 emphasis will be switched to Eshamy Lake sockeye escapement and wild pink and chum escapement concerns in the Northwestern District.

PWSAC has asked the department for a 50 fathom set back from their barrier seine in Main Bay. Last year it was 50 feet, however with tidal changes the barrier seine drifts several hundred feet either way. This additional protection will help provide a separation of the early Coghill stock and later Eshamy stock by reducing the possibility of damage to the barrier seine. If this closure is granted setnet sites would be eliminated, basically the alternating gear zone (AGZ) would be closed.

The Unakwik District will open June 17 and run as scheduled with two 24-hour periods each week and be adjusted as needed through the season.

A remote release of late chum at Naked Island by VFDA was voted down by everyone at the table. VFDA also indicated to Wayne that the main objective for remote release is to collect their chum brood stock in Port Valdez and not have the seine fleet interfere with the sport fishery.

If pinks remain the predominate species in late August and early September at Esther, seiners will be allowed to fish in Lake and Quillian Bays during short 12-hour openings.

The Mixed Stock Policy will be taken up at the BOF meeting in March. The policy is expected to be similar to the old unofficial policy, but will be made official by the BOF.

The SHTF recommends no general district fishing until escapement levels reach at least 80 percent in the given districts, until then only subdistrict fishing. They also recommended no 6-hour periods. Sam wants the SHTF to recognize that just because they remain in the subdistricts, wild stocks are still harvested.

Sam explained that the east-west corridor strategy used during the seine season in 1992 harvested a larger portion of wild stocks in the western corridor than in the eastern corridor. To help with wild stock escapement, action will need to be implemented prior to 8 August. Sam says that the 80% level of escapement is too risky for us if there is no CWT program. We should not allow outside fishing until escapement reaches 95 to 100%. Wayne doesn't feel real comfortable about stating that and thinks the escapement won't reach 80% and the commercial fishery will remain in the SHA's all season. Wayne would be happy to see escapement into the Northwestern District at 80 percent. The SHTF will be informed that the department is not willing to take that big of a risk on wild stocks so the plan will call for a 95 to 100 percent escapement in all districts before the seiners are allowed out of the SHA's.

#### SALMON BOARD PROPOSALS

Wayne went through the salmon proposals for the upcoming BOF meeting, Attachment 7.

#### ESCAPEMENT PROGRAMS

Mark Willette indicated that he does not have the go ahead for the Coghill Lake fertilization and the evaluation program, it's still up to the Trustees.

Funding for Coghill weir is in the budget however Eshamy weir money will come from the test fish project. Dan Sharp would like to run the smolt weir at Eshamy with help from PWSAC. Dan went over the Eshamy forecast using smolt data, Appendix 16. He needs \$6k to \$7K to run the weir and he needs to know by April 28. Having the smolt weir in would help us identify if sockeye straying is occurring from the Main Bay hatchery.

John Wilcock summarized the Eshamy test fish study results which indicated that most Coghill fish were caught in the Esther Subdistrict for a given period of fishing (Appendix 17). The Crafton Island Subdistrict was next. The test fishery will be conducted for one more year.

The supplemental aerial survey fund balance is \$3.5K. Wayne has sent out letters to the processors that did not pay last year hoping they will come up with some money this year. At least \$9k is needed. The extra flights will begin around July 20 and continue through August 10. At this time Beth Haley has not

indicated that she is coming back. Sam wants us to think about keeping the permanent staff busy, like Dan Sharp, before we hire seasonal help. All agreed and will work out the details at a later time.

#### GENERAL TOPICS

The Cordova lab will be upgraded to include a hood, new counter top and chemical storage cabinets. Greg Carpenter will work with Juneau on ordering supplies. Ernie Greek wants to be involved with the Department of Labor violations. He will argue to put fines towards upgrading the lab. Other CIP's submitted by the region were parking lot paving, boat shed expansion, and vessel mooring upgrade.

The warehouse roof will be coated with Alumination 301 this summer. The materials are in the warehouse and will be applied after F&WP complete repairs on their half of the roof. Sam Sharr indicated that he will pay for Windows software to upgrade the network. Ellen will look into the cost.

APPENDIX 1

Annual Staff Meeting Agenda

PRINCE WILLIAM SOUND - COMMERCIAL FISHERIES  
ANNUAL STAFF MEETING AGENDA  
February 16 - 18, 1993  
ADF&G REGIONAL OFFICE, ANCHORAGE

TUESDAY, FEBRUARY 16

I. HERRING PROGRAMS

- 8:30 a.m. A. Herring Spawn Deposition (Wilcock/Baker/Funk/Brown)
1. Summary of 1992 results/NRDA Closeout (Brown)
  2. Plans for 1993/Restoration Project (Wilcock)
    - a. Personnel needs
    - b. Vessel contract
- 9:30 a.m. B. 1993 Biomass Projection (Baker/Funk)
- 10:00 a.m. C. Management Outlook (Donaldson)
1. Outlook paper, aerial surveys (Donaldson)
  2. Herring test fish program
  3. Sac roe seine (Donaldson)
  4. Sac roe gillnet (Simpson)
  5. Wild harvest spawn-on-kelp (Simpson)
    - a. should this fishery be divided into two gear types, dive & hand pick
  6. Pound spawn-on-kelp (Morstad)
    - a. vessel contract/personnel needs
    - b. review of pound permit
    - c. court cases
    - d. pound management budget
  7. Board Proposals, 1993 (Donaldson/Simpson/Morstad)
- 11:00 a.m. D. AWL Sampling (Moffitt)

II. REGIONAL REVIEW

- 1:15 p.m.
1. Comments from Headquarters
  2. FRED-Comm fish merger
  3. FY-93 Pre Audit (Regional Staff)
  4. FY-94 Outlook (Regional Staff)
    - Staffing changes & layoffs
  5. Groundfish management (Brady)
  6. Regional Administration Review (Prigge)
  7. Test Fish Gear Cards (Haanpaa)
  8. Statewide Board of Fish issues (Regional Staff)
    - Statewide proposals 353, 354
    - Mixed stock mgmt policy (regulation)
  9. C.I.P's
  10. Field Office Assistant reclass

### III COPPER/BERING

- 2:00 p.m. D. Copper/Bering River
1. Markers (Morstad)
  2. Forecast (Wilcock)
    - a. Chinook Forecast Techniques (Hepler/Roberson)
  3. Chinook, Sockeye & Coho strategies (Morstad)
    - a. Copper River
    - b. Bering River
  4. Escapement (Morstad/Hepler/Roberson)
    - a. Delta
    - b. Bering River
    - c. Upper Copper River Aerial Survey
  5. Miles Lake (Morstad)
    - a. Personnel
    - b. Status of C.I.P.
    - c. Equipment calibration
  6. AWL Sampling (Wilcock)
  7. Gulkana Hatchery Status Review (Roberson)
  8. Sport Fish Issues, Copper River & Delta (Hepler)
  9. Copper River PU/Subsistence fisheries (Hepler)

WEDNESDAY, FEBRUARY 17

### IV. HATCHERY ISSUES

- 8:30 a.m. A. RPT Activity Report (Brady)
1. Remote release sites
  2. Phase III plan
  3. Other issues
- B. Status of Concensus Document & PWSAC Prod. Planning (Willette)
- 9:00 a.m. C. Annual Facility management plans (Simpson)
1. Solomon Gulch
  2. Main Bay
  3. AFK, ESTHER, C.C.
  4. Gulkana (Roberson)
- 9:30 a.m. D. Tag application and quality control (Sharr/Willette)
1. Fry Release Program
- E. Development of Otolith Mass Marking Program (Willette)

V. ENFORCEMENT ISSUES

- 10:00 a.m.
1. Anadromous stream closures in Eshamy District prior to July 7. (Donaldson)
  2. Salmon seine & drift practice set areas (Donaldson)
  3. Announced hatchery openings (Simpson)
  4. F&WP proposals (Hook Point, Eshamy district) (Cockrell)
  5. Herring enforcement (Cockrell)
    - a. Sac roe fisheries
    - b. Pound fishery management, A.G.'s opinion
    - c. Wild harvest fishery
  6. Radios & GPS equipment (Morstad)
  7. State Assistant D.A. (Cockrell)
  8. 92 citations
  9. Loss of P/V Burton during salmon season

VI. SALMON OIL SPILL PROJECTS

- 11:00 a.m. A. Review 1992 Studies (Sharr/Willette)
1. CWT Project
  2. Injury to eggs and Pre-emergent Fry
  3. Injury to Spawning Areas
  4. Aerial Surveys vs. Foot Surveys
  5. Straying
  6. Radio tag results (Geiger)
  7. Juvenile Salmon Growth (Willette)

VII VESSEL SUPPORT (Vansant)

- 2:00 p.m. A. Communication
- B. Schedule
  - C. CFOS/CTD DATA
  - D. Markers (Vansant/Simpson)
    1. 1993 proposal for closed waters
    2. Mapping

VIII. SALMON FISHERY MANAGEMENT

- 3:00 p.m. A. Annual Mgmt. Report, 92 (Simpson/Donaldson)
- 3:30 p.m. B. 93 Management Outlook
1. Forecast (Sharr)
  2. Preseason Outlook Paper Status (Donaldson)
  3. SHTF (Donaldson)
  4. Board proposals 1993

THURSDAY, FEBRUARY 18

VIII. (CONTINUED)

- 8:30 a.m. C. 2. Escapement Programs
- a. Coghill lake rehabilitation (Willette)
  - b. Coghill & Eshamy weirs (Sharp)
  - c. Eshamy test fishery (Sharr/Wilcock)
  - c. Aerial Surveys (Donaldson)

IX. GENERAL DISCUSSION TOPICS

- 9:30 a.m.
- 1. Maintenance
    - a. Warehouse roof
    - b. Lab upgrade
      - Status of D.O.L. citation, appeals and potential fine
  - 2. Network (Simpson)
    - Status, Costs, Future Upgrades
  - 3. Fred Division projects
  - 4. Other

12:00 p.m. ADJOURN

DISTRIBUTION

Florey	Brady	Haanpaa	Fried	Brannian	Biggs
Simpson	Morstad	Sharr	Wilcock	Nowlin	Trowbridge
Moffitt	Mala	Willette	Roberson	Bue	Peckham
Sharp	Prigge	Hepler	Baker	F&WP-Cockrell	
Seitz	Vansant	Clasby	Geiger	Funk	Evans

APPENDIX 2

Prince William Sound Herring Forecast

# Alaska Department of Fish and Game

## Division of Commercial Fisheries

1255 West 8<sup>th</sup> Street  
P.O. Box 25526  
Juneau, Alaska 99802-25536



Phone: (907) 465-4210  
Fax: (907) 465-2604

### MEMORANDUM

To: Wayne Donaldson

Date: January 29, 1993

From: Fritz Funk, Statewide Herring Biometrician

A handwritten signature in black ink, appearing to be 'F. Funk', written over the 'From:' line.

Re: Prince William Sound Forecast

Attached is a brief description of the 1993 forecast for Prince William Sound herring. I apologize for not getting these numbers to you sooner and for being tardy with the writeup and further documentation. The forecast uses the age-structured assessment (ASA) model which we discussed last fall. The model is fit to spawn survey egg deposition estimates, miles of milt (pre-1988), and observed age compositions of the spawning population, purse seine fishery and gillnet fishery. Catches from the other fisheries (food and bait and kelp) are deducted in the appropriate places in the model, but there is too much noise in the age composition data to provide useful tuning information. It appears that selectivity varies considerably from year to year in those fisheries.

The 1989 spawn deposition survey estimate of eggs spawned clearly does not fit with the other data that we have. The 1989 estimate has the narrowest confidence limit of any of the spawn survey years because of the large sample size and relatively consistent number of eggs found among transects. The ASA estimate of eggs deposited which best fits all of the remaining data combined, except the 1989 egg estimate, is more 6 times farther from the spawn survey point estimate than the upper 95% confidence limit. While we do not know the precision of the ASA estimate, this would be an extremely significant difference under any level of precision imaginable for the ASA model. Whether the cause was egg retention or some other phenomenon we cannot say from these data. Because the 1989 spawn survey appears to be such an obvious outlier, I excluded it from the data considered in the ASA model. Also, please note that the 1992 spawn survey estimate has been revised. The primary change to the 1992 spawn survey estimate resulted from discovering a number of quadrats that had been excluded from the estimate because the vegetation code was missing. Further documentation of these estimates will be forthcoming after the oil spill symposium.

The ASA model forecast for 1993 is 134,133 short tons. An attached table compares this estimate with that which would have been derived from the spawn survey (139,034 tons). Based on this biomass, the harvest allocations by fishery would be:

<u>Fishery</u>	<u>Allocation</u>	<u>Quota (tons)</u>
Purse Seine	58.1%	15,586
Gillnet	3.4%	912
Pound Kelp	14.2%	3,809
Wild Kelp	8.0%	2,146
Food and Bait	<u>16.3%</u>	<u>4,373</u>
TOTAL	100.0%	26,827 = 20% of 134,133 tons

# COMPARISON OF 1993 PWS HERRING FORECASTS

## Revisions to Forecast Methodology

- Survival Rate Survival rate (from ASA model) is now 68% (M =0.39);  
Former assumption (from literature review) was 64% (M=0.45).
- Maturity Slightly earlier maturity schedule from new ASA model  
Former maturity schedule came from old (1990) ASA model.
- Forecast Weight Used average observed weight from 1985-1992;  
Formerly used poor model fit from RIR 5J89-10; too high for middle-aged fish

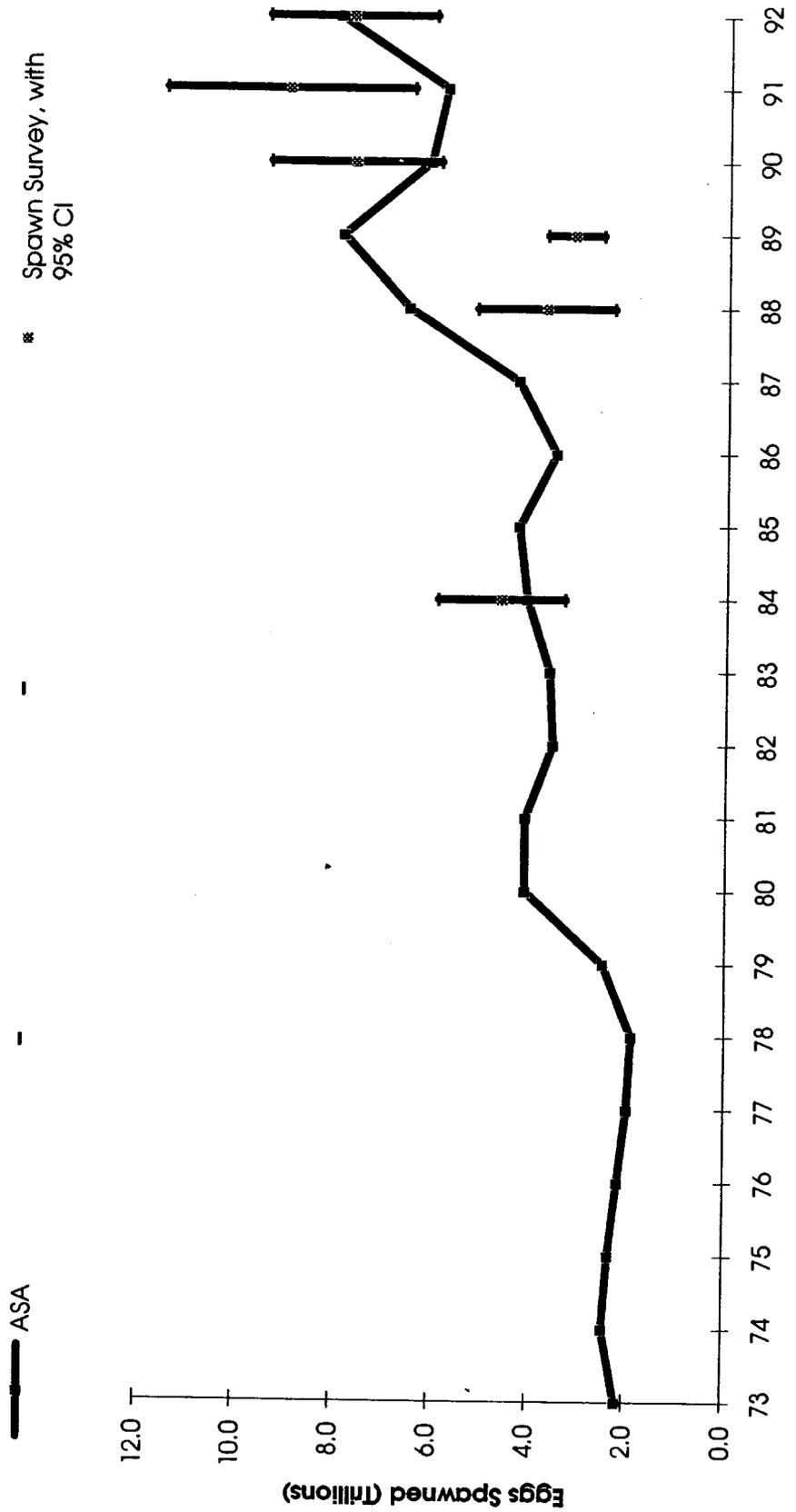
## Projection From: 1992 Spawn Survey Point Estimate

Age	1992 Spawn Survey Escapement				1993 Projection			
	Biomass (Tons)	Weight (g)	Number (Millions)	Maturity (=Availability)	Survival Rate	Number (Millions)	Weight (g)	Projection (Tons)
2	27	40	0.6	0.02	68%	0.0		0
3	608	68	8.2	0.18	68%	3.2	69	243
4	69,148	88	713.9	0.67	68%	20.4	93	2,092
5	3,600	89	36.6	0.95	68%	683.4	114	86,066
6	1,160	116	9.1	0.99	68%	26.0	133	3,801
7	5,871	135	39.6	1.00	68%	6.2	150	1,020
8	42,366	144	267.1	1.00	68%	26.9	164	4,855
9+	5,483	161	30.8	1.00	68%	202.4	184	40,957
Total	128,263		1,105.2			968.5		139,034

## Projection From: 1992 ASA Model Biomass Estimate

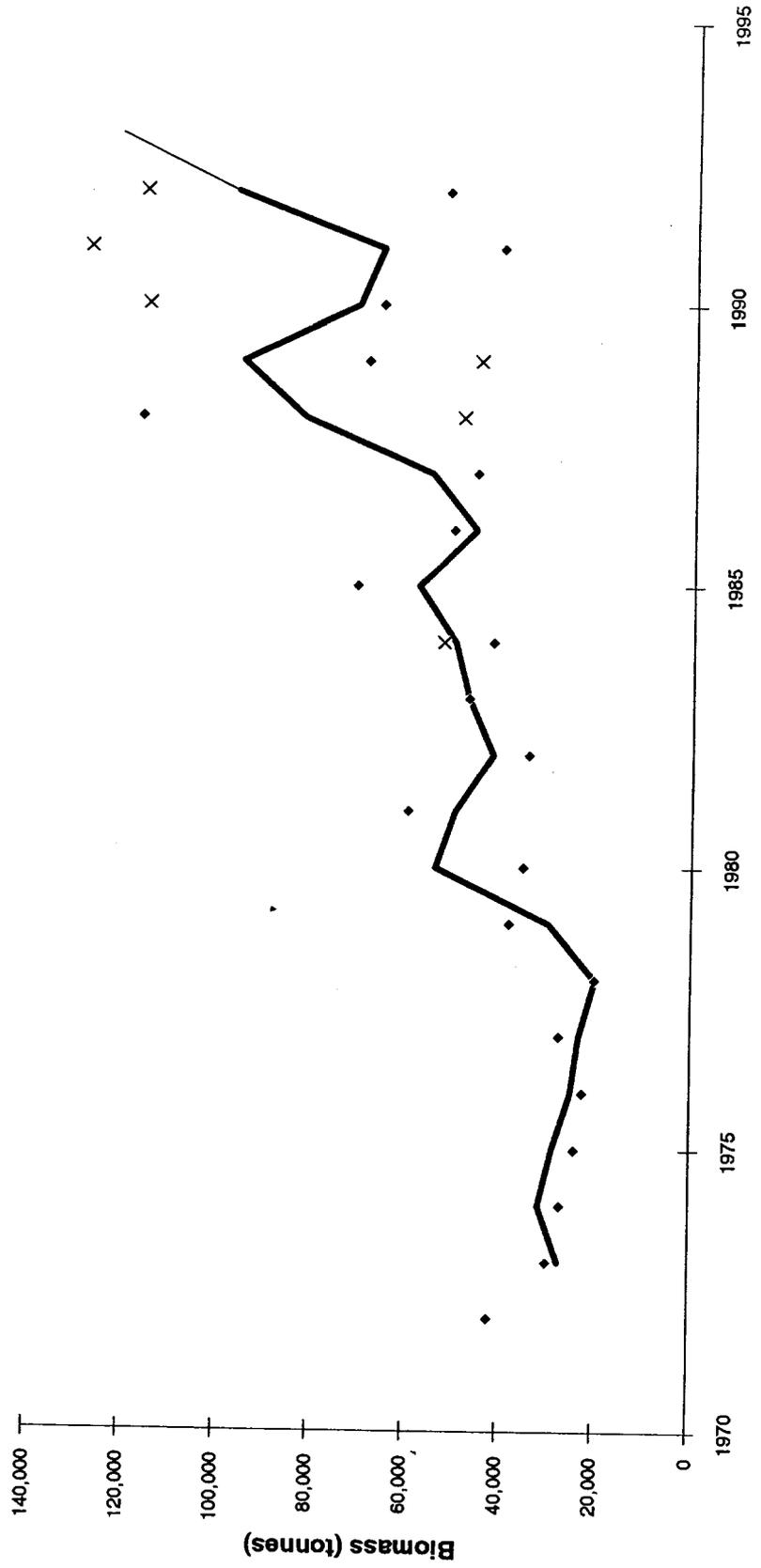
Age	1992 ASA Escapement				1993 Projection			
	Biomass (Tons)	Weight (g)	Number (Millions)	Maturity (=Availability)	Survival Rate	Number (Millions)	Weight (g)	Projection (Tons)
2								
3	1,134	68	15.2	0.18	68%	25.9	69	1,978
4	87,625	88	904.6	0.67	68%	38.0	93	3,900
5	2,010	89	20.4	0.95	68%	866.1	114	109,065
6	424	116	3.3	0.99	68%	14.5	133	2,122
7	2,731	135	18.4	1.00	68%	2.3	150	373
8	14,593	144	92.0	1.00	68%	12.5	164	2,258
9+	2,312	161	13.0	1.00	68%	71.3	184	14,436
Total	110,831		1067.0			1,030.6		134,133

# Estimates of Eggs Spawned

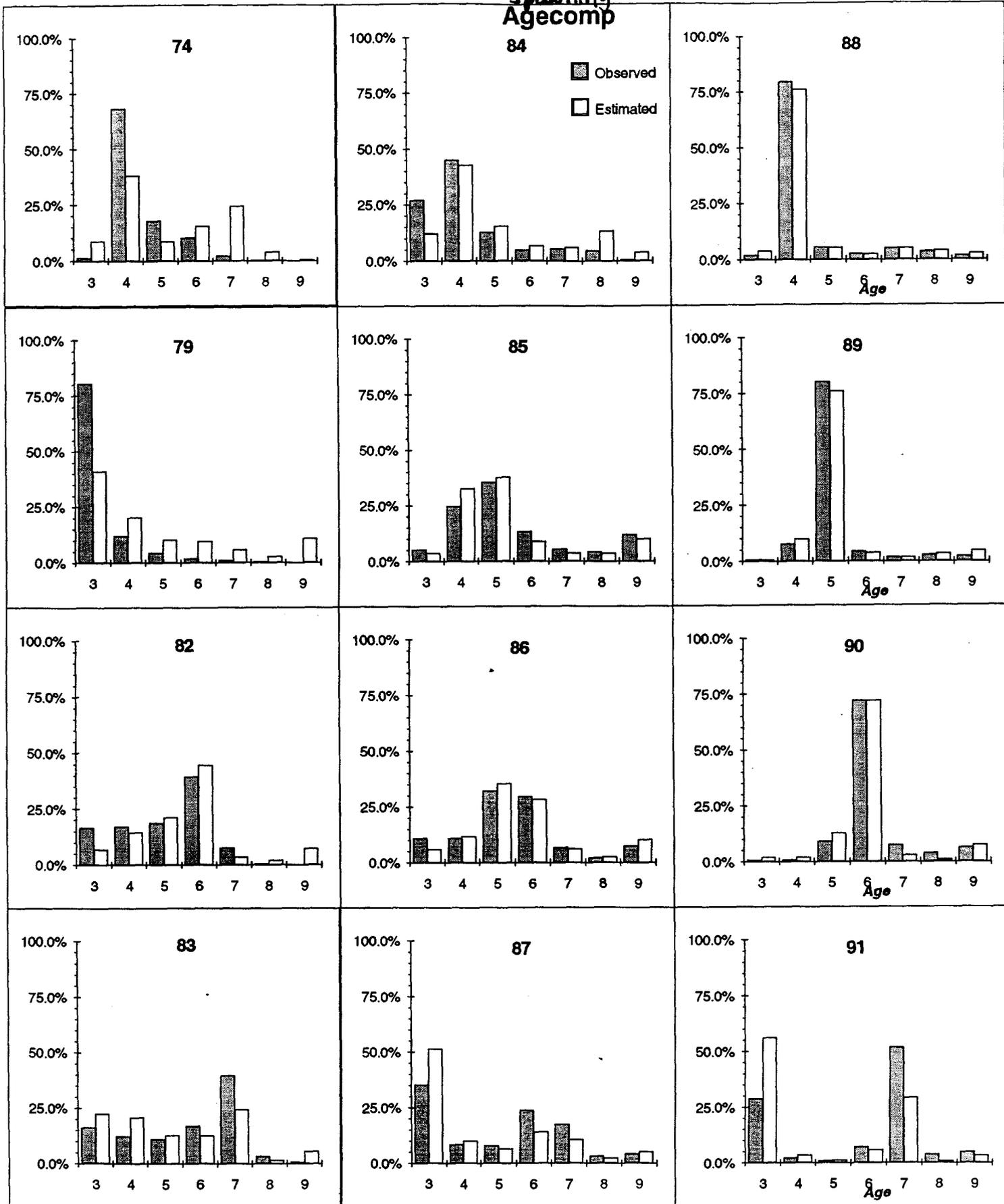


# Mature Biomass

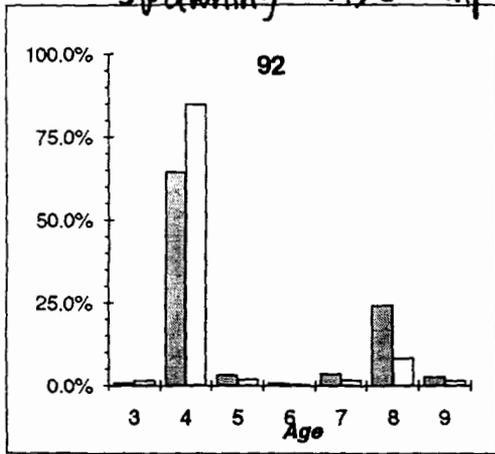
ASA    X    Egg    ♦    Milt    Forecast

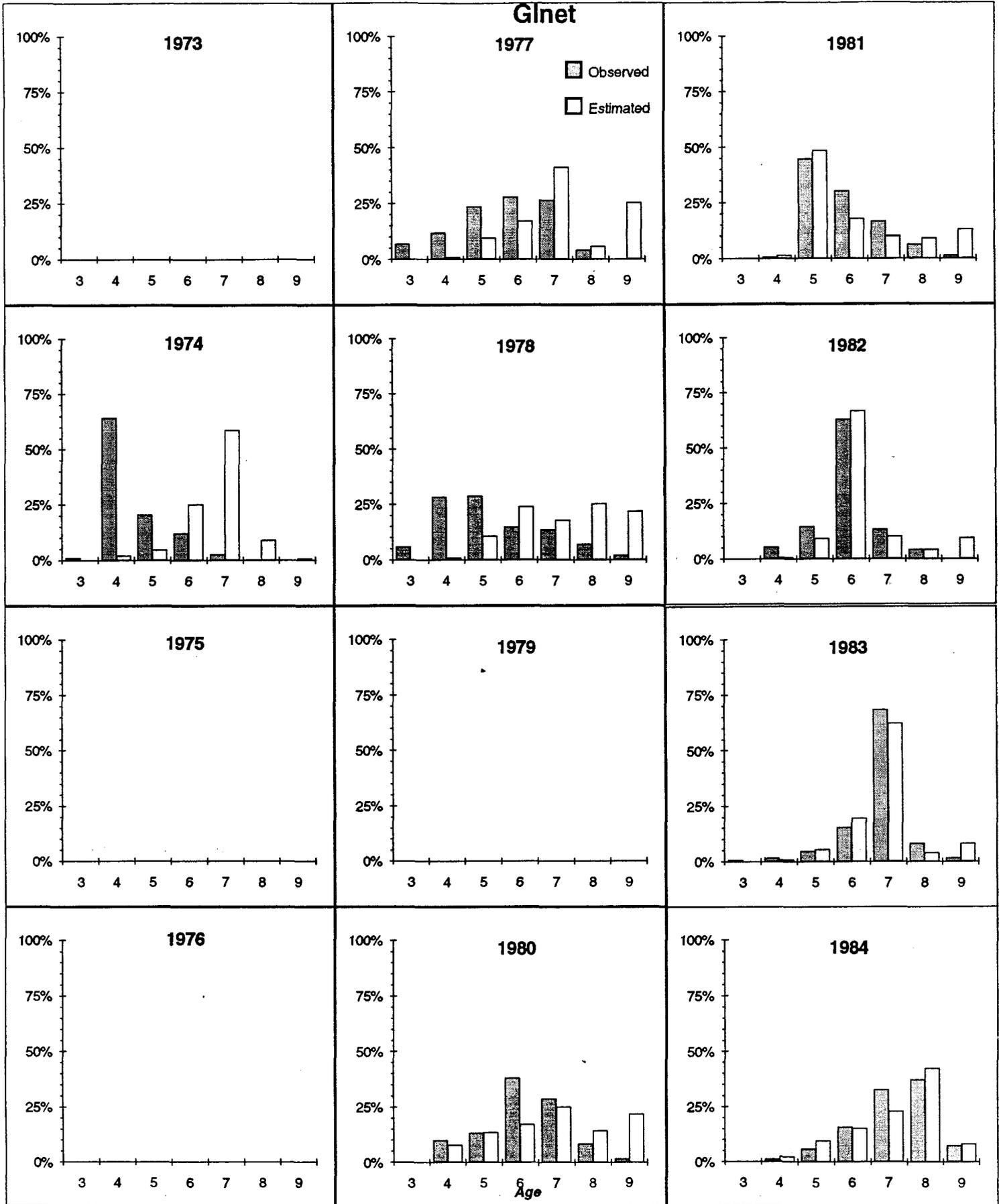


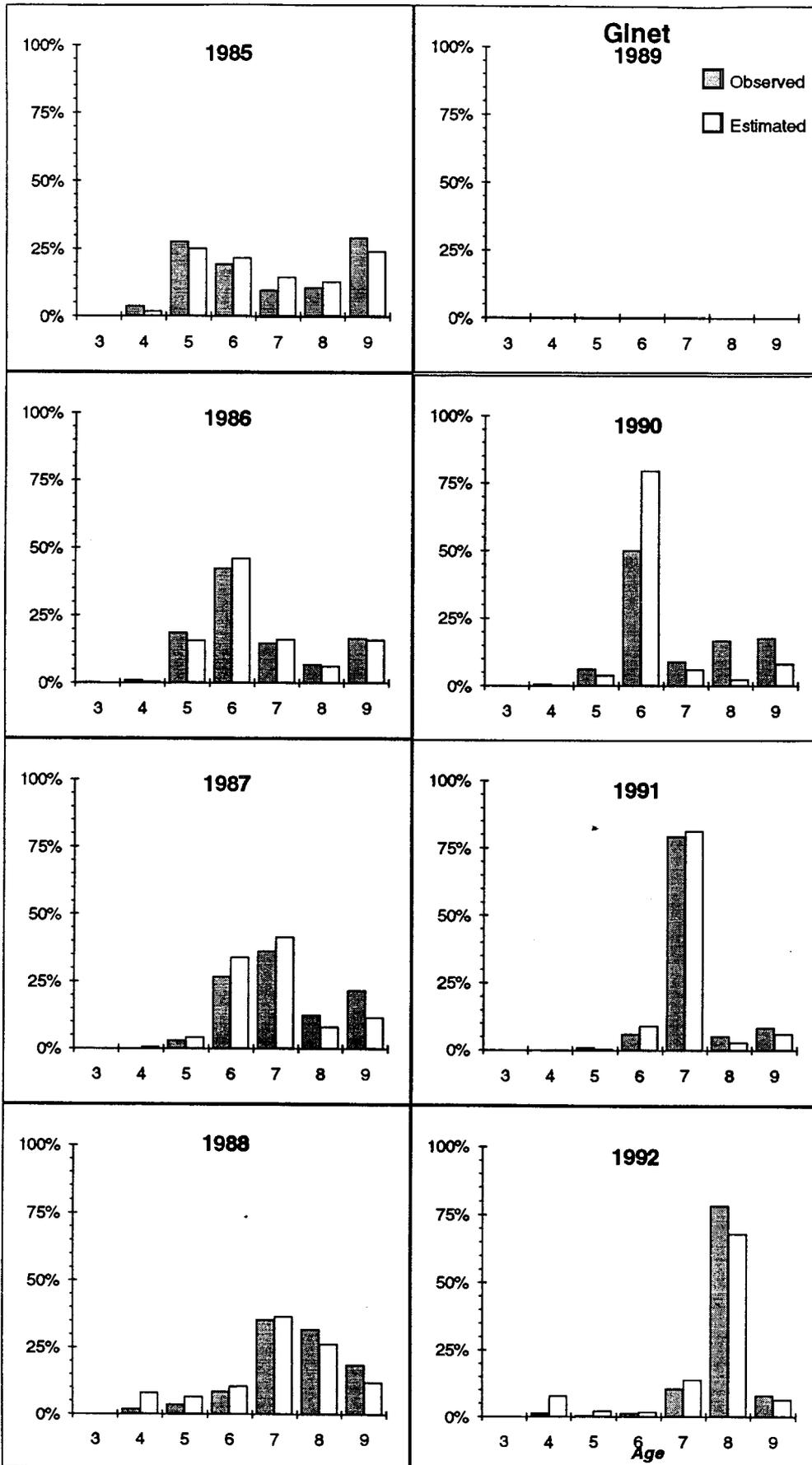
**Spawning  
Agecomp**

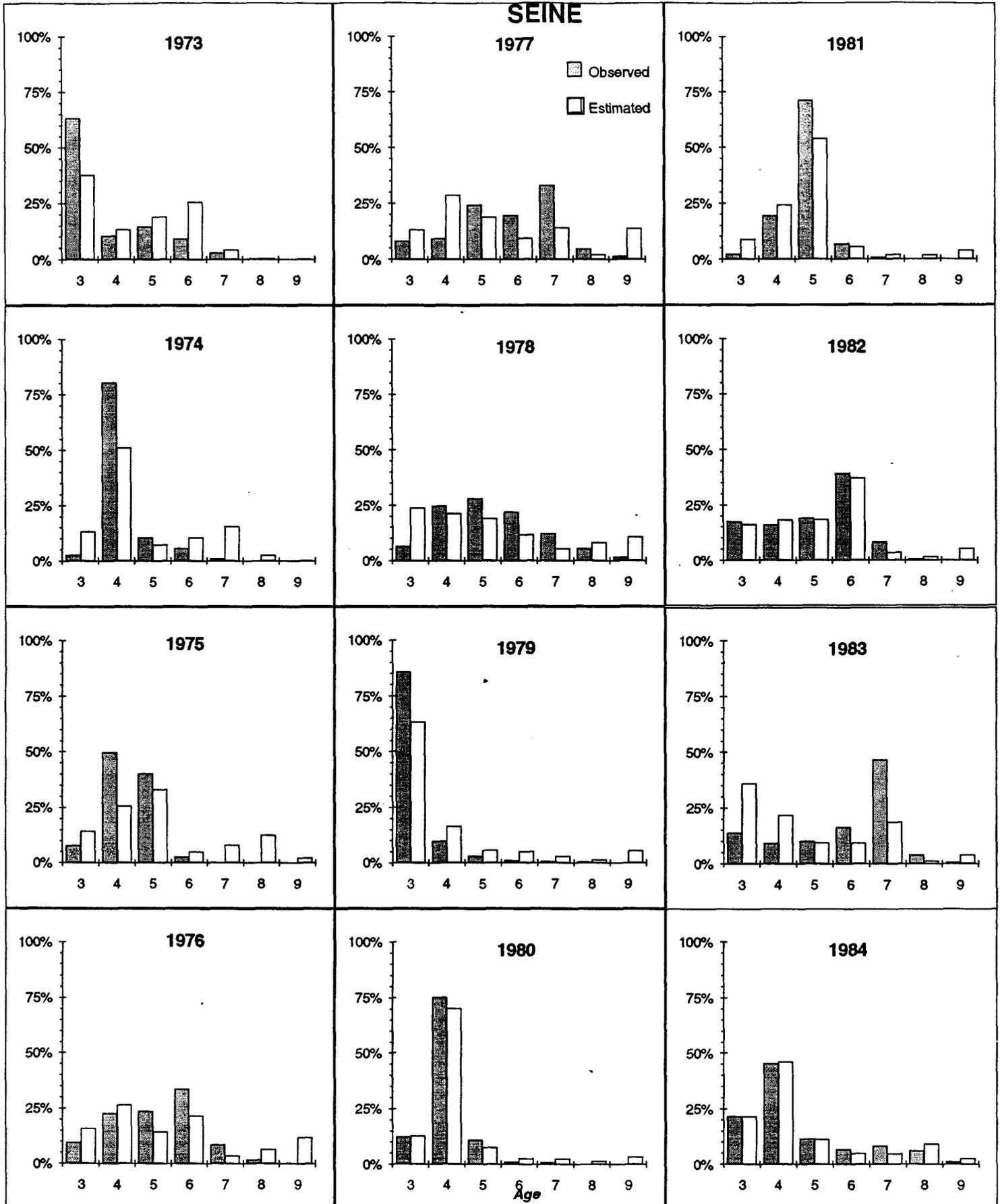


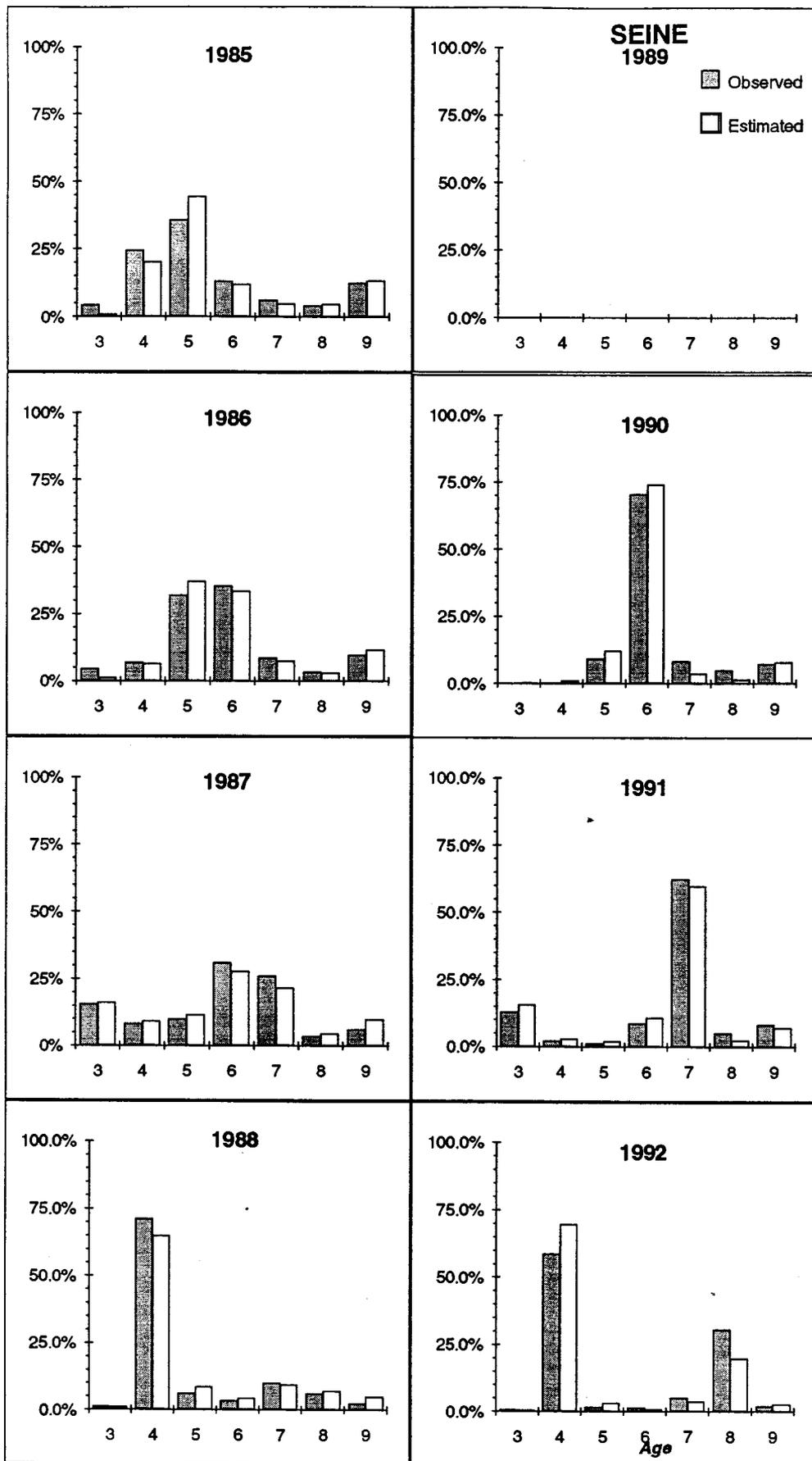
### Spawning Age Comp





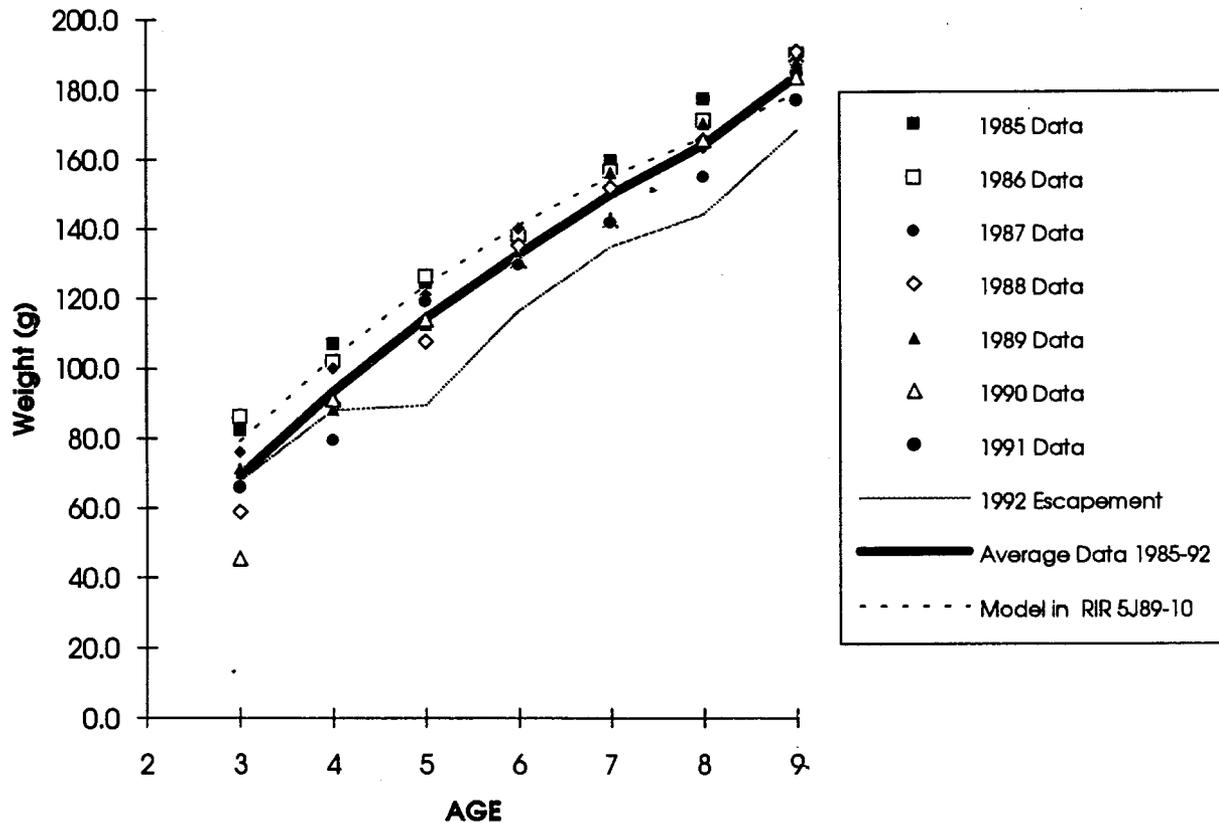




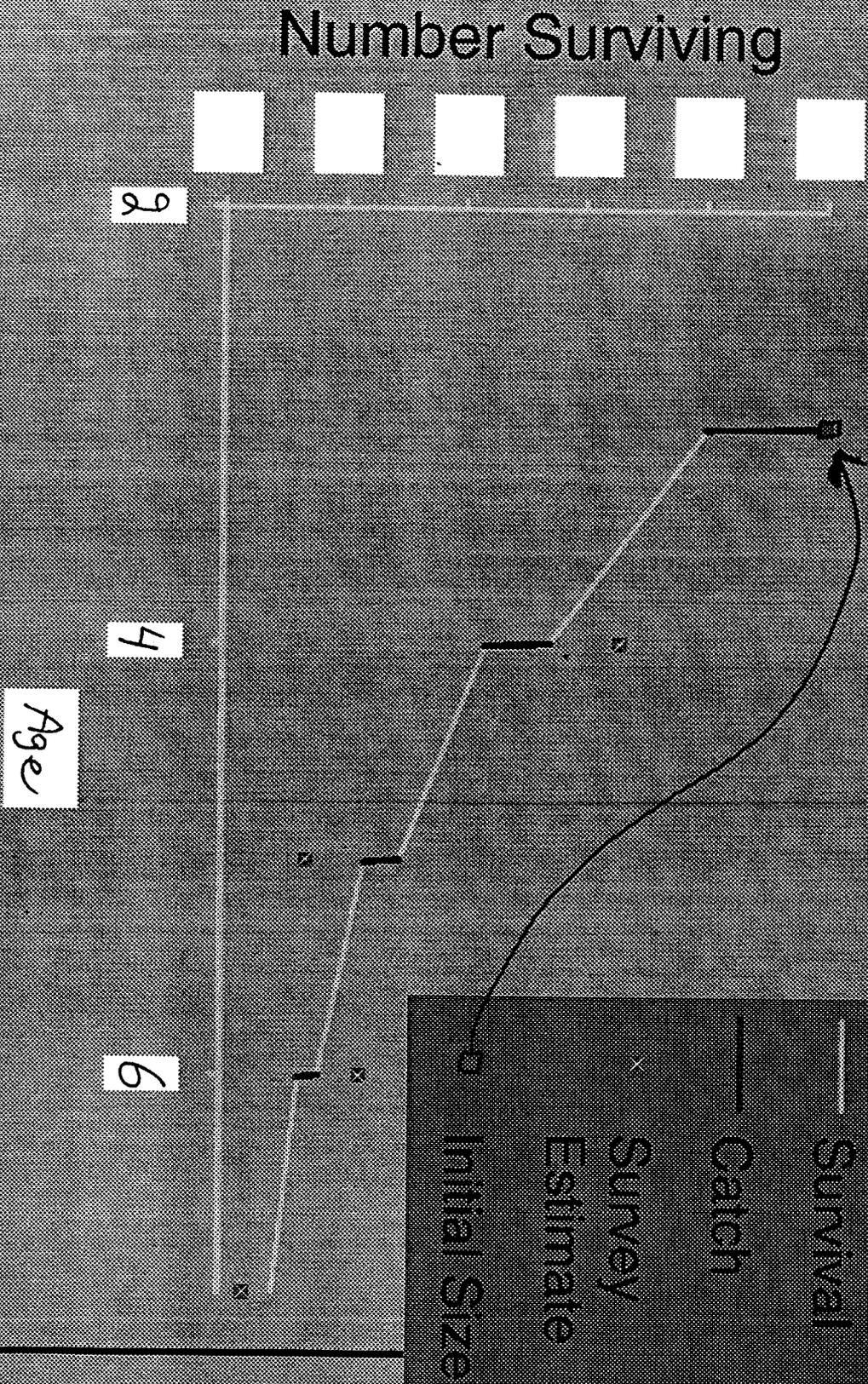


# ANALYSIS OF PWS HERRING WEIGHT DATA FROM DIFFERENT SOURCES

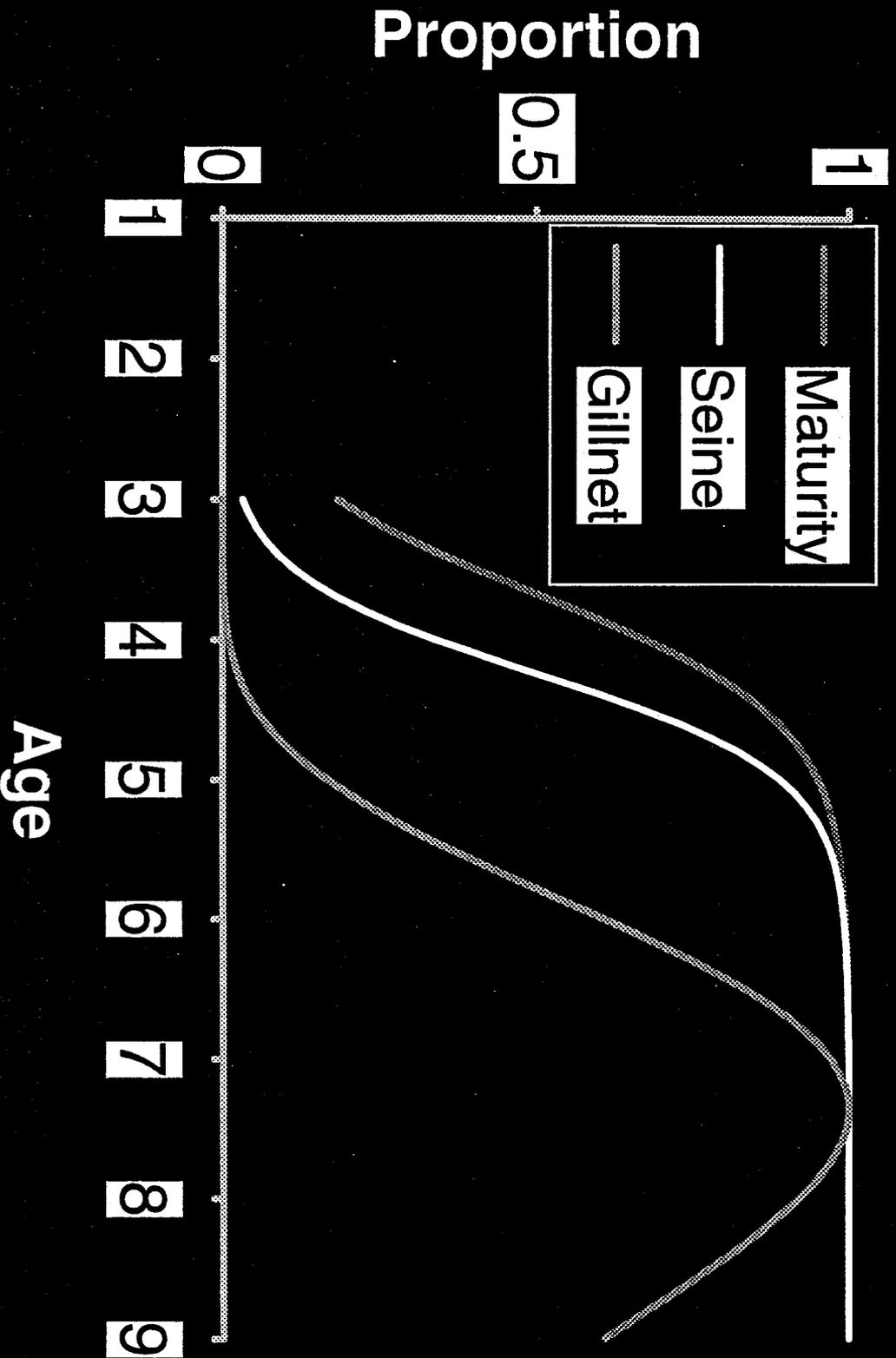
SOURCE	AGE						
	3	4	5	6	7	8	9
1985 Data	82.2	107.0	124.3	138.8	159.5	177.1	185.3
1986 Data	86.2	101.6	126.2	138.2	156.3	170.8	189.5
1987 Data	76.0	100.0	121.0	140.0	155.0	163.0	188.5
1988 Data	58.7	89.8	107.6	135.1	151.6	165.0	190.4
1989 Data	71.3	88.4	112.6	131.8	156.2	170.2	187.6
1990 Data	45.5	91.0	113.9	130.7	142.4	165.3	183.2
1991 Data	65.9	79.3	119.0	129.4	141.5	154.5	176.5
1992 Escapement	67.5	87.9	89.2	116.2	134.5	143.9	167.9
Average Data 1985-92	69.2	93.1	114.2	132.5	149.6	163.7	183.6
Model in RIR 5J89-10	79.1	102.9	123.7	140.9	154.8	165.7	178.8



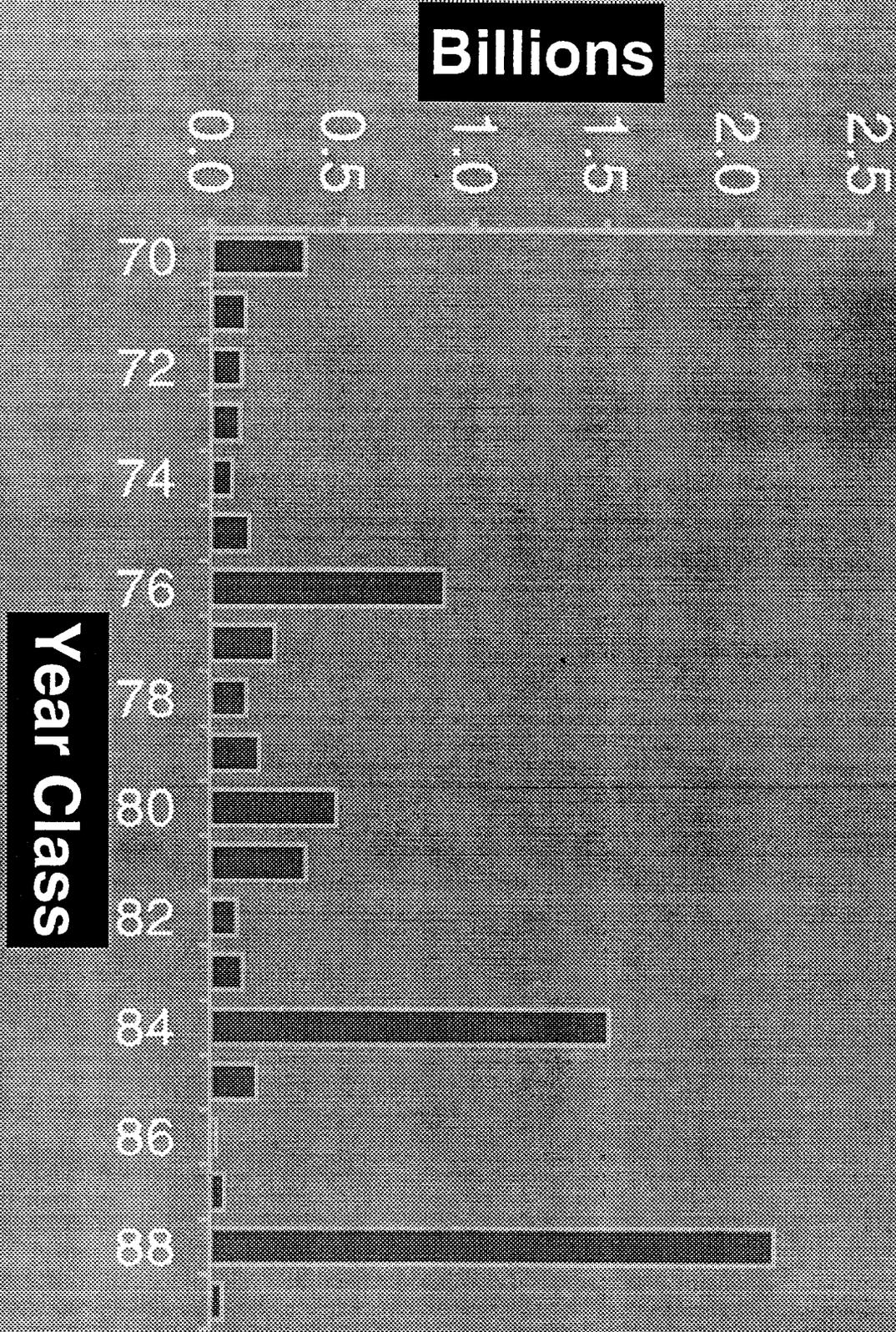
# Cohort Survival Model



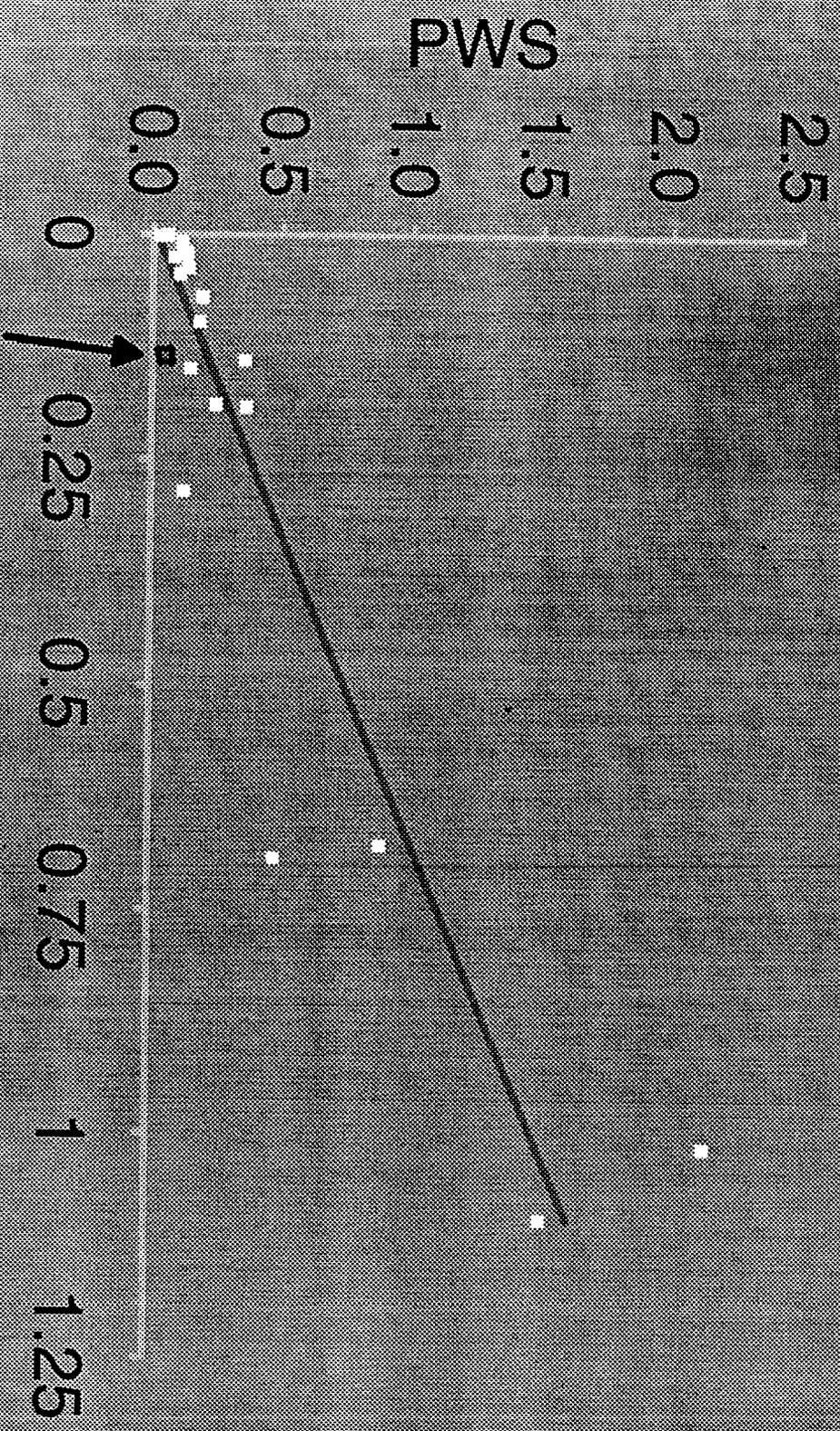
# Maturity and Gear Selectivity



# Year Class Size at Age 3



# Recruitment Correlation

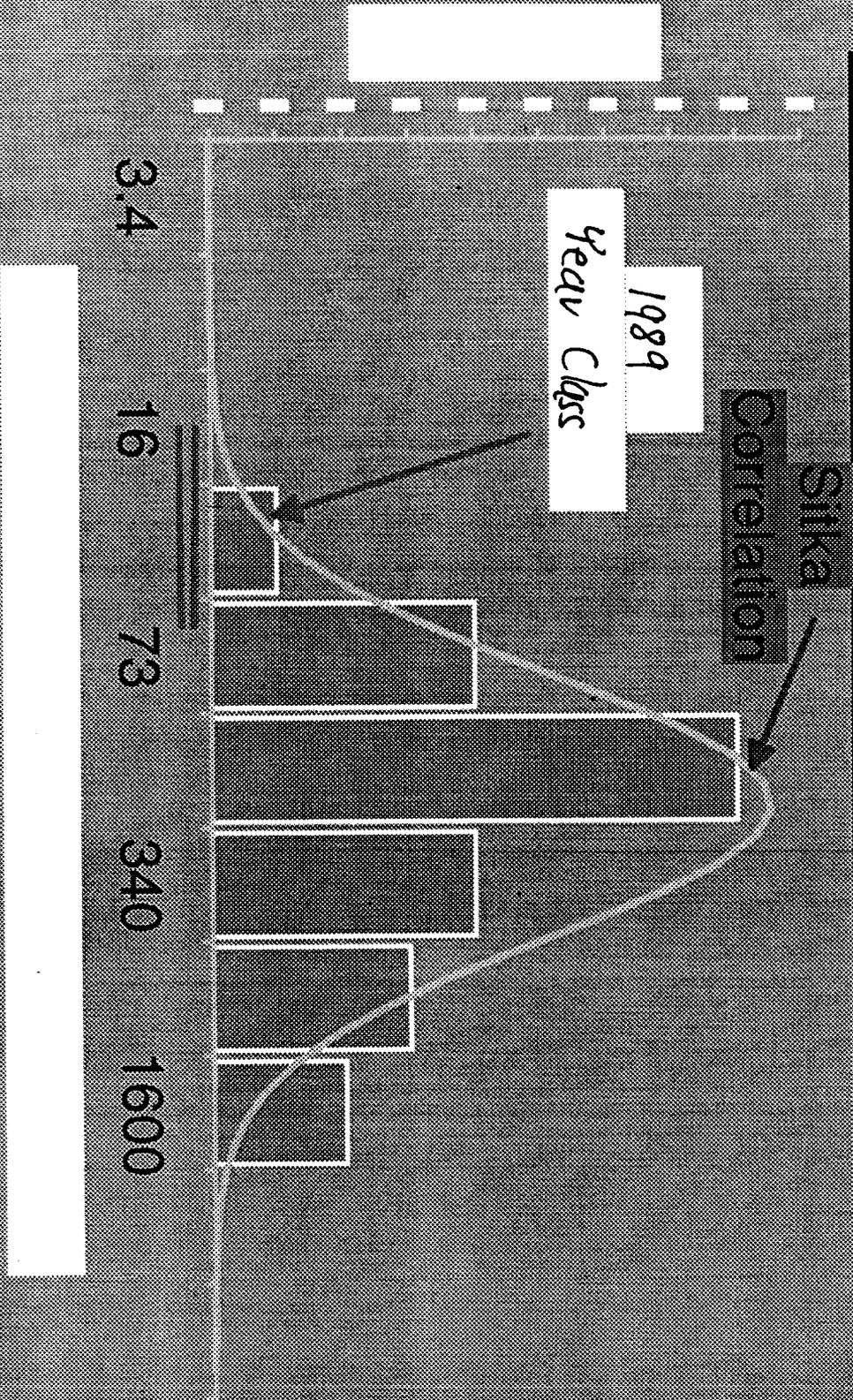


1989

Sitka

# Recruitment Strengths

Observed Frequency     Log Normal



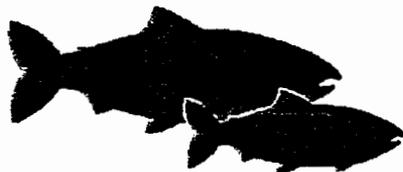
APPENDIX 3

1993 Central Region Groundfish Fisheries Outlook

# COMMERCIAL FISHERIES

## NEWS RELEASE

### ALASKA DEPARTMENT OF FISH AND GAME



STATE OF ALASKA

CENTRAL REGION

Department of Fish and Game  
Carl L. Rosier, Commissioner

3298 Douglas St.  
Homer, Alaska 99603

Robert Clasby, Acting Director  
Division of Commercial Fisheries

Contact: William R. Bechtol  
Groundfish Biologist  
Ph# 235-8191

IMMEDIATE RELEASE

Date: January 5, 1993  
Groundfish Announcement No. 1

## 1993 CENTRAL REGION GROUND FISH FISHERIES OUTLOOK

The Alaska Department of Fish and Game (ADF&G) is reminding all groundfish fishermen and processors that the following licenses, permits, and registrations are required prior to engaging in any groundfish fishery or transporting raw fish in State waters of Alaska during 1993:

1. Coast Guard vessel documentation number (AK #).
2. 1993 vessel license (ADF&G #; available from Limited Entry offices in Juneau, ph# 789-6160, or Kodiak, ph# 486-4791).
3. 1993 interim-use card (Commercial Fisheries Entry Commission Card; available from Limited Entry offices in Juneau, ph# 789-6160, or Kodiak, ph# 486-4791) for applicable fisheries and gear types.
4. Area registration is not currently required for Central Region groundfish fisheries, but may be required if deemed appropriate for specific fisheries. Vessel operators intending to fish State waters of the Gulf of Alaska located south and west of Cape Douglas should contact the Kodiak ADF&G office; those intending to fish State waters east of 147°W long. and outside of Prince William Sound, should contact the Petersburg ADF&G office.
5. 1993 Prince William Sound sablefish fishing permit (available from Homer, Anchorage, and Cordova ADF&G) for fishermen intending to participate in this fishery.
6. 1993 Marine Mammals Exemption (available from the National Marine Fisheries Service, ph# 586-7233) for vessels fishing longline for sablefish in Prince William Sound. Other area-gear combinations may require this exemption.

7. Compliance with the Federal Logbook Program is required for ALL vessels harvesting a groundfish species managed under a Federal TAC quota (includes most species in waters outside of Prince William Sound or inside Southeast), whether fishing in State or Federal waters.
8. Compliance with the Federal Observer Program is required for ALL vessels harvesting a groundfish species managed under a Federal TAC quota (includes most species in waters outside of Prince William Sound or inside Southeast), whether fishing in State or Federal waters. In general, vessels 60 feet or longer must carry observers for a portion of their fishing time.

### NEW FOR 1993

The Alaska Board of Fisheries addressed Cook Inlet, the North Gulf District, and some Prince William Sound finfish issues, including groundfish, during November 8-10, 1992 in Anchorage. Brief summaries of Board action on groundfish issues follow:

**Proposal 8 - North Gulf District** - Adopted to establish the North Gulf District as State waters of the Gulf of Alaska located north of Cape Douglas and west of 147°W long., excluding Cook Inlet and Prince William Sound. Future Emergency Orders will refer to this area as the North Gulf District.

**Proposal 3 - Rockfish Management Plans** - Adopted to establish 5-day trip limits for the aggregate of all rockfish species as follows: 1,000 lb for Cook Inlet, 4,000 lb in the North Gulf District, and 3,000 lb in Prince William Sound. Aggregate harvests of 150,000 lb, or conservation concerns, in Prince William Sound or the North Gulf District, will cause bycatch-only fisheries to be implemented in the appropriate area. A bycatch-only status in the North Gulf District will be simultaneously implemented in Cook Inlet.

**Proposals 4-5 and 11 - Lingcod Conservation Measures** - Adopted for commercial lingcod fisheries in Cook Inlet, the North Gulf District, and Prince William Sound. Established: (1) the open season for lingcod as July 1 to December 31; and (2) a minimum size of 35 inches as measured from the snout to the tip of the tail (or 28 inches from the insertion of the dorsal fin to the tip of the tail). Similar regulations apply to the sport fisheries in these areas. An Emergency Order closure of commercial lingcod fishing inside Aialik Cape to Cape Resurrection will complement a regulation indefinitely closing the lingcod sport fisheries in this area.

**Proposal 9 - Cook Inlet trawl closure area** - Adopted to correct typographical errors in a previous regulation.

**Proposal 13 - Groundfish bycatch in Cook Inlet herring or salmon gillnets** - Adopted to allow retention and sale of groundfish caught incidentally in Cook Inlet herring or salmon gillnet fisheries (set or drift).

**Proposal 14 - Groundfish pot longlining and buoy marking** - Adopted to prohibit longlining of groundfish pots. This regulation change also requires that groundfish pot buoys bear only a single number, the ADF&G number of the vessel operating the gear. The ADF&G number must be placed on the top one-third of the buoy in numerals at least four inches in height,

one-half inch in width, and in a color contrasting to the color of the buoy. These marking requirements are similar to crab buoy marking requirements.

Proposal 15 - **Sunken gillnets** - Adopted to prohibit the use of sunken gillnet gear for groundfish in all areas of the State.

During the 1993-94 meeting cycle, the Alaska Board of Fisheries will consider regulation changes for finfish in the Southeast, Yakutat, and Prince William Sound areas. Proposed regulation changes need to be submitted by early-April.

## Harvest Reporting Requirements

Fishermen and processors are reminded that accurately completed ADF&G groundfish fish tickets are required for each commercial groundfish harvest or delivery within waters of Alaska. Fish tickets must be submitted to a local representative of the department (of Fish and Game) within seven days after landing, or as specified by the department for each particular area and fishery. Due to recent changes in fish ticket formats, processors and catcher/sellers should obtain updated fish ticket booklets from ADF&G (Juneau 465-4150). As per section 5 AAC 39.130 REPORTS REQUIRED OF PROCESSORS, BUYERS, AND FISHERMEN, the following information is required on each ADF&G groundfish fish tickets:

1. **VESSEL NAME**
2. **COMMERCIAL FISHERIES ENTRY COMMISSION (CFEC) PERMIT CARD:** State regulations require a CFEC card imprint on all fish tickets. The card imprint provides the fishery name, the name and social security number of the permit holder, permit number, and ADF&G number of the licensed vessel.
3. **ADF&G NUMBER**
4. **DATE FISHING TRIP BEGAN, DATE CATCH WAS LANDED, and NUMBER OF DAYS FISHED**
5. **PORT OF LANDING**
6. **GEAR TYPE**
7. **STATISTICAL AREA OF THE CATCH** - Enter the six-digit ADF&G statistical area code for reporting all landings from both State and Federal waters. These codes are listed on ADF&G statistical area charts, available from ADF&G offices. The six-digit statistical area may be recorded in one of two places on the fish ticket:
  - (a) The Statistical Area Worksheet", in the upper right corner of the fish ticket, may be used if the species composition of both catch retention and discards is similar in all statistical areas fished. Enter all statistical areas fished, followed by the estimated proportion (%) of the catch from each area. The sum of these proportions must equal 100%. If all species on the fish ticket were from one statistical area, enter that area and 100%. If you use this worksheet, there is no need to enter statistical areas elsewhere on the fish ticket.
  - (b) If the species composition of the catch retention and discards was not similar in all statistical areas fished, list the catch and discard of each species from each statistical area.
8. **SPECIES** - List groundfish by species name and species code; a species code list is provided on the cover of the fish ticket booklet. Broad non-specific species categories, such as "rockfish" or "pelagic rockfish" are not acceptable.
9. **PRODUCT DELIVERY CONDITION CODE** - Entered in the "Cond. Code" column, this describes the condition of the pounds of fish as reported on the fish ticket. A condition code list is provided on the cover of the fish

- ticket booklet. At-sea discards and landed discards (harvested but not purchased) must also be recorded. If some of the catch of a species was delivered as different conditions (e.g., some Pacific cod delivered as bled and some delivered as headed-and-gutted), list these separately.
10. **POUNDS** - Enter product weight in pounds for the appropriate condition code.
  11. **PRICE AND PRODUCT VALUE** - Enter the price paid per pound and total value, or leave blank if fish were not sold.
  12. **SIGNATURE** - The permit holder must sign here.
  13. **FISH RECEIVED BY** - Signature of the person authorized to receive fish for the processor.

All fish ticket information is confidential. To help ADF&G better manage Central Region groundfish stocks, fishermen are also urged to fill out groundfish fish tickets when fish is harvested for use as bait (such as hanging bait) or retained as "home-pack" by the vessel operator. Currently, a substantial amount of harvested groundfish, especially Pacific cod, is used as bait. Because much of this harvested resource is not delivered to a processor, information on groundfish harvests by individual fishermen has not been reported as a resource removal or credited to a fisherman's annual catch. Since future management strategies often reflect past harvesting activity, the under-reporting of resource removals may unnecessarily restrict future fisheries.

Catcher/sellers include fishermen who sell raw (unprocessed) fish to a buyer not licensed to process fish, such as sales to tourists at the dock. Catcher/sellers must: (a) complete an ADF&G form to obtain fish tickets, (b) record each landing on an ADF&G fish ticket using C-5000 for the processor code, and (c) submit completed fish tickets to ADF&G within seven days after landing, or as specified by the Department.

## LEGAL GEAR

**Buoys:** All commercial longline or skate gear buoys, or kegs or buoys for groundfish pots or sunken gillnets, must be marked with the permanent vessel license plate number (ADF&G No.) of the vessel operating the gear. See below for groundfish pot buoy requirements.

**Groundfish Pots:** The following specifications apply to groundfish pots fished in State waters of Cook Inlet, Prince William Sound, and the North Gulf District:

- 1) groundfish pots may not be longlined;
- 2) the sidewall must contain an opening that is no less than 18 inches in length, located parallel to and within six inches of the bottom of the pot, and laced closed with untreated, 100 percent cotton twine no larger than 30 thread;
- 3) tunnel eye openings must have a circumference of not more than 30 inches;
- 4) each pot must be marked with a permanent label or tag that contains the word "groundfish", to identify it as a groundfish pot; and
- 5) groundfish pot buoys may bear only a single number, the ADF&G number of the vessel operating the gear. The ADF&G number must be placed on the

top one-third of the buoy in numerals at least four inches in height, one-half inch in width, and in a color contrasting to the color of the buoy.

Groundfish pots fished in Federal waters require: 1) a cotton twine sidewall opening as described above; 2) tunnel eye openings that are a maximum of nine inches in any vertical or horizontal direction; and 3) groundfish may not be retained from longlined pot gear in the Gulf of Alaska.

Fishing with groundfish pots opened January 1, 1993 in most areas. However, groundfish pot fishing will be closed (EO Nos. 2-GF-H-01-93 and 2-GF-H-02-93) in portions of Kamishak Bay of Cook Inlet and in the North Montague-Orca Bay area of Prince William Sound throughout 1993. Under an Emergency Regulation issued by the Commissioner of ADF&G, fishermen participating in the commercial Tanner crab fishery may fish groundfish pots in the Cook Inlet Management Area immediately prior to the Tanner crab opening provided that their groundfish pots are out of the water or in legal storage, as specified in Tanner crab regulation 5 AAC 35.050(c), before fishing for Tanner crab. Fishermen may begin fishing groundfish pots again after: (1) the closure of the Tanner crab season; (2) putting Tanner crab gear in legal storage; (3) invalidating their Tanner crab registration by contacting an ADF&G representative at the Homer office; and (4) submitting to a tank inspection.

Longline: Longline gear is not regulated beyond buoy marking requirements. The Gulf of Alaska reopened to longline gear January 1, 1993 and will close when halibut bycatch mortality limits are exceeded in groundfish longline fisheries.

Trawl: Because several areas off the Coast of Alaska are closed to trawling for groundfish (see groundfish regulation book), fishermen should contact ADF&G prior to trawl fishing in State waters. Trawling for groundfish is closed from January 1 until January 20. Trawl fishing will close when halibut bycatch mortality limits are exceeded in groundfish trawl fisheries. Rockfish retention by trawl gear will be restricted to bycatch-only allowances until July 1993.

Jig/Hand Troll: The difference between mechanical jig and hand troll gear is the use of a "power assist". Any gear which uses hydraulic, electric, or other power assistance to set, jig, retrieve, or otherwise operate jig gear is a mechanical jig. Hand troll gear (hand jig) does not involve a power assist. Jig fishing opens January 1, 1993.

## GENERAL INFORMATION

Moratorium: A three-year moratorium on new entries into federally managed fisheries off Alaska has been approved by the North Pacific Fisheries Management Council (NPFMC) and is now in the federal rulemaking process.

IFQ's: The Individual Fishing Quota system for halibut and fixed gear sablefish (excluding Prince William Sound and Southeast Alaska) off Alaska was approved by the NPFMC and is now in the federal rulemaking process. Implementation of this system is not anticipated to occur in 1993.

Marine Mammal Protection Areas: Several areas off the coast of Alaska have been closed to protect walrus or sea lion populations. Fishermen should be aware of these areas; a list of these areas is available at local ADF&G or National Marine Fisheries Service (NMFS) offices.

**Federal Management Strategy:** Groundfish fisheries off the coast of Alaska have changed tremendously due to implementation of the Magnuson Act, market demand, and economic or biological declines in non-groundfish fisheries. Management of groundfish in waters under Federal jurisdiction is currently based on Total Allowable Catch allocations (TAC's), or quotas, which are recommended by the NPFMC and implemented by the NMFS. TAC's may be set for each Federal management area by individual species, by species assemblages, and also by gear types. A fishery is generally opened first to directed fishing, then changed to "BYCATCH" status when 85-95% of the TAC for the year has been harvested. Allowable bycatch can vary between species, gear type, and fish species. As the remaining TAC is harvested in bycatch fisheries, a PROHIBITED SPECIES CATCH (PSC) status is applied and no retention is allowed.

Another factor regulating Alaska groundfish fisheries is the bycatch of prohibited species, such as halibut. Halibut bycatch mortality limits are established for fixed gear (e.g., longline) and for non-fixed gears (e.g., trawl). Halibut discard rates are calculated from observer coverage and extrapolated to the entire fishing fleet in the Gulf of Alaska. For trawl gear, the annual halibut bycatch mortality quota is divided into four quarterly quotas; for longline gear, three trimester quotas are applied. As gear-specific quotas are exceeded, management area-gear closures are implemented. Under the Vessel Bycatch Incentive Program, individual vessel operators may be fined for excessive bycatch of prohibited species.

**State Management Strategy:** The ADF&G intends to more actively manage groundfish fisheries in waters of State jurisdiction. However, due to incomplete or limited fishery harvest reporting, historical stock composition data for groundfish stocks in State waters has been limited. The ADF&G is responsible for resource conservation and given the lack of biological data from past years, a conservative management strategy of adopting inseason adjustments that occur in Federal waters adjacent to Central Region waters will be effected in 1993 (EO No. HQ-GF-01-93). For State waters of Prince William Sound, Cook Inlet, and the North Gulf District (located between 147°W. long. and Cape Douglas), groundfish seasons will coincide with seasons in Federal waters of the Central Gulf of Alaska Management Area, unless specifically altered by ADF&G Emergency Order. Exceptions will include Prince William Sound sablefish, lingcod, and rockfish.

A catch sampling program conducted during 1991-1992 will continue in 1993 to collect biological data on commercially harvested species. The ADF&G will also attempt to periodically place observers aboard commercial vessels in order to obtain data on discards. As stock composition data is compiled, the ADF&G will more actively manage groundfish in State waters.

**Rockfish:** Rockfish are typically slow-growing, slow to reach sexual maturity (7-17 yrs old), long-lived (50-80+ yrs), and have localized distributions. These fish are highly susceptible to overfishing. Once rockfish stocks are depleted, they are difficult to rebuild without curtailing non-rockfish fisheries. If rockfish stocks are to be managed for long-term yield, it is necessary that fish tickets accurately report harvest area and species composition. It is not acceptable for fish tickets to list rockfish as "rockfish" or "snapper". ADF&G staff will periodically sample deliveries to collect data on the age, weight, length, and maturity of rockfish so that these species may be managed for long-term yield.

A good rockfish identification guide is:

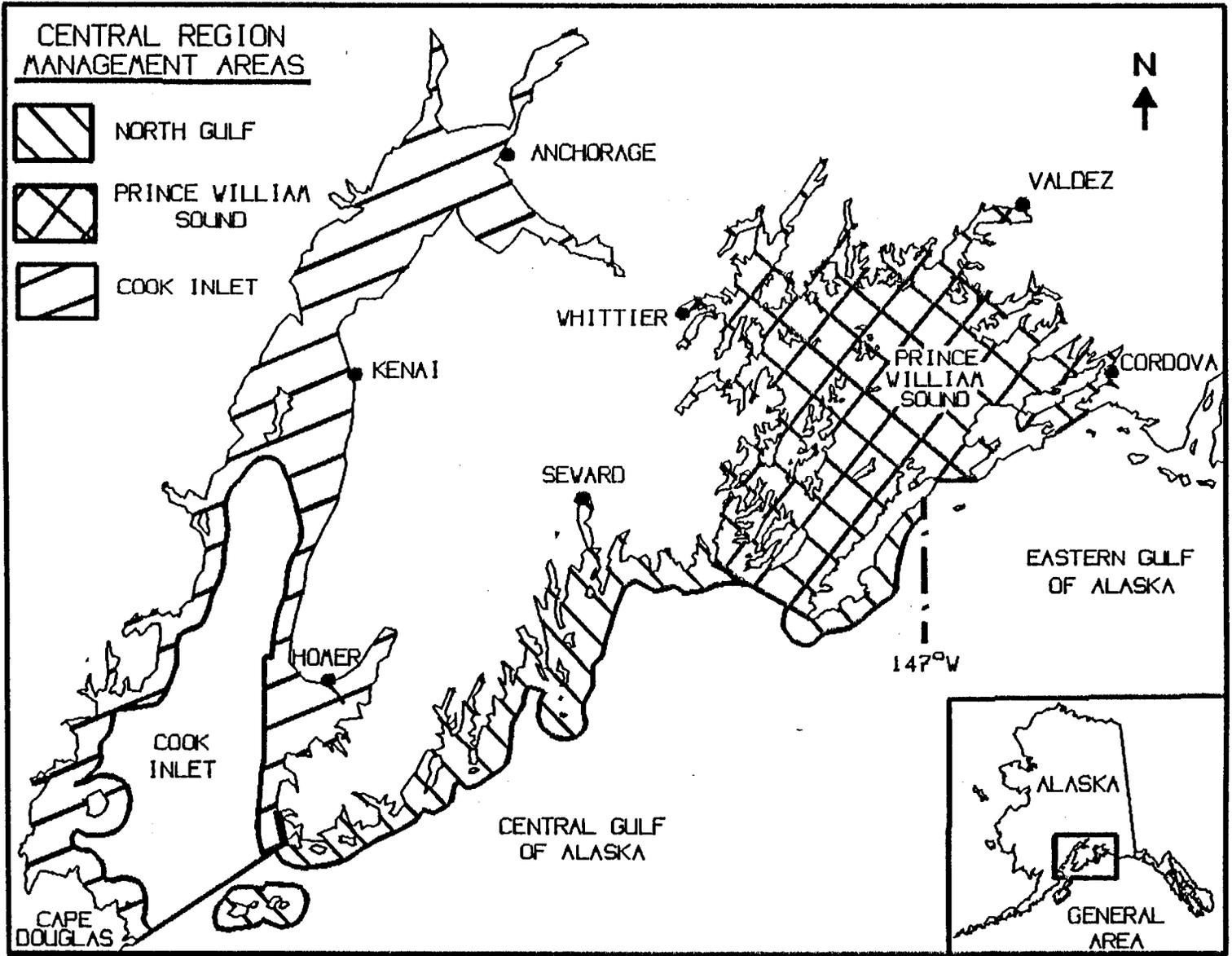
Kramer, D. E., and V. M. O'Connell. 1986. Guide to Northeast Pacific rockfishes, genera Sebastes and Sebastolobus. Marine Advisory Bull. #25., Alaska Sea Grant, Univ. of Alaska, Fairbanks. 78 p.  
(This inexpensive book has plastic-coated pages...good for boats!)

**Prince William Sound Sablefish:** ADF&G manages the Prince William Sound sablefish fishery for a harvest of around 200,000 lbs (round weight). Retention (including bycatch) of Prince William Sound sablefish is allowed only during the directed Prince William Sound sablefish fishery. Fishermen must obtain a Prince William Sound Sablefish Permit from ADF&G prior to participation in this fishery. The 1991 Prince William Sound sablefish fishery lasted five weeks, the 1992 fishery lasted 17 days. In both years, the fishery substantially exceeded the pre-season harvest target level, reflecting the increasing intensity in this fishery. To better manage this fishery for the long-term yield and conservation of the sablefish resource, the 1993 fishery will involve weekly fishing periods of 72-hours lasting from 12:00 Noon on Mondays until 12:00 Noon on Thursdays. The weekly fishing periods will commence on May 17, the first Monday after the May 15 sablefish opening in the adjacent Federal waters of the Central Gulf of Alaska. Processors need to pre-register before the sablefish season, and daily reporting of landings will be required.

**Pacific Cod:** The directed fishery for Pacific cod opened to non-trawl fisheries on January 1, 1993. Area-specific gear closures for trawl and pot gear will be in effect (see legal gear section above). In 1992, the directed Pacific cod fishery lasted into April when a bycatch status was enacted, and the directed fishery was reopened from August 17 through October 16.

**Other Species:** Other groundfish species opened to directed fishing by non-trawl gear on January 1, 1993. Inseason closures will be announced by NMFS, with announcements distributed to area ADF&G offices.

Additional information, as well as applications for licenses and permits, can be obtained from the Homer ADF&G office (ph# 235-8191).



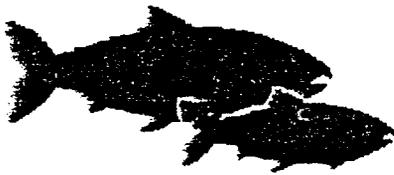
47

Figure 1. Groundfish management areas for state waters in the Central Region.

# COMMERCIAL FISHERIES

## NEWS RELEASE

### ALASKA DEPARTMENT OF FISH AND GAME



STATE OF ALASKA

CENTRAL REGION

Department of Fish and Game  
Carl L. Rosier, Commissioner

3298 Douglas St.  
Homer, Alaska 99603

Robert Clasby, Acting Director  
Division of Commercial Fisheries

Contact: William R. Bechtol  
Groundfish Biologist  
Homer: ph# 235-8191

IMMEDIATE RELEASE

Date: February 15, 1993  
Groundfish Announcement No. 2

### COMMERCIAL LINGCOD CLOSURE OF PRINCE WILLIAM SOUND, COOK INLET, AND THE CENTRAL GULF OF ALASKA LOCATED NORTH OF CAPE DOUGLAS AND WEST OF 147°W

The Alaska Department of Fish and Game (ADF&G) announces a closure of Prince William Sound, Cook Inlet, and that portion of the Central Gulf of Alaska located north of Cape Douglas and west of 147°W long. to the commercial harvest of lingcod from February 15 through June 30, 1993. Lingcod resources in portions of the Central Gulf of Alaska are depressed. Age and size composition data indicate localized recruitment failures. Lingcod are particularly vulnerable during the spawning and nest-guarding phase of their reproductive cycle.

Best available data, combined with ADF&G surveys, suggest spawning congregations and egg-laying begins in January and continues into March and April. After spawning, the females disperse and males guard the nest during a 7-11 week incubation period which can extend into June. Permanent removal of male lingcod from the egg nests results in the loss of eggs to predators, generally within 48 hours. Spawning congregations of male and female lingcod, and nest-guarding male lingcod, are very aggressive and highly susceptible to fishing pressure.

A major portion of the lingcod harvests in recent years has occurred during the critical nest-guarding phase. This emergency order closure will protect lingcod resources in the Prince William Sound, Cook Inlet, and Central Gulf of Alaska Areas during the nest-guarding phase, and complements similar sport fishery closures in these areas. The Alaska Board of Fisheries recently adopted new regulations to govern the lingcod fisheries. The new regulations established closed fishing seasons and minimum size limits for Cook Inlet, Prince William Sound, and the entire Central Gulf of Alaska. These new regulations will be fully implemented in the near future and published in the 1993 regulation book.

APPENDIX 4

1993 Copper/Bering Salmon Forecast

File: FCST933.wp5

Date: 11/13/92

Disk: "SF"

FORECAST AREA: Prince William Sound/Copper River

SPECIES: Sockeye Salmon

1992 DATA: Escapement: 750,408 2/,3/ Catch: 960,676 1/,2/

Return: 1,711,084 1/,2/,3/

1/ Preliminary

2/ Includes Enhanced Stock Production

3/ Includes Subsistence/Personal Use and Sport Catch

PRELIMINARY FORECAST OF 1993 RETURN:

NATURAL PRODUCTION	Point	Range
Return Estimate:	1,403,200	1,219,700 to 1,586,700
Harvest Estimate:	787,200	696,100 to 878,300
Escapement Goal:	616,000	

SUPPLEMENTAL PRODUCTION

Gulkana Hatchery

Return Estimate:	221,300	177,000 to 265,500
Harvest Estimate:	132,800	106,200 to 159,400
Brood Stock and Stream Escapement	88,500	

TOTAL PRODUCTION

Return Estimate:	1,624,500	1,396,700 to 1,852,200
Harvest Estimate:	920,000	802,300 to 1,037,700
Escapement and Brood Stock:	704,500	

FORECAST METHODS:

Natural Production: The 1993 sockeye salmon forecast utilized historical return per spawner data and parent year escapement weighted by age class (4,5 and 6-year-olds) for the Copper River

Delta and Upper Copper River independently. The 1993 predicted return is influenced heavily by the 1988 and 1989 brood years for the Upper Copper River and for the Copper River Delta with five year returns expected to be the strongest in each area.

Supplemental Production: The 1993 supplemental return will be the result of production from Gulkana hatchery. Brood years 1988 and 1989 using F.R.E.D. Division standard survival assumptions should produce an adult return of 221,300. A harvest level of 60% would contribute 132,800 salmon to the commercial catch.

#### DISCUSSION OF THE 1993 FORECAST

Natural Production: Continued relatively mild winter conditions, particularly on the Copper River Delta during the freshwater life history stage of the age groups represented in the 1993 return, should produce an above average return per spawner contribution from the below average parent year escapements of 1987, 1988 and 1989. Upper Copper River escapements were near average in all three years, thus generally mild conditions and good distribution should yield above average returns. The forecast will error on the conservative side if environmental conditions continue to produce above average survival rates; additionally, moderate fry densities should increase the return per spawner.

Supplemental Production: Facility production data and conditions suggest that a wide variation in survival from the expected could significantly alter the 1993 total sockeye return; however, as future years data is collected, predictions will become more reliable.

SPECIES: Chinook Salmon

1992 DATA: Escapement: 11,122 1/,2/,3/ Catch: 39,810 1/,4/

Return: 50,932 1/,3/

1/ Preliminary

2/ Expanded Index

3/ Includes Sport, Subsistence and Personal Use Catches

4/ Commercial Catch Only

#### PRELIMINARY FORECAST OF THE 1993 RETURN

NATURAL PRODUCTION	Point	Range
Return Estimate:	42,100	35,200 to 49,000
Harvest Estimate:	27,100	20,500 to 33,700
Escapement Goal:	15,000	

## FORECAST METHODS

The 1993 chinook salmon forecast utilized historical aerial index and age composition data from the 4,5,6 and 7-year-old age classes. Weighted index figures are combined to create a single index of abundance figure which for lack of better data base is compared to the historical average escapement index. The expected return is then a return per spawner calculation which does not consider relative density, climate conditions or distribution of spawners.

## DISCUSSION OF THE 1993 FORECAST

During the past eleven years, chinook salmon returns to the Copper River have tended to be above average and have established several of the top catches on record while escapements have generally been maintained at high levels. Only a failure of the 1987 and/or 1988 brood years or significant extra production from the 1989 brood year could seriously affect the forecasted return. No climate condition or other event is believed to have significantly impacted any of the brood years involved. A chinook salmon harvest of the 27,100 fish magnitude appears to be a solid although conservative estimate.

FORECAST AREA: Copper and Bering River Areas

SPECIES: Coho Salmon

REVIEW OF 1992 RUN:	Projected <u>Harvest</u>	Actual <u>Harvest</u>	<u>Escapement</u>	<u>Run</u>
Copper River District	313.3	291.6	44.6	336.2
Bering River District	122.5	125.6	14.4	140.0
Copper Bering R Total	435.9	413.2	59.0	476.2

PRELIMINARY FORECAST OF 1993 RUN:

	Forecast Estimate <u>(thousands)</u>	Forecast Range <u>(thousands)</u>
HARVEST PROJECTION FOR NATURAL RUN:		
Copper River District	310.5	138.9-436.9
Bering River District	124.0	0.0-230.1
Copper&Bering R. Total	434.5	130.6-658.6

FORECAST METHODS:

The harvest projection for the 1993 run of coho salmon to the Copper and Bering River areas is based on the average catch of the commercial fishery for 1980-92 and the range is the 80% confidence interval about the mean. Although harvest information exists for all years since statehood, only the last 12 years were used to represent 1993 because of substantial increases in efficiency as well as changing fishing patterns and participation in recent years.

FORECAST DISCUSSION:

Although there were occasional departures from long term average temperatures, weather conditions during the freshwater residency of the two major brood years (1989 and 1990) were generally within normal ranges and survival is expected to be average. Returns from the 1989 brood year in the 1992 catch were slightly above the average return for the 1.1 age class; however, the correlation between age 1.1 returns and subsequent sibling returns is poor.

Construction of brood tables and the use of return per spawner and sibling return relationships have not yielded satisfactory results. Possibilities for forecast improvements include reanalysis of historic catch scale samples to remove reader inconsistencies, collection of escapement age data, inclusion of environmental data for freshwater residency years, and inclusion of USFS overwinter survival data from spawning channels.

APPENDIX 5

Copper River Sockeye Expected Weekly Catch and Escapement

Appendix Table 2. Expected weekly catch and escapement with supplemental split between Paxson, Summit and Crosswind, 1993.

Date	Stat.	Anticipated 2/ 1/ Conn. Catch				3/ Supplemental		4/ Production			Comb. 5/ Sockeye Harvest	Cumul. Sockeye Harvest	6/ Wild Expt. Escape	Paxson Supple. Expect	Summit Supple. Expect	Xwind Supple. Expect	8/ Personal Use/King Escape	9/ Comb. Antic. Escape	10/ Cumul. Antic. Escape	11/ P
		Week	Percent	Cum. Percent	(Natural Run)	Percent Paxson	Catch Paxson	Percent Summit	Catch Summit	Percent Xwind										
May 7-15	20	0.97	0.97	7636	0.85	583	1.7	564	0.00	0	8783	8783	0	0	0	0	0	0	0	
May 16-22	21	12.16	13.13	95724	5.51	3776	11.02	3659	0.00	0	103159	111942	5180	189	377	0	4913	10659	10659	
May 23-29	22	21.88	35.01	172239	6.48	4445	12.94	4296	0.00	0	160981	292923	27160	1222	2444	0	10107	40933	51592	
May 30-Jun 5	23	17.15	52.16	135005	3.74	2566	7.49	2487	0.00	0	140057	432980	55790	1435	2870	0	11781	71877	123469	
Jun 6-12	24	12.05	64.21	94858	2.12	1451	4.24	1408	0.00	0	97716	530696	66535	830	1661	0	11178	80203	203672	
Jun 13-19	25	9.10	73.31	71635	2.62	1797	5.25	1743	0.00	0	75176	605871	47530	470	939	0	8832	57770	261442	
Jun 20-26	26	7.32	80.63	57623	4.37	2998	8.75	2905	0.00	0	63526	669397	33600	582	1163	0	8696	44040	305482	
Jun 27-Jul 3	27	4.55	85.18	35818	5.14	3523	10.28	3413	0.00	0	42753	712150	25235	970	1940	0	10761	38906	344389	
Jul 4-10	28	3.60	88.78	28339	17.32	11862	14.94	4960	19.71	6090	51271	763422	26180	1140	2280	0	5908	35507	379896	
Jul 11-17	29	2.72	91.50	21412	28.38	19469	12.41	4120	44.32	13695	58696	822117	25685	3844	3312	4060	4157	40958	420854	
Jul 18-24	30	3.82	95.32	30071	10.17	6979	7.02	2331	13.33	4119	43500	865617	21805	6296	2753	9130	3341	43324	464178	
Jul 25-31	31	2.68	98.00	21097	11.75	8061	3.19	1059	20.28	6267	36483	902100	10570	2259	1558	2746	2329	19462	483641	
Aug 1-7	32	1.24	99.24	9761	1.51	1032	0.65	216	2.36	729	11739	913839	4655	2605	708	4178	986	13132	496773	
Aug 8-14	33	0.42	99.66	3306	0.06	41	0.12	40	0.00	0	3387	917226	175	334	144	486	927	2066	498839	
Aug 15-21	34	0.15	99.81	1161	0.00	0	0	0	0.00	0	1181	918407	0	13	27	0	723	762	499601	
Aug 22-28	35	0.09	99.90	708	0.00	0	0	0	0.00	0	708	919116	0	0	0	0	221	221	499822	
Aug 29-Sep 4	36	0.07	99.97	551	0.00	0	0	0	0.00	0	551	919667	0	0	0	0	94	94	499916	
Sept 5-11	37	0.02	99.99	157	0.00	0	0	0	0.00	0	157	919824	0	0	0	0	51	51	499967	
Sept 12-18	38	0.01	100.00	79	0.00	0	0	0	0.00	0	79	919903	0	0	0	0	0	0	499967	
Totals		100.00	100.00	787,200	100.00	68,600	100.00	33,200	100.00	30,900	919,903	919,903	350,000	45,700	22,200	20,600	65,000	499,967	499,967	

1/ Data from cumulative percentage catch by day for 1969 to 1992.

2/ Based upon 1993 forecast report which uses comparative return per spawner escapement data and considers the impact of environmental influences.

3/ Eight years (1984-89, 1991-92) of coded wire tag recovery percentages, smoothed by a moving average of five, having equal weight.

4/ Based upon Paxson (1%), Summit (0.8%) and Crosswind (1.5%) fry to adult survival and partitioned by 17% four year old and 83% five year old returns.

5/ Anticipated natural production harvest plus anticipated supplemental production harvest.

6/ Sonar enumerated escapement at Miles Lake includes only sockeye. Does not include 200,000 sockeye bound for delta streams.

7/ Escapement includes 20,000 for brood stock (hatchery

APPENDIX 6

1992 Copper River Personal Use and Subsistence Summary

2/12/93

COPPER RIVER PERMIT SUMMARY  
Number of Fish by Permit Type

	Number Permits	Reds -----	Kings -----	Cohos -----	Steelhd -----	Other -----	TOTAL -----
** PU							
INDIVIDUAL DIPNET	901	5959	294	227	9	0	6489
FAMILY DIPNET	5486	78491	3022	1251	21	5	82790
** Subtotal **	6387	84450	3316	1478	30	5	89279
** SUB							
INDIVIDUAL DIPNET	32	541	29	0	0	0	570
FAMILY DIPNET	119	3418	76	11	0	0	3505
INDIVIDUAL FISHWHEEL	85	5279	217	32	4	3	5535
FAMILY FISHWHEEL	419	31961	998	287	19	35	33300
** Subtotal **	655	41199	1320	330	23	38	42910
*** Total ***	7042	125649	4636	1808	53	43	132189

Subsistence Returns  
Personal use u

586  
6160

APPENDIX 7

1993 Draft Staff Proposals to the Board of Fisheries



S

**PROPOSAL 000 - 5 AAC 24.367 (c)(3)**

No part of a set gillnet or drift gillnet may be operated closer than 50 feet to the barrier seine in front of the Main Bay hatchery.

**PROBLEM:** Current regulation only requires set gillnet fishermen to remain at least 50 fathoms from the barrier seine at the Main Bay hatchery. The department has closed the area within 50 feet of the barrier seine to all gear types by emergency order. The department expects that this area will be closed on an annual basis.

**WHAT WILL HAPPEN IF NOTHING IS DONE?** The department will use emergency order authority to close this area to both drift and set gillnets.

**WHO IS LIKELY TO BENEFIT?** Prince William Sound Aquaculture Association, set gillnet fishermen.

**WHO IS LIKELY TO SUFFER?** Drift gillnet fishermen.

**OTHER SOLUTIONS CONSIDERED?** None.

**PROPOSED BY:** Alaska Department of Fish and Game

S

**PROPOSAL 000 - 5 AAC 24.350 (c)**

The department will review closed waters while in the field during the 1993 season and submit recommendations for correcting inconsistencies during the fall.

**PROBLEM:** There are inconsistencies and errors in the closed water regulations. This has caused problems with enforcement of these regulations as well as confusing the public. This is a housekeeping proposal to reorganize, correct, and update the closed waters regulations.

**WHAT WILL HAPPEN IF NOTHING IS DONE?** Fish and Wildlife Protection will continue to have problems in enforcing closed waters regulations.

**WHO IS LIKELY TO BENEFIT?** Protection officers, resource managers and the public will benefit.

**WHO IS LIKELY TO SUFFER?** No one will suffer.

**OTHER SOLUTIONS CONSIDERED?** No other solutions were considered.

**PROPOSED BY:** Alaska Department of Fish and Game

S

**PROPOSAL 000** - 5 AAC 24.350 (c)(41) and (c)(43), 24.365, 24.366, 24.367, 24.368, 40.035, 40.038

Repeal 5 AAC 40.035, 5 AAC 40.038, 5 AAC 24.350 (c)(41) and (c)(43) and incorporate into the following proposal.

**5 AAC 24.365. ARMIN F. KOERNIG SALMON HATCHERY MANAGEMENT PLAN.**

(a) The department, in consultation with the hatchery operator, shall manage the Point Elrington and Port San Juan subdistricts to achieve the corporation escapement goal for the Armin F. Koernig salmon hatchery.

(b) There is established the Prince William Sound Aquaculture Corporation Armin F. Koernig Hatchery Terminal Harvest Area, consisting of all waters of Sawmill Bay, Evans Island, north and west of a line from 60°03'40" N. lat., 147°59'20" W. long., to 60°02'40" N. lat., 148°01'35" W. long. excluding the Armin F. Koernig Special Harvest Area.

(c) There is established the Prince William Sound Aquaculture Corporation Armin F. Koernig Special Harvest Area consisting of all waters of Sawmill Bay, Evans Island, west of 148°01'50" W. longitude.

(d) The hatchery permit holder harvesting salmon within the special harvest area is exempt from the provisions of 5 AAC 24.310 - 5 AAC 24.320 except as may be specifically provided by emergency order. The hatchery permit holder may harvest salmon within the special harvest area by gear types specified in (e) seven days per week from 6:00 a.m. July 7 through 6:00 p.m. September 15 unless closed or modified by emergency order.

(e) Notwithstanding 5 AAC 24.330, legal gear for the hatchery permit holder in the special harvest area are purse seine, hand purse seine and beach seine.

**5 AAC 24.366. SOLOMON GULCH SALMON HATCHERY MANAGEMENT PLAN.** (a) the department, in consultation with the hatchery operator, shall manage the Valdez Narrows subdistrict to achieve the corporation's pink salmon escapement goal for the Solomon Gulch salmon hatchery. The department may manage those waters of Valdez Arm south to the latitude of Rocky Point to assist in the achievement of the corporation's pink salmon escapement goal for the hatchery.

(b) The Solomon Gulch terminal harvest area consists of all waters of Port Valdez east of 146°30'30" W. long., except for those closed waters areas described in 5 AAC 24.350(c)(14).

(c) There is established the Solomon Gulch Special Harvest Area, consisting of all waters within a 500-yard radius of the terminus of Solomon Gulch Creek.

(d) The hatchery permit holder harvesting salmon within the special harvest area is exempt from the provisions of 5 AAC 24.310 and 5 AAC 24.320, except as may be specifically provided by

emergency order. The hatchery permit holder may harvest salmon in the special harvest area during periods established by emergency order.

(e) Notwithstanding 5 AAC 24.330, legal gear for the hatchery permit holder in the special harvest area is any gear listed in 5 AAC 39.105(d) except gill nets.

**5 AAC 24.367. MAIN BAY HATCHERY HARVEST MANAGEMENT PLAN.** (a) the purpose of the Main Bay salmon hatchery management plan in this section is to provide an equitable distribution of harvest opportunity and to reduce conflicts between users in the vicinity of the Main Bay salmon hatchery.

(b) In the Main Bay subdistrict:

(1) no portion of a drift gill net may be operated within 25 fathoms of a set gill net, except in the zone outside of the offshore end of a set gill net;

(2) no set gill net buoy may be more than 20 feet seaward of the set gill net to which it is attached;

(3) set gill nets must be operated in substantially a straight line, except that no more than 25 fathoms of a single gill net may be used as a hook in any configuration;

(4) the inshore end of a setnet or setnet lead may not be operated in more than two fathoms of water at low tide.

(c) In the Main Bay subdistrict west of a line from 60°32'18" N. lat., 148°04'37" W. long., to 60°31'55" N. lat., 148°03'55" W. long. (Main Bay Terminal Harvest Area.

(1) no set gill net may exceed 50 fathoms in length;

(2) a set gill net may be operated only from the mainland shore;

(3) no part of a set gill net may be operated closer than 50 fathoms to the barrier seine in front of the Main Bay salmon hatchery;

(4) no part of a set gill net may be operated within 50 fathoms of any part of another set gill net.

(d) In the Main Bay subdistrict south of a line from 60°31'28" N. lat., 148°05'33" W. long., to 60°31'24" N. lat., 148°05'24" W. long. (Main Bay Alternating Gear Zone)

(1) set gill net gear and drift gill net gear may be operated only on alternating days during periods established by emergency order throughout the season; the department shall alternate the gear type which is allowed to operate at the start of each opening;

(2) the operator of a set gill net shall remove all nets, anchors, and associated equipment from the waters of this zone at the end of the fishing day for that gear type.

(e) There is established the Prince William Sound Aquaculture Corporation Main Bay Hatchery Special Harvest Area, consisting of all waters of Main Bay west of 60°31'39" N. latitude, 148°04'54" W. longitude to 60°31'53" N. latitude, 148°05'18" W. longitude.

(f) The hatchery permit holder harvesting salmon within the special harvest area is exempt from the provisions of 5 AAC 24.310 - 5 AAC 24.320 except as may be specifically provided by emergency order. The hatchery permit holder may harvest salmon within the special harvest area by gear types specified in (g) during periods established by emergency order.

(g) Notwithstanding 5 AAC 24.330, legal gear for the hatchery permit holder in the special harvest area are purse seine, hand purse seine and beach seine.

**5 AAC 24.368. WALLY NOERENBERG (ESTHER ISLAND) HATCHERY MANAGEMENT PLAN.** (a) The department, in consultation with the hatchery operator, shall manage the Esther subdistrict and the Perry Island subdistrict to achieve the corporation's escapement goal for the Wally Noerenberg (Esther Island) salmon hatchery.

(b) In the Esther subdistrict:

(1) before July 21, salmon may be taken by gill nets only;

(2) on and after July 21, salmon may be taken by gill nets and seines.

(c) There is established the Prince William Sound Aquaculture Corporation Wally Noerenberg Hatchery Terminal Harvest Area, consisting of all waters of Lake and Quillian bays inside of a line from Hodgkin Point to Esther Light as marked exclusive of the Wally Noerenberg Special Harvest Area.

(d) There is established the Prince William Sound Aquaculture Corporation Wally Noerenberg Special Harvest Area, consisting of all waters of Lake Bay north of 60°47'36" N. latitude.

(e) The hatchery permit holder harvesting salmon within the special harvest area is exempt from the provisions of 5 AAC 24.310 - 5 AAC 24.320 except as may be specifically provided by emergency order. The hatchery permit holder may harvest salmon within the special harvest area by gear types specified in (f) during periods established by emergency order.

(f) Notwithstanding 5 AAC 24.330, legal gear for the hatchery permit holder in the special harvest area are purse seine, hand purse seine and beach seine.

**PROBLEM:** Regulations concerning hatchery management plans, hatchery harvest area definitions and harvest activities are now scattered throughout the commercial fishing and private nonprofit regulations. This is a housekeeping proposal to consolidate and standardize these regulations.

**WHAT WILL HAPPEN IF NOTHING IS DONE?** Confusion will continue over the location of regulations pertaining to hatchery harvest areas.

**WHO IS LIKELY TO BENEFIT?** Resource managers, hatchery personnel, and the resource users will benefit.

**WHO IS LIKELY TO SUFFER?** No one will suffer.

**OTHER SOLUTIONS CONSIDERED?** No other solutions were considered.

**PROPOSED BY:** Alaska Department of Fish and Game

**PROPOSAL 000 - 5 AAC 27.310 (b)**

5 AAC 27.310 (b) Herring may be taken from September 1 through January 31 for the food and bait fishery.

**PROBLEM:** Current regulation confines the herring food and bait fishery to the General Herring District. Herring are not always available in the General district or higher quality herring may be available in another location.

**WHAT WILL HAPPEN IF NOTHING IS DONE?** The department will issue an emergency order when conducting the food and bait fishery in a location other than the General District.

**WHO IS LIKELY TO BENEFIT?** Herring fishermen and processors.

**WHO IS LIKELY TO SUFFER?** No one.

**OTHER SOLUTIONS CONSIDERED?** None.

**PROPOSED BY:** Alaska Department of Fish and Game

**PROPOSAL 000 - 5 AAC 27.305**

**REPEAL** 5 AAC 27.305 (a)(b)(c)(d)

**AMEND** 5 AAC 31.210. **FISHING SEASONS** (a)(1): In those waters encompassed by a line from a point on Knowles Head at 60' 41' N. Lat., 146' 37' 30" W. long., to 60' 41' N. Lat., 146' 58' 30" W. long., to 60' 50' N. Lat., 146' 58' 30" W. Long., to 60' 50' N. Lat., 147'

20' W. Long., to a point on the mainland at 60' 53' 45" N. Lat., 147' 20' W. Long. except for the closed waters described in 5 AAC 31.235 (2) from June 1 through August 31.

Amend 5 AAC 31.235. **CLOSED WATERS (2):** East of a line from Porcupine Point in Port Fidalgo to the southernmost tip of Bligh Island to the northernmost tip of Bligh Island to Rocky Point.

**PROBLEM:** The department does not use the herring districts for management of herring fisheries and proposes to delete all herring districts. Catch statistics are compiled and reported using salmon districts and statistical areas. Since the Northern Herring Fishing District is cited in the P.W.S. Trawl Shrimp fishery (FISHING SEASONS 5 AAC 31.210(a)(1) and CLOSED WATERS 5 AAC 31.235(2) shellfish regulations will need to be amended if adopted.

**WHAT WILL HAPPEN IF NOTHING IS DONE?** The herring regulations will reference herring districts, however they will not serve a management function.

**WHO IS LIKELY TO BENEFIT?** Fishermen, processors, and the department will have one less regulation.

**WHO IS LIKELY TO SUFFER?** No One.

**OTHER SOLUTIONS CONSIDERED?** None.

**PROPOSED BY:** Alaska Department of Fish and Game

**H**  
**PROPOSAL - 000 - 5 AAC 27.365(b)**

5 AAC 27.365(b) The management plan for herring fisheries in Prince William Sound assumes that all of these fisheries use a single stock of herring which may be harvested at a rate of zero to 20 percent of the spawning biomass. The management year for herring is March 1 through February 28. Guideline harvest levels are established before the spring herring fisheries and are based upon the final spawning biomass estimate from the previous year, cohort analysis, and projected recruitment.

**PROBLEM:** Change the definition of the management year in the Prince William Sound Herring Management Plan. The current definition does not provide adequate time for staff to finalize the spring biomass estimate from the spawn deposition dive program and establish harvest levels before the fall food and bait fishery. If changed, the management year will establish harvest levels during the winter and be effective for all herring fisheries during the next calendar year.

**WHAT WILL HAPPEN IF NOTHING IS DONE?** The preliminary forecast will be used for management of the fall food and bait fishery.

**WHO IS LIKELY TO BENEFIT?** Department staff will have adequate time to prepare a final biomass estimate before the food and bait fishery.

**WHO IS LIKELY TO SUFFER?** No one.

**OTHER SOLUTIONS CONSIDERED?** None.

**PROPOSED BY:** Alaska Department of Fish and Game

**S**  
PROPOSAL 000 - 5 AAC 24.200

5 AAC 24.200 (e) Miners District: waters of Unakwik Inlet north of 61' 01' N. latitude.

5 AAC 24.310. **FISHING SEASONS** (c) Replace Unakwik with Miners.

5 AAC 24.330. **GEAR** Replace Unakwik with Miners.

5 AAC 24.331. **GILL NET SPECIFICATIONS AND OPERATIONS** (b) replace Unakwik with Miners.

(6) Replace Unakwik with Miners.

**PROBLEM** Change the name of the Unakwik District to the Miners District to allow for more accurate catch reporting. The Unakwik District only encompasses the upper half of Unakwik Inlet and was created to manage sockeye runs to Miners and Cowpens lakes. A major pink salmon hatchery is now located at the southern boundary of the Unakwik District. Changing the name to the Miners District will help fishermen and tendermen to distinguish the two areas for catch reporting on fish tickets.

**WHAT WILL HAPPEN IF NOTHING IS DONE?** Commercial catch information may be misreported. The distinction between the Unakwik District and Unakwik Inlet will continue to be confusing to the public.

**WHO IS LIKELY TO BENEFIT?** Fishermen and processors will benefit from less confusion.

**WHO IS LIKELY TO SUFFER?** No one.

**OTHER SOLUTIONS CONSIDERED?** None.

**PROPOSED BY:** Alaska Department of Fish and Game

**H**  
PROPOSAL 000 - 5 AAC 27.330. **GEAR**

5 AAC 27.330. **GEAR**. (c) Herring pounds may be located north and east of a line from Porcupine Point to Point Freemantle or in locations specified by emergency order.

5 AAC 27.330. **GEAR**. (d) A herring pound is a single structure including frame, netting and suspended kelp that is used to enclose herring over extended periods of time.

**PROBLEM:** Amend 5 AAC 27.330. GEAR (c) to clarify that pounds may be located north and east of a line from Porcupine Point to Point Freemantle or in areas specified by emergency order. Currently the location for pounds is specified in the commissioner's permit. Add a new section (d) to clarify to clarify the definition in Prince William Sound.

**WHAT WILL HAPPEN IF NOTHING IS DONE?** The gear type will not be well defined for the spawn-on-kelp in pounds fishery.

**WHO IS LIKELY TO BENEFIT?** The definition of a pound will be clear to the public.

**WHO IS LIKELY TO SUFFER?** No one.

**OTHER SOLUTIONS CONSIDERED?** None.

**PROPOSED BY:** Alaska Department of Fish and Game

**PROPOSAL 000** - 5 AAC 27.365(d)(2)

**H** 5 AAC 27.365. **PRINCE WILLIAM SOUND HERRING MANAGEMENT PLAN.**(d)(2) spawn-on-kelp in pounds: the spawn-on-kelp harvest objective will be set based on the ratio of one ton of spawn-on-kelp for every 12.5 tons of herring allocated to this fishery; the department shall manage this fishery to achieve this harvest objective by restricting those persons holding valid CFEC spawn-on-kelp in pound fishery permits to a specified number of kelp blades annually by emergency order.

**PROBLEM:** To specify in regulation that the number of kelp blades each permit holder is allocated will be specified by emergency order. Currently the number of kelp blades is specified in the commissioner's permit.

**WHAT WILL HAPPEN IF NOTHING IS DONE?** The department will continue to specify the number of kelp blades in the commissioner's permit.

**WHO IS LIKELY TO BENEFIT?** This aspect of the current commissioner's permit will be placed in regulation for everyone's benefit.

**WHO IS LIKELY TO SUFFER?** This will not change the method of blade allocation.

**OTHER SOLUTIONS CONSIDERED?** None.

**PROPOSED BY:** Alaska Department of Fish and Game

**H** PROPOSAL 000 - 5 AAC 27.365(e) and 5 AAC 27. 333 (b)(10)

REPEAL 5 AAC 27.365(e)

Incorporate the provision to weigh spawn-on-kelp at the time of harvesting into 5 AAC 27.333(b)10).

**PROBLEM:** Repeal 5 AAC 27.365 (e). The department proposes that the requirement to seal totes be deleted and the provision to weigh kelp when removed from the pound be moved from this section and incorporated into 5 AAC 27.333. **HERRING SPAWN-ON-KELP HARVEST SPECIFICATIONS AND OPERATIONS** (b)(10).

**WHAT WILL HAPPEN IF NOTHING IS DONE?** The department will still be required to seal totes. Sealing of totes does not help to regulate the fishery as the number of kelp blades that can be harvested is controlled. Sealing of totes is a hold over from when each permit holder was allowed to harvest a fixed quantity of spawn-on-kelp.

**WHO IS LIKE TO BENEFIT?** Both the department and the fishermen.

**WHO IS LIKELY TO SUFFER?** No one.

**OTHER SOLUTIONS CONSIDERED?** None.

**PROPOSED BY:** Alaska Department of Fish and Game

**H** PROPOSAL 000 - 5 AAC 27.380(b) and 5 AAC 27.333 (b)

REPEAL 5 AAC 27.380. **PERMITS**(b)(1)(2)(3)(4)(5)

Amend 5 AAC 27.333(b)

5 AAC 27. 333. **HERRING SPAWN-ON-KELP HARVEST SPECIFICATIONS AND OPERATIONS FOR WILD AND IN POUNDS FISHERIES.** (b) Herring spawn-on-kelp in pounds may be taken only under the following conditions:

- (1) A permit holder may operate only one single pound structure. A single structure is defined as a floating frame with adequate buoyancy to support a net enclosure which contains suspended kelp and live herring over extended periods of time in one location. Where permitted, two permit holders may operate a single pound structure. Hereafter the term pound refers to a single or half of a double pound.
- (2) ADF&G will announce by emergency order the times and the areas that are open for the seining of herring for the introduction into pounds.

- (3) Prior to the introduction of kelp, each pound must be plainly and legibly marked in a conspicuous place with the permit holder's name(s) and five digit CFEC permit serial number. Possession of a pound structure may not be transferred and labeling may not be changed at any time.
- (4) Each pound will be constructed to include a minimum of five feet of surplus webbing gathered at the surface so it may be lowered into the water when submerged webbing becomes so egg saturated as to prevent circulation of surrounding sea water and result in suffocation of impounded herring. The surplus web must remain above the surface until herring have been introduced.
- (5) All lines of kelp blades must be plainly and legibly marked with the permit holder's name. Each line of kelp blades must state the number of kelp blades attached to that line.
- (6) Each permit holder shall be physically present at the fishing site and personally operate or assist in operation of the pound to include the placement of kelp, the capture and transfer of herring and the harvest of herring spawn-on-kelp produced by the pound.
- (7) Prince William Sound kelp may be taken by hand for use in pounds and may include the entire plant including the stipe (stem) and holdfast. Kelp plants may be taken only by a hand-held, unpowered blade cutting device. Kelp may be taken from all areas in Prince William Sound unless closed by emergency order.
- (8) Permit holders may introduce herring into their pounds for a maximum of six consecutive days. No herring may be held for more than eight days and no herring may be transferred from one pound into another. Day one will begin on the day herring were introduced and day eight will end at midnight.
- (9) Dead loss of herring resulting from capture, transfer and holding of herring will be included in calculating the allocation available to each permit holder.
- (10) The permit holder shall weigh all spawn-on-kelp taken at the time it is removed from the pound. Each permit holder's kelp must remain separate from other permit holder's kelp until processed. The permit holder must provide these weights to the processor for recording on the fish ticket.
- (11) After the release of the captured herring, the pound structure, including web, will remain in place for a minimum of four weeks. Egg covered webbing must remain on the pound frame in the original configuration with adequate water circulation on all sides to optimize the hatch success. Within six weeks of harvest date, all components of the structure must be completely removed from the water.

**PROBLEM:** The herring spawn-on-kelp in pounds fishery is currently regulated by the terms of a commissioner's permit. The fishery has been ongoing since 1978 and the department proposes to move specifications currently listed in the commissioner's permit into regulation.

**WHAT WILL HAPPEN IF NOTHING IS DONE?** The department will continue to manage the pound fishery by the commissioner's permit.

**WHO IS LIKELY TO BENEFIT?** Permit holders will benefit by having terms of the fishery in regulation. This will result in less paperwork for staff as the annual permit will not have to be issued. Permit holders will benefit by having the terms of the fishery in regulation.

**WHO IS LIKELY TO SUFFER?** Those permit holders who want the fishery managed by the commissioner's permit.

**OTHER SOLUTIONS CONSIDERED?** None.

**PROPOSED BY:** Alaska Department of Fish and Game

**PROPOSAL 000 - 5 AAC 24.310**

**REPEAL 5 AAC 24.310. FISHING SEASONS.(a)(b)(c)(d)(e)**

**PROBLEM:** The salmon fishery in Area E is opened and closed by emergency order. Regulatory fishing seasons are no longer used.

**WHAT WILL HAPPEN IF NOTHING IS DONE?** The regulation will remain in print but will not serve a management function.

**WHO IS LIKELY TO BENEFIT?** Fish and Game staff.

**WHO IS LIKE TO SUFFER?** No one.

**OTHER SOLUTIONS CONSIDERED?** None

**PROPOSED BY:** Alaska Department of Fish and Game

**PROPOSAL 000 - 5 AAC 27.332**

**5 AAC 27.332. SEINE SPECIFICATIONS AND OPERATION.** Effective 4/1/95, no purse seine may be more than 1,000 meshes in depth and more than 100 fathoms in length from March 1 through June 30.

**PROBLEM:** To help control the rate of harvest, primarily in the sac roe seine fishery and secondarily in the spawn-on-kelp in pounds fishery. The department proposes to reduce the length of purse seines from 150 fathoms in length to 100 fathoms in length.

**WHAT WILL HAPPEN IF NOTHING IS DONE?** The harvest potential of the seine fleet will remain high. High harvest rates may result in exceeding the guideline harvest allocation. High harvest rates may lower product quality as there is limited processing capacity available.

**WHO IS LIKELY TO BENEFIT?** Fishermen will benefit through improved management of the fishery. Processors will benefit from better product quality.

**WHO IS LIKELY TO SUFFER?** Fishermen will have to shorten their nets by 50 fathoms.

**OTHER SOLUTIONS CONSIDERED?** Limiting time and area was considered but rejected. Currently, openings are very short (20 minutes) and in generally small confined areas.

**PROPOSED BY:** Alaska Department of Fish and Game

**PROPOSAL 000** - 5 AAC 01.610(d)

**H** 5 AAC 01.610(d) Subsistence harvest of herring spawn-on-kelp by hand picking may be taken above tide level from March 15 through June 15. Subsistence harvest of herring spawn-on-kelp taken under water using dive gear may occur only during open commercial periods of the herring spawn-on-kelp not in pounds fishery.

**PROBLEM:** Adequate opportunity does not exist for the subsistence harvest of spawn-on-kelp. Current regulation only allows subsistence spawn-on-kelp to be taken during the open commercial spawn-on-kelp season. The commercial season typically only lasts several days.

**WHAT WILL HAPPEN IF NOTHING IS DONE?** The department issued an emergency order in 1991 and 1992 to open the subsistence harvest of spawn-on-kelp above the tide line from April 1 through June 30.

**WHO IS LIKELY TO BENEFIT?** Subsistence users in Prince William Sound.

**WHO IS LIKELY TO SUFFER?** No One.

**OTHER SOLUTIONS CONSIDERED?** None.

**PROPOSED BY:** Alaska Department of Fish and Game

**PROPOSAL 000 - 5 AAC 40.038(a)**

S

5 AAC 40.038 **SOLOMON GULCH SPECIAL HARVEST AREA - VALDEZ** (a) Prior to July 5 the Special Harvest Area for the Solomon Gulch Hatchery consists of those waters of Port Valdez east of 146' 30' 30" W longitude. After July 5, the Special Harvest Area is defined as all waters within a 500 yard radius of the terminus of Solomon Gulch Creek.

**PROBLEM:** The special harvest area for the Solomon Gulch Hatchery has been expanded in recent years by emergency order to include a larger area in Port Valdez than is stated in regulation. The department would like the Board of Fisheries to review the area currently being used for the special harvest area.

**WHAT WILL HAPPEN IF NOTHING IS DONE?** The area currently defined as the special harvest area by the hatchery operator will be out of compliance with the published special harvest area in the Private Non Profit Hatchery regulations.

**WHO IS LIKELY TO BENEFIT?** The Solomon Gulch Hatchery.

**WHO IS LIKELY TO SUFFER?** No one.

**OTHER SOLUTIONS CONSIDERED?** None

**PROPOSED BY:** Alaska Department of Fish and Game

**PROPOSAL 000 - 5 AAC 27.333(a)(3)**

H

5 AAC 27.333(a)(3) ribbon and sieve kelp plant blades must be cut at least four inches above the stipe (stem) and fucus and hair kelp plants may be taken in their entirety.

**PROBLEM:** Current regulations do not clearly define the harvest specifications for different species of kelp. The department has allowed fishermen targeting fucus and hair kelp to harvest the entire plant as other methods of harvesting are not practical. For other species of kelp, the harvest requirements are more practical and help to conserve the kelp resource.

**WHAT WILL HAPPEN IF NOTHING IS DONE?** Confusion over legal harvesting requirements will continue.

**WHO IS LIKELY TO BENEFIT?** The resource users will benefit.

**WHO IS LIKELY TO SUFFER?** No one will suffer.

**OTHER SOLUTIONS CONSIDERED?** No other solutions were considered.

**PROPOSED BY:** Alaska Department of Fish and Game

**PROPOSAL 000 - 5 AAC 27.333(a)**

**H** 5 AAC 27.333.(a)(5) Each fisherman participating in the wild spawn-on-kelp fishery shall indicate on the fish ticket at the time of landing, any spawn-on-kelp harvested which are not purchased by the processor or buyer, or which have been dumped at sea. (a)(6) Each buyer of wild spawn-on-kelp shall indicate on the fish ticket any wild spawn-on-kelp which was not purchased from a delivery.

**PROBLEM:** There is no regulation that requires discarded wild spawn-on-kelp to be reported to ADF&G. Harvested but unsalable wild spawn-on-kelp is sometimes dumped overboard either at the processor or by the fishermen. The eggs on this kelp do not necessarily survive and hatch because the kelp is dumped in deep water or has been out of the water too long. This kelp should be included in the catch applied against the GHIL for this fishery. Wild harvest spawn-on-kelp catches are currently under reported.

**WHAT WILL HAPPEN IF NOTHING IS DONE?** Wild harvest spawn-on-kelp catches will continue to be under reported.

**WHO IS LIKELY TO BENEFIT?** All harvesters who want to maximize the amount of quality product in the harvest. The ADF&G would have increased management precision.

**WHO IS LIKELY TO SUFFER?** Harvesters who are not concerned with harvesting a quality product.

**OTHER SOLUTIONS CONSIDERED?** No other solutions were considered.

**PROPOSED BY:** Alaska Department of Fish and Game

APPENDIX 8

RPT Draft Phase III Plan

## GOALS

### PRINCIPAL GOAL

*Achieve optimum production of wild and enhanced stocks on a sustained yield basis through an integrated program of research, management, and application of salmon enhancement technology, for the benefit of all user groups.*

The concept of optimum sustainable yield for the purposes of this salmon plan incorporates a blend of biological requirements for maximum sustained yield of wild stocks and the biological and economic requirements for sustained yield of enhanced stocks.

Maximum sustained yield (MSY) of wild salmon production has its roots in a set of theories used by fishery managers called stock-recruitment relationships, which links the number of adult spawners to the subsequent recruitment, or number of progeny produced that survive to return and spawn. These theories predict that at low stock size, recruitment will increase in proportion to stock size. At high stock size, they predict that recruitment will decline or level off (Figure ???). Maximum sustainable yield is the point at which the stock-recruitment curve is the greatest distance above the replacement line. Maximum sustained yield is defined in the state's escapement goal policy as "the greatest average annual yield from a stock", which in practice "is approached when a constant level of escapement is maintained on an annual basis regardless of run strength."

### WILD STOCKS

The stock-recruitment relationship for wild salmon populations is best described by the line graph shown in Figure XXX. The descending limb of the curve at high stock size as shown in Figure XXX is due to a process called compensatory mortality. Compensatory mortality occurs when mortality rates increase with increasing abundance. As an example, compensatory mortality for pink and chum salmon may occur during the early marine lifestage when a large fry outmigration must compete for limited food resource. As a result fry may experience reduced growth leading to increased mortality because predators select the smaller, slower growing individuals. In sockeye salmon, compensatory mortality may occur during lake residency. Large numbers of fry at this lifestage may overgraze zooplankton stocks in the lake causing a collapse of the prey resource.

### ENHANCED STOCKS

In a hatchery, the number of spawners is dependant upon the egg capacity of the facility which is based upon the incubator space and water supply. Compensatory mortality obviously will not occur during the egg stage in a properly managed hatchery. However, during the early marine lifestage, compensatory mortality may occur when large numbers of fry are forced to compete for a limited food resource. If so, marine survival rates will decline (mortality will increase) as fry release numbers are increased. Further research is needed to determine whether competition for food is causing compensatory mortality at present levels of enhanced salmon production in PWS.

## MIXED STOCKS

Mixed stocks of hatchery and wild salmon significantly increases the complexity of management for the achievement of maximum sustained yield of wild stocks. Fisheries targeting on hatchery salmon may result in undesireably high exploitation rates on wild salmon. Mixed-stock fisheries of this nature may reduce the number of wild spawners that escape the fishery causing a reduction in yield from wild stocks. As hatchery production increases overall yield increases, but high exploitation of wild salmon decreases yield from wild stocks (Figure ???). In this context, optimum sustainable yield is achieved at a level of hatchery production that can be managed without overexploitation of wild stocks. In Prince William Sound, wild stock salmon have been managed to achieve a wild stock escapement equal to the historical average escapement. Any long-term reduction in wild stock escapement below the historical average is considered an unacceptable depletion of wild stocks.

Wild salmon stocks must be maintained at MSY to achieve optimum sustainable yield of wild and enhanced stocks over the long term. Wild salmon stocks represent a resource of genetic variability that is needed for continued enhanced salmon production in a changing environment. The climatic, ecological, and pathological environment encountered by the fish will change over time. Genetic variability within wild and enhanced stocks is essential if these stocks are to survive in a changing environment. Straying of enhanced stocks into streams may put genetic variability among wild stocks at risk. In Prince William Sound, enhanced stocks greatly outnumber wild stocks. Under these conditions, even relatively low straying rates of enhanced stocks may cause reduced genetic variability among affected wild stocks. This problem may be reduced by minimizing straying and periodically introducing new brood stocks into hatcheries.

## MANAGEMENT CONCERNS

It is generally necessary to exploit wild and enhanced stocks at different rates to achieve optimum sustainable yield. Two approaches are needed to achieve differential exploitation of these two stocks while maintaining the highest possible intrinsic quality of harvested fish. First, to the greatest extent possible, the harvestable surplus of wild and enhanced salmon must be taken in offshore areas where intrinsic quality is greatest. Accurate and timely information on wild and enhanced salmon abundances in mixed-stock areas is needed to achieve this goal without causing overexploitation of the weaker stock. Second, the remaining surplus of wild or enhanced stocks must be harvested in terminal areas where the stocks are separated. A reduction in the quality of these fish will occur if they are not harvested rapidly.

## RESEARCH .... Mark will fix up this section.....

Competition for food or attraction of predators during the marine lifestage may lead to reduced growth and survival of wild salmon. A monitoring program is needed to determine whether enhanced salmon production affects the growth and survival of wild salmon at present or future levels of production. Continuing research in these areas is essential to achieve optimum sustainable yield of wild and enhanced salmon.

## ECONOMIC SUSTAINED YIELD

For a salmon enhancement program to be self sustaining, it must generate revenues to offset production costs while contributing a substantial portion of its annual production to the common property fisheries..

Program costs may include the distribution of hatchery fish to remote release locations as hatchery production increases. Also included is the intensified management and assessment of wild stock / hatchery stock interactions, which may become more costly than either ADF&G or the hatchery operators can afford. Maintenance of MSY for wild stocks becomes more difficult in a mixed stock fishery, and costly stock identification programs are required to minimize the management risk of failing to achieve escapement goals.

Increases in hatchery production which greatly exceeds wild stock production will likely be accompanied by an increase in the need to harvest a large percentage of the total returns in the hatchery subdistricts to protect wild stocks. Overall fish quality in the catches might be reduced because of harvests in near terminal areas. Reduced quality in years of abundant supply could have a self limiting effect on desired production levels at the hatcheries because of reduced prices and resultant hatchery revenues.

At high levels of production, production costs and economic factors must be weighed against the overall benefits of the program. There may be a point of diminishing returns, beyond which additional production is not cost effective.

## OPTIMIZE PRODUCTION

The concept of optimum production of wild and enhanced stocks entails the integration of wild stock management for MSY and enhanced production at a level that can contribute significantly to common property fisheries. Paramount to this highest level goal, is the preservation of wild stock integrity. Optimum production is achieved when the enhanced production component is maintained below the level that would compromise MSY of wild stocks.

In addition to the principal goal of optimum production of wild and enhanced stocks, the PWS/CR RPT has identified THREE subordinate goals that are of high importance to the planning for future salmon fisheries in the Prince William Sound area.

## SUBORDINATE GOALS

DRAFT 2/5/93

**GOAL: Increase fishing opportunities for salmon resource users.**

Increased fishing opportunities will be the measure by which most fishery users will rate the success of the Phase III plan. These opportunities can be created by increasing existing runs, diversifying species availability and broadening run timing.

Increasing existing runs through enhancement and enlightened management results in increased harvests. If wild runs are maintained at healthy levels, then optimum utilization of hatchery returns is much more achievable.

Species diversification benefits the commercial fisheries by smoothing out the highs and lows of a fishery dominated by a single species such as pink salmon in PWS. The two year life cycle of pink salmon results in large variations in run size since the return each year consists as a single year class. In contrast, the brood year of the other four species of salmon returns over a period of several years which reduces the scale of annual variation in returns. The sport and subsistence groups benefit by diversification into king, coho and sockeye since these are prized by the general public as recreation and personal use species.

Congestion in the commercial fisheries will be reduced as hatchery returns are diversified and spread out over time. Remote releases will play a key role in spreading out the fleet and will benefit sport and subsistence users also.

**GOAL: Achieve equitable allocation of the harvestable surplus of wild and enhanced salmon, while minimizing changes to historic fishing patterns.**

The harvestable surplus consists of all salmon remaining after wildstock escapement and hatchery brood stock requirements are met. For hatchery production to continue, a portion of the surplus must be allocated to cost recovery fisheries. The remaining surplus is intended to be allocated equitably to the user groups. King and coho production in PWS is harvested by both sport and commercial fishermen through releases at the hatcheries and larger communities. Sockeye, chum and pink salmon are intended to be divided approximately 50-50 between seine and gillnet gear. The intention is to maintain traditional and historical fishery patterns as much as possible. (See PWS allocation policy.)

**GOAL: Achieve an economically self-sustaining fishery.**

The fishery should be productive enough to generate capital sufficient to fund the management, research, enforcement and enhancement efforts needed to maintain that production. Capital can be generated directly through taxes such as income taxes, fish landing taxes and enhancement assessments or through cost recovery programs which generate a majority portion of the funding for hatchery operations.

Additional capital is indirectly accrued through excise taxes on sporting equipment which translates into Dingel-Johnson funding for sport fish programs. The economic activity induced by commercial and sport fisheries generates large amounts of tax money for the General Fund of the State of Alaska. A portion of this money is budgeted by the State to maintain staff and officers for management, research and enforcement. The General Fund is also the source for state grants and loans to the PNP hatcheries.

At the present time, the General Fund of the state is heavily dependent on oil based revenues. Funding for salmon resource management and development in PWS can be described as subsidized since a portion of the capital originates for the oil industry. Enhancement, coupled with sound management and associated research and enforcement, should develop a fishery resource of sufficient value to be economically self-sustaining.

NOTE: A NEW PRODUCTION GOAL TABLE IS BEING PREPARED BASED ON FORMAT REVISION RECOMMENDATIONS. THE NEW TABLE WILL INCLUDE EGG CAPACITIES AS WELL AS ADULT RETURNS. IT WILL BE DISTRIBUTED AT THE NEXT RPT MEETING.

TABLE ----

PRODUCTION GOALS			
Species	Current	1995	2000
E. pink	6.4	10.1	* 22.0
L. pink	23.7	26.6	27.3
E. chum	1.8	1.7	5.3
L. chum	0.2	0.3	0.4
Sockeye			
Eyak	0.0	0.0	1.0
Coghill	0.7	0.4	2.0
Eshamy	0.0	0.3	1.0
New hatchery	0.0	0.0	1.0
Gulkana Hatchery	0.25	0.25	0.40
Coho	0.19	0.35	0.35
Chinook	0.005	0.031	0.033

\* Level of expanded production is contingent on market.

### REMOTE RELEASE OBJECTIVES

To fulfill fishery objectives such as increasing opportunity in area and decreasing congestion in hatchery terminal harvest areas, remote releasing increments of production are recommended. Based on more than 18 months of investigation and site selection, the RPT recommends hatchery production be released at various hatchery and remote locations to result in adult returns according to TABLE \_\_\_\_.

Remote release recommendations are preliminary and require scrutiny of stocks, genetic and management concerns. Pertinent remote release site discussions and guidelines are provided in APPENDIX ----, PWS/CR RPT Remote Release Site Report.

TABLE ----

REGIONAL SALMON PRODUCTION GOALS

Stock	Facility	Current			Current +5			Current +10		
		BY90			BY95			BY2000		
		Green Eggs	Adults	Green Eggs	Adults	Green Eggs	Adults	Green Eggs	Adults	
Early Pink Salmon	VFDA	159,448,601	6,417,412	230,000,000	10,145,805	230,000,000	10,145,805	230,000,000	10,145,805	
	WHIN	0	0	0	0	0	0	200,456,000	11,862,484	
Total Early Pink Salmon		159,448,601	6,417,412	230,000,000	10,145,805	230,000,000	10,145,805	430,456,000	22,008,288	
Late Pink Salmon	AFK	126,149,144	5,655,144	196,576,000	10,215,016	196,576,000	8,852,798	196,576,000	8,852,798	
	CC	150,866,567	6,415,284	151,212,000	6,318,686	214,218,000	8,951,472	214,218,000	8,951,472	
	WHIN	215,297,347	13,800,649	169,616,580	10,037,486	169,616,580	10,037,486	169,616,580	10,037,486	
Total Late Pink Salmon		492,313,058	25,871,077	517,404,580	26,571,188	517,404,580	27,841,756	580,410,580	27,841,756	
Total Pink Salmon		651,761,659	32,288,489	747,404,580	36,716,993	747,404,580	49,850,045	1,010,866,580	49,850,045	
Early Chum Salmon	WHIN	85,298,403	1,536,786	286,613,472	5,283,823	286,613,472	5,283,823	286,613,472	5,283,823	
Late Chum Salmon	WHIN	782,938	14,434	0	0	0	0	0	0	
	VFDA	1,862,299	18,440	38,000,000	364,213	38,000,000	364,213	38,000,000	364,213	
	Total Late Chum Salmon		2,645,237	32,874	38,000,000	364,213	38,000,000	364,213	38,000,000	364,213
Total Chum Salmon		87,943,640	1,569,660	324,613,472	5,648,035	324,613,472	5,648,035	324,613,472	5,648,035	
Eyak Sockeye Salmon	MB	65,639	5,043	7,162,709	1,000,000	7,162,709	1,000,000	7,162,709	1,000,000	
	MB	2,709,000	324,807	14,616,403	2,000,000	14,616,403	2,000,000	14,616,403	2,000,000	
	MB	2,977,270	509,955	7,274,626	1,000,000	7,274,626	1,000,000	7,274,626	1,000,000	
Total Main Bay Sockeye Salmon		5,751,909	839,805	29,053,738	4,000,000	29,053,738	4,000,000	29,053,738	4,000,000	
Gulkana Sockeye Salmon	Gulkana I	30,500,000	152,246	35,500,000	198,800	35,500,000	198,800	35,500,000	198,800	
	Gulkana II	2,500,000	5,361	2,500,000	14,000	2,500,000	14,000	2,500,000	14,000	
Total Gulkana Sockeye Salmon		33,000,000	157,607	38,000,000	212,800	38,000,000	212,800	38,000,000	212,800	
Total Sockeye Salmon		38,751,909	997,412	67,053,738	4,212,800	67,053,738	4,212,800	67,053,738	4,212,800	

TABLE ----

REGIONAL SALMON PRODUCTION GOALS (cont.)

Stock	Facility	Current		Current +5		Current +10	
		BY90 Green Eggs	Adults	BY95 Green Eggs	Adults	BY2000 Green Eggs	Adults
Coho Salmon	WHN	3,043,831	241,004	2,495,000	229,614	2,495,000	229,614
	VFDA	2,260,023	110,620	2,000,000	122,911	2,000,000	122,911
<b>Total Coho Salmon</b>		<b>5,303,854</b>	<b>351,624</b>	<b>4,495,000</b>	<b>352,525</b>	<b>4,495,000</b>	<b>352,525</b>
King Salmon	WHN	898,434	23,956	953,000	32,890	953,000	32,890
	VFDA	0	0	0	0	0	0
<b>Total King Salmon</b>		<b>898,434</b>	<b>23,956</b>	<b>953,000</b>	<b>32,890</b>	<b>953,000</b>	<b>32,890</b>
<b>Total Salmon</b>		<b>784,659,496</b>	<b>34,879,517</b>	<b>1,140,024,790</b>	<b>46,610,719</b>	<b>1,403,486,790</b>	<b>59,743,770</b>

# HISTORIC WILD STOCK AND HATCHERY HARVEST OF PINK SALMON IN PWS

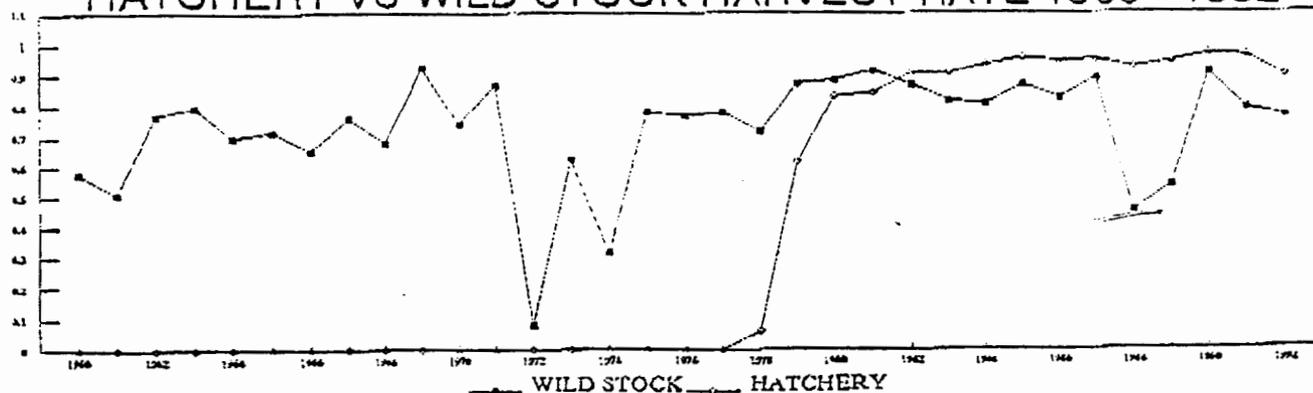
YEAR	WILD STOCK				HATCHERY				
	ESCAPE	HARVEST	TOTAL	RATE	R/S	ESCAPE	HARVEST	TOTAL	RATE
1960	1,350,722	1,341,896	3,192,618	0.58		--	--	--	--
1961	2,198,980	2,298,218	4,497,198	0.51		--	--	--	--
1962	2,018,010	6,742,316	3,760,326	0.77	6.5	--	--	--	--
1963	1,355,740	5,295,373	6,551,118	0.80	3.0	--	--	--	--
1964	1,841,680	4,206,396	6,048,576	0.70	3.0	--	--	--	--
1965	975,956	2,460,471	3,436,427	0.72	2.5	--	--	--	--
1966	1,423,170	2,699,418	4,122,588	0.55	2.2	--	--	--	--
1967	342,260	2,526,340	3,468,600	0.76	3.6	--	--	--	--
1968	1,156,510	2,452,168	3,608,678	0.68	2.5	--	--	--	--
1969	404,570	4,328,579	5,233,149	0.92	6.2	--	--	--	--
1970	979,220	2,309,996	3,789,216	0.74	3.3	--	--	--	--
1971	1,112,550	7,310,964	3,423,514	0.87	20.3	--	--	--	--
1972	641,180	54,783	995,963	0.08	0.7	--	--	--	--
1973	1,225,010	2,056,373	3,281,383	0.63	2.9	--	--	--	--
1974	958,120	448,773	1,406,893	0.32	2.2	--	--	--	--
1975	1,255,560	4,467,960	5,733,520	0.78	4.7	--	--	--	--
1976	926,260	3,059,427	3,985,687	0.77	4.2	--	--	--	--
1977	1,298,170	4,568,838	6,366,308	0.73	4.6	--	--	--	--
1978	1,145,010	2,904,162	4,049,172	0.72	4.4	145,061	9,559	154,620	0.06
1979	2,217,280	15,275,830	17,493,110	0.87	13.5	211,801	341,194	552,995	0.62
1980	1,371,940	12,467,360	14,139,300	0.88	12.3	270,745	1,313,092	1,583,837	0.83
1981	1,713,080	17,968,575	19,679,655	0.91	8.9	379,178	2,027,004	2,406,182	0.84
1982	2,274,570	14,847,641	17,122,211	0.87	10.2	563,431	5,366,321	5,929,752	0.90
1983	2,163,100	9,753,110	11,916,210	0.82	7.0	458,513	4,322,275	4,780,788	0.90
1984	4,031,360	17,005,707	21,037,567	0.81	9.2	358,306	5,080,194	5,439,000	0.93
1985	2,521,330	17,113,259	19,734,589	0.87	9.1	399,510	8,120,360	8,520,000	0.95
1986	960,220	4,522,309	5,482,529	0.82	1.4	404,038	6,384,962	7,289,000	0.94
1987	1,466,240	11,574,354	13,041,094	0.89	5.0	966,557	17,536,378	18,502,933	0.95
1988	964,530	301,406	1,765,936	0.45	1.8	344,302	10,516,238	10,860,540	0.93
1989	1,272,770	1,486,202	2,758,972	0.54	1.9	1,230,077	20,163,720	21,393,797	0.94
1990	1,325,852	12,223,844	13,549,696	0.90	14.0	1,158,160	31,939,635	33,097,795	0.97
1991	1,837,166	6,883,191	3,720,356	0.79	6.9	1,317,761	30,251,120	31,568,381	0.96
1992	554,000	1,793,882	2,347,382	0.76	1.8	802,068	6,838,450	7,640,518	0.90

60-64 AVG	1,753,026	4,076,941	5,829,967	70
65-69 AVG	961,148	3,083,300	4,044,446	76
70-74 AVG	1,040,484	2,867,872	3,908,356	73
75-79 AVG	1,451,732	7,655,183	9,106,915	84
80-84 AVG	2,560,788	15,337,258	17,898,046	86
85-89 AVG	1,197,922	6,121,723	7,319,645	84

431,908	4,983,237	5,415,144	92
920,627	17,408,186	18,328,813	95

EVEN AVG	1,424,874	5,346,028	6,770,902	79
ODD AVG	1,498,110	7,247,903	8,746,013	83
60-92 AVG	1,460,382	6,268,149	7,728,532	81

## HATCHERY VS WILD STOCK HARVEST RATE 1960-1992



HISTORIC WILD STOCK AND HATCHERY HARVEST OF CHUM SALMON IN PWS

YEAR	WILDSTOCK			HATCHERY		
	ESCAPE	HARVEST	TOTAL	BROOD	SALES/CP	TOTAL
1960	201,877	381,353	583,735	--	--	--
1961	338,350	224,401	562,751	--	--	--
1962	486,840	891,380	1,378,720	--	--	--
1963	371,160	942,900	1,314,060	--	--	--
1964	442,550	539,047	981,597	--	--	--
1965	195,644	201,043	396,687	--	--	--
1966	142,560	426,628	569,188	--	--	--
1967	127,210	274,234	401,444	--	--	--
1968	74,570	342,939	417,509	--	--	--
1969	91,540	320,977	412,517	--	--	--
1970	61,550	230,661	292,211	--	--	--
1971	109,770	574,265	684,035	--	--	--
1972	269,190	45,370	314,560	--	--	--
1973	491,270	729,839	1,221,109	--	--	--
1974	166,900	38,544	255,444	--	--	--
1975	47,290	100,479	147,769	--	--	--
1976	80,520	370,478	450,998	--	--	--
1977	159,490	572,610	732,100	--	--	--
1978	156,170	485,147	641,317	--	--	--
1979	30,280	326,414	406,694	--	--	--
1980	89,820	482,010	571,830	--	6	6
1981	134,130	1,878,598	2,012,728	--	118	118
1982	285,500	1,249,168	1,534,668	36,200	0	36,200
1983	347,510	997,309	1,344,819	44,000	0	44,000
1984	224,550	1,193,956	1,418,506	3,000	4,386	7,386
1985	185,240	1,274,576	1,459,816	1,677	3,340	5,517
1986	218,710	1,550,874	1,769,584	78,123	54,052	132,175
1987	319,000	1,776,494	2,095,494	60,000	68,000	128,000
1988	483,780	1,199,142	1,682,922	108,278	524,694	632,972
1989	243,310	590,476	833,786	74,513	330,973	405,486
1990	299,025	608,506	907,531	106,098	245,234	351,332
1991	133,398	180,837	314,235	136,555	14,514	151,069
60-64 AVG	368,155	596,017	964,173			
65-69 AVG	126,305	313,164	439,469			
70-74 AVG	219,736	333,736	553,472			
75-79 AVG	104,750	371,026	475,776			
80-84 AVG	216,302	1,160,208	1,376,510	26,640	1,002	27,642
85-89 AVG	290,008	1,278,312	1,568,320	64,518	196,312	260,830
60-91 AVG	220,585	657,864	878,449			

PRELIMINARY DATA, DOES NOT INCLUDE COPPER & BERING DISTRICTS

# HISTORIC WILD STOCK AND HATCHERY HARVEST OF SOCKEYE SALMON IN PWS

YEAR	WILDSTOCK			HATCHERY		
	ESCAPE	HARVEST	TOTAL	BROOD	SALES/CP	TOTAL
1960	166,520	35,176	201,696	--	--	--
1961	104,250	55,551	159,801	--	--	--
1962	41,080	44,679	85,759	--	--	--
1963	80,480	39,746	120,226	--	--	--
1964	114,340	37,517	151,857	--	--	--
1965	210,260	118,563	328,823	--	--	--
1966	111,600	100,752	212,352	--	--	--
1967	35,040	21,118	56,158	--	--	--
1968	92,170	123,516	215,686	--	--	--
1969	158,700	287,271	445,971	--	--	--
1970	48,560	103,717	152,277	--	--	--
1971	35,500	384,821	420,321	--	--	--
1972	96,370	197,526	293,896	--	--	--
1973	73,520	124,802	198,322	--	--	--
1974	33,216	129,366	162,582	--	--	--
1975	41,629	189,613	231,242	--	--	--
1976	35,023	112,750	147,773	--	--	--
1977	54,808	310,358	365,166	--	--	--
1978	62,014	222,083	284,097	--	--	--
1979	63,300	150,040	213,340	--	--	--
1980	196,209	198,049	394,258	--	--	--
1981	187,360	252,447	439,807	--	--	--
1982	206,574	1,041,419	1,247,993	--	--	--
1983	76,952	92,111	169,063	--	--	--
1984	116,808	311,955	428,763	--	--	--
1985	214,889	506,370	721,259	--	--	--
1986	86,844	488,866	575,710	--	--	--
1987	194,363	540,109	734,472	--	--	--
1988	107,249	75,709	182,958	--	--	--
1989	104,227	203,574	307,801	--	--	--
1990	29,640	242,402	272,042	0	7,877	7,877
1991	65,276	182,500	247,776	37,312	422,562	459,874
60-64 AVG	101,436	42,534	143,970			
65-69 AVG	121,554	130,244	251,798			
70-74 AVG	57,493	188,006	245,500			
75-79 AVG	51,315	196,969	248,284			
80-84 AVG	156,781	379,196	535,977			
85-89 AVG	141,514	363,026	504,540			
60-91 AVG	101,418	216,399	317,817			

PRELIMINARY DATA, DOES NOT INCLUDE COPPER & BERING DISTRICTS

HISTORIC WILD STOCK AND HATCHERY HARVEST OF COHO SALMON IN PWS

YEAR	WILDSTOCK			HATCHERY		TOTAL
	ESCAPE	HARVEST	TOTAL	BROOD	SALES/CP	
1960	35,000	30,722	65,722	--	--	--
1961	35,000	3,335	38,335	--	--	--
1962	35,000	17,388	52,388	--	--	--
1963	35,000	30,998	65,998	--	--	--
1964	35,000	30,914	65,914	--	--	--
1965	35,000	13,363	48,363	--	--	--
1966	35,000	17,218	52,218	--	--	--
1967	35,000	14,634	49,634	--	--	--
1968	35,000	11,660	46,660	--	--	--
1969	35,000	7,032	42,032	--	--	--
1970	35,000	10,030	45,030	--	--	--
1971	35,000	30,551	65,551	--	--	--
1972	35,000	1,634	36,634	--	--	--
1973	35,000	1,399	36,399	--	--	--
1974	35,000	801	35,801	--	--	--
1975	35,000	6,142	41,142	--	--	--
1976	35,000	6,171	41,171	--	--	--
1977	35,000	843	35,843	--	--	--
1978	35,000	1,495	36,495	--	--	--
1979	35,000	6,343	41,343	--	--	--
1980	35,000	2,952	37,952	--	--	--
1981	35,000	4,383	39,383	--	--	--
1982	35,000	24,362	59,362	--	--	--
1983	35,000	10,496	45,496	64	0	64
1984	35,000	12,420	47,420	173	0	0
1985	35,000	19,753	54,753	170	0	170
1986	35,000	9,014	44,014	20	3,263	3,283
1987	35,000	34,311	69,311	969	13,440	14,409
1988	35,000	5,147	40,147	2,572	70,562	73,134
1989	35,000	10,152	45,152	5,936	193,422	199,358
1990	35,000	31,720	66,720	11,187	202,805	213,992
1991	35,000	4,720	39,720	12,034	140,591	152,625
60-64 AVG	35,000	22,771	57,771			
65-69 AVG	35,000	12,881	47,881			
70-74 AVG	35,000	8,883	43,883			
75-79 AVG	35,000	4,299	39,299			
80-84 AVG	35,000	10,923	45,923	47	0	13
85-89 AVG	35,000	15,675	50,675	1,933	56,137	58,071
60-91 AVG	35,000	12,925	47,925			

PRELIMINARY DATA, DOES NOT INCLUDE COPPER & BERING DISTRICTS.  
DOES NOT INCLUDE SPORT HARVEST IN PORT VALDEZ

APPENDIX 9

Prince William Sound Coded Wire Tag Program Briefing Paper

# Prince William Sound Coded Wire Tag Program

## Briefing Paper

### INTRODUCTION

The Prince William Sound salmon industry is heavily dependant upon enhanced production from what has developed into the most successful hatchery program in North America. In its infancy following the disastrous returns in the early 1970's, its promoters envisioned an enhancement program that would fill in the gaps for the lean years and provide stability and growth to the state's salmon industry. Owing largely to its marked success, the program has now significantly broadened the economic base of the Prince William Sound communities, by drawing in new processing companies and enabling fishermen to upgrade and enlarge their fisheries operations. The program currently is producing pink salmon at a level that is over five fold the historic mean wild stock production levels. Chum, sockeye, coho and chinook salmon programs are at varying stages of development and also contribute significantly to the fisheries of the area.

The overwhelming success of the hatchery program has not come without its problems, and the greatest challenge to the Department of Fish and Game has been management of the mixed wild and hatchery salmon returns without compromising sustained yield of the area's wild stocks. The measure of success for sustained yield management of wild stocks is achievement of annual escapement goals. In 1992 the wild pink salmon escapement was the smallest observed for even cycle returns since statehood. In spite of this shortfall, fishermen and hatchery cost recovery programs harvested nearly 75% of the wild return, even though the fishery was restricted to the large part in hatchery terminal harvest areas.

The Department has attempted to address the mixed stocks management problem by the application of a stock identification programs, relying chiefly on Coded Wire Tag (CWT) technology. Microscopic wire tags, etched with an identifying code are applied by hatchery operators to a representative proportion of the fry they release each year. The cost of this tag application is born by the hatchery associations. A program to recover the tagged hatchery fish as returning adults in the commercial harvest has be undertaken by the Department of Fish and Game for the past 6 years. Hatchery stocks detected in the catch provide fishery managers with estimates of the stock composition within the fishery. Collection and analysis of these data have been streamlined to the point that results are available to the fishery managers within three days of a fishery closure. Using this information managers can then make modifications to the fishing areas and times to better insure protection for the wild returns, while most efficiently harvesting the hatchery return.

Since the inception of the hatchery programs in Prince William Sound, there have been no project allocations from the general fund to pay for CWT recovery. Prior to the Exxon Valdez oil spill, contract monies from PWSAC were used. Following the spill, damage assessment funds were applied to the program, however, these funds are no longer available. Currently no funding exists for CWT recovery, although tagged adults will be returning for at least the next three years.

## CONTEMPORARY ISSUES RELATING TO THE CWT PROGRAM.

**Mixed stock management:** Prince William Sound managers are faced with a mixed stock fishery where hatchery stocks grossly outnumber wild stocks each year. These fish are to a large degree harvested in common areas. The relative strengths of hatchery and wild component, varies each season, and would be unknown without a stock identification program. In conducting harvests in these areas, the manager must balance competing interests for; 1.) wildstock escapement requirements, 2.) hatchery cost recovery and brood stock needs, and 3.) for an orderly common property harvest. Paramount of these is the requirement to sustain wild stocks. Wild stocks returning to the northern areas of the Sound are especially at risk as they are repeatedly subjected to intense fishing pressure as they pass by hatchery areas along their migratory route to their natal streams.

**Quality of the catch and economic return:** With statewide salmon production at high levels, prices have fallen and the demand for high quality salmon from the fisheries has dramatically increased. Flesh quality of the catch declines sharply when salmon mill in terminal areas particularly late in the return. To maximize the quality (and the economic yield) of their catch, fishermen and processors demand that as much of the harvest as possible be taken in the mixed stock entrance areas rather than terminal subdistricts in front of the hatcheries. In these mixed stock areas, the exploitation rate on wild stocks can be very high. Consequently fishery managers risk over exploitation of wild stocks, when conducting harvest in these areas.

**Terminal Harvest Management:** Prince William Sound has experienced large hatchery pink salmon returns since 1987. From 1987 until 1992 there were three years with low wild stock runs. These occurred in 1988, 1989 and 1992. Experience during this time has shown that the wild stock harvest rate can be lowered by confining the fleet in terminal harvest areas. Terminal harvesting lowers quality, increases congestion and creates problems for processors such as inadequate daily capacity. Harvesting in terminal areas does not eliminate wild stock interception, but may reduce it significantly.

## WHAT THE CWT PROGRAM MEANS TO COMMERCIAL FISHERIES MANAGEMENT.

**Sustained yield of wild stocks:** By statute, the state of Alaska directs the Department of Fish and Game to manage the salmon resources of the state for sustained yield. The state legislature recently clarified this charge, placing the highest priority on the wild stocks of salmon. In order for fishery managers to meet this charge, it is imperative that they have clear knowledge of the composition of fish in the mixed stock harvest areas. With inseason stock allocation information the interception rate and magnitude of the wild stock return can be estimated, aiding managers in their decisions, and improving their ability to achieve wild stock escapement goals.

Prior to hatcheries the Department experienced years when wild stock escapement was not achieved. It is therefore important to understand that the best evaluation program can not insure that wild stock escapements will always be achieved. The benefit from a stock assessment program will be most evident during years of average or above average returns when the inseason information offered by the stock assessment program allows the Department greater flexibility to fish in mixed stock areas without compromising wild stock escapements.

**Quality and economic considerations:** The stock composition data from the CWT program enables managers to maximize the harvest of high quality fish in the mixed stock areas. This information gives managers feedback on various management scenarios, such as the corridor approach attempted in the 1992 season. Managers may thus be able to open specific passages or mixed stock areas outside of the terminal areas, that might otherwise have been left closed for protection of wild stocks.

#### **WHAT ARE THE CONSEQUENCES OF LOSING THE CWT PROGRAM:**

**Sustained yield of wild stocks will be put at risk.** At the current levels of hatchery production it may not be possible to maintain the long term health of the wild stocks. In order to insure that the frequency and severity of shortfalls in the number of wild spawners does not increase, significant changes in the conduct of the fishery will be required. These include:

- 1.) **A large portion if not all of the commercial harvest will be taken in terminal areas in front of the hatcheries.**
- 2.) **Managers response time to changes in stock composition in the fishery will be delayed, or inappropriate, resulting in large buildups or short falls in isolated terminal areas.**
- 3.) **It may be necessary to significantly reduce production at the hatcheries, in order to bring the ratio of hatchery and wild fish down to a level that wild stock escapements can be consistently attained.**

**There will be no valid estimate of hatchery and wild stock composition in the commercial harvests.** Lack of a stock assessment program, to calculate hatchery and wild stock composition, will result in the following impacts:

- 1.) **The Department's ability to forecast the catches or monitor the productivity and performance of wild salmon stocks will be lost.**
- 2.) **Allocative split of hatchery fish between PNP operators and fishermen will be inaccurate, resulting in lost revenues to one group or the other.**
- 3.) **The Department will have no method of evaluating harvest strategies outside of terminal areas to improve quality of harvest, provide a more even flow of product to the processors and reduce congestion in the fisheries.**
- 4.) **Managers will have fewer options to respond to unexpected changes in the fishery.**

## WHAT ALTERNATIVES ARE AVAILABLE?

1. **Significantly reduce hatchery production to the point that managers can be reasonably assured that commercial fisheries are not adversely impacting wild escapement.** Without stock identification (CWT or some other method) to help managers understand the relationship and productivity of wild and enhanced stocks, hatchery production should be reduced. This would be a positive move to help protect wild stocks, however, the Department would still not have a method to monitor interactions of wild and hatchery fish. Further, this would represent a significant economic loss to fishermen and processing companies that have invested capital into the P.W.S. salmon industry.

2. **Increase corporate escapement at PNP hatchery facilities sufficiently to fund evaluation programs.** With this alternative the Aquaculture associations would then carry the financial burden for payment. If production was capped at existing levels, the burden would be passed on to the fishing fleet. Legislation and/or regulatory action would be required to clearly establish this obligation on the part of the PNP hatchery associations and resolve allocation issues.

3. **Secure long term finding in the operational budget for evaluation programs.**

With a stock identification program funded as in No. 2 or 3. above, the Department would be able to monitor the long term health of the resource. Moreover during years of moderate abundance the stock separation program would provide information to managers to allow some general district fishing before the escapement goals are achieved. This would improve the quality of the pack and reduce congestion. In years of low wild stock abundance the usual problems associated with large hatchery harvests in terminal areas would remain.

PROJECT TITLE: Prince William Sound Pink Salmon Coded-Wire Tag Recovery	PROJECT NUMBER: TF-XXX
FISHERY UNIT: Prince William Sound Salmon 1101XXX1	LEDGER CODE:
COMPONENT: Commercial Fish 206 XXX1	PRINT ORDER:
LOCATION: Cordova	REGION: 2
SUBCOMPONENT:	PRIORITY: 1.00
LEGISLATIVE DISTRICTS: 6,2	

PROGRAM ELEMENT: Stock Structure Analysis  
 FISHERIES AFFECTED: Purse Seine and Gill Net

USER GROUPS AFFECTED: Commercial, PNP Cost Recovery

SPECIES AFFECTED: Pink (100%)

PROJECT DESCRIPTION

Management complexity in Prince William Sound (PWS) pink salmon fisheries has increased due to the Valdez Fisheries Development Association (VFDA) Solomon Gulch Hatchery and the Prince William Sound Aquaculture Corporation Cannery Creek, Wally H. Noerenberg, and Armin F. Koernig hatcheries. Returns to these four hatcheries now outnumber wild returns by almost five to one and mingle with wild returns in migratory corridors as well as in hatchery terminal areas. Fisheries directed at numerically superior hatchery returns in these mixed stock areas may overexploit wild fish which cannot sustain comparable harvest rates. To minimize interceptions of wild fish yet still permit some fishing in non-terminal areas fisheries managers must be able to identify time and area trends in abundance for both hatchery and wild fish. This project will recover coded-wire tags from the commercial gillnet and seine fisheries in the all fishing districts of PWS. It will also recover tags from cost recovery harvest and broodstock from all PWS pink salmon hatcheries. Tag recovery data will be used to make catch stock composition estimates from specific areas and times. These estimates will provide better understanding of stock intermixing among and within districts and weeks. This information can be used to regulate fisheries or modify district boundaries to control exploitation rates on wild and hatchery stocks.

PROJECT OBJECTIVES

To provide estimates of stock composition for specific area and time strata within fishing districts and hatchery terminal harvest areas of Prince William Sound.

BUDGET MANAGER: PCN 1210 - Sam Sharr, PWS Research Project Leader

YELLOWBOOK PAGE 2 PROJECT DESCRIPTION

Salaries computed using FY93 rates.

PROJECT TITLE: Prince William Sound Pink PROJECT NUMBER: TF-XXX  
 Salmon Coded-wire Tag Recovery  
 UNIT: Prince William Sound Salmon LEDGER CODE: 1101XXX1  
 COMPONENT: Commercial Fish PRINT ORDER:  
 206\_\_XXX1\_\_

REGION: 2

BUDGET DETAIL: CODE/LINE ITEM	PRIOR YEAR ALLOCATIONS			PAGE 2 SUMMARY
	FY90	FY91	FY92	
100 PERSONAL SERVICES	0.0	0.0	0.0	
200 TRAVEL	0.0	0.0	0.0	
300 CONTRACTUAL	0.0	0.0	0.0	
400 COMMODITIES	0.0	0.0	0.0	
500 EQUIPMENT	0.0	0.0	0.0	
700 GRANTS	0.0	0.0	0.0	
PROJECT TOTALS	0.0	0.0	0.0	
FEDERAL RECEIPTS	0.0	0.0	0.0	
GENERAL FUND	0.0	0.0	0.0	
INTERAGENCY RECEIPTS	0.0	0.0	0.0	
PROGRAM RECEIPTS	0.0	0.0	0.0	
GENERAL FUND MATCH	0.0	0.0	0.0	
STAFF MONTHS	0.0	0.0	0.0	

PERSONAL SERVICES DATA

PCN	TITLE & NAME	R	S	Range		MM	SEADUTY		Premium Pay			TOTAL COST	
				93	94		SWD	RDO	OT	HAZ	SHIFT		
1909	FB II - Peckham C	A	S	DWA	16A	16A	12.0	0	0	0.	0.	0.	\$57,288
1571	FB I - Valdez	A	S	EAA	14A	14A	4.0	0	0	240.	0.	0.	\$21,320
????	FB I - Cordova	A	S	DWA	14A	14A	6.0	0	0	180.	3.	0.	\$30,345
1496	FT III- Speer N	A	S	DWA	11A	11A	6.0	0	0	180.	0.	0.	\$27,117
7072	BMI - Evans D	A	S	EBA	17A	17A	3.0	0	0	0.	0.	0.	\$10,977
????	FT II - Cordova	A	S	DWA	09A	09A	3.0	0	0	120.	0.	0.	\$10,518
????	FT II - Cordova	A	S	DWA	09A	09A	3.0	0	0	120.	0.	0.	\$10,518
????	FT II - Cordova	A	S	DWA	09A	09A	3.0	0	0	120.	0.	0.	\$10,518
????	FT II - Cordova	A	S	DWA	09A	09A	1.5	0	0	60.	0.	0.	\$5,010
????	FT II - Cordova	A	S	DWA	09A	09A	1.5	0	0	60.	0.	0.	\$5,010
????	FT II - Cordova	A	S	DWA	09A	09A	1.5	0	0	60.	0.	0.	\$5,010
????	FT II - Cordova	A	S	DWA	09A	09A	1.5	540	0	90.	0	0.	\$6,388
????	FT II - Cordova	A	S	DWA	09A	09A	1.5	540	0	90.	0.	0.	\$6,388
????	FT II - Cordova	A	S	DWA	09A	09A	1.0	0	0	60.	0.	0.	\$3,754
????	FT II - Cordova	A	S	DWA	09A	09A	1.0	0	0	60.	0.	0.	\$3,754
????	FT II - Cordova	A	S	DWA	09A	09A	1.0	0	0	60.	0.	0.	\$3,754
????	FT II - Cordova	A	S	DWA	09A	09A	1.0	0	0	60.	0.	0.	\$3,754
????	FT II - Whittier	A	S	DWA	09A	09A	2.0	0	0	100.	0.	0.	\$9,828
????	FT II - Valdez	A	S	EAA	09A	09A	2.5	0	0	200.	0.	0.	\$11,042
????	FT II - Valdez	A	S	EAA	09A	09A	2.5	0	0	200.	0.	0.	\$11,042
????	FT II - Valdez	A	S	EAA	09A	09A	2.5	0	0	200.	0.	0.	\$11,042
????	FT II - Valdez	A	S	EAA	09A	09A	2.5	0	0	200.	0.	0.	\$11,042
????	FT II - Valdez	A	S	EAA	09A	09A	2.5	0	0	200.	0.	0.	\$11,042
????	FT II - Valdez	A	S	EAA	09A	09A	2.5	0	0	200.	0.	0.	\$11,042
????	FT II - Valdez	A	S	EAA	09A	09A	1.5	0	0	120.	0.	0.	\$6,626
????	FT II - Valdez	A	S	EAA	09A	09A	1.5	0	0	120.	0.	0.	\$6,626
????	FT II - Kodiak	A	S	CAA	09A	09A	1.0	0	0	100.	0.	0.	\$4,662

YELLOWBOOK PAGE 3 PROJECT DESCRIPTION

Salaries computed using FY93 rates.

PROJECT TITLE:	Western Prince William Sound Sockeye and Chum Salmon Stock ID	PROJECT NUMBER:	TF-KXX
UNIT:	Prince William Sound Salmon	LEDGER CODE:	1101XXX1
COMPONENT:	Commercial Fish	PRINT ORDER:	205__KXX1__
		REGION:	2

7031 AP III- Juneau	A S AWA 17D 17D	7.0	0	0	0.	0.	0.	\$35,784
7042 FT III- Juneau	A S AWA 11C 11C	7.0	0	0	0.	0.	0.	\$23,975
7038 FT II - Juneau	A S AWA 09C 09C	15.5	0	0	0.	0.	0.	\$48,406
7040 FT II - Juneau	A S AWA 09B 09B	6.0	0	0	0.	0.	0.	\$12,000
-----								
Personnel Totals =		108.0	7.2	0	821.	3.	0.	\$435,585

PROJECT LINE ITEM DETAIL

LINE #	DESCRIPTION	AMOUNT	COMMENT
-----		-----	-----
72240	Supervisory travel	7.2	Cdv to Vdz,Kdk, & Wtr
72360	Per Diem	2.4	
73100	Communication	1.0	Phones (Vdz, Anch, Swd etc)
73400	Air Charter	5.1	
73420	Vehicle Rental	3.2	
73400	Transportation	6.8	
73500	Printing	1.0	
73600	Public Utilities	0.5	
73700	Minor Repair & Maint	1.0	
73800	Office Rental (Valdez,Whittier)	1.8	
74220	Office & Library Supplies	4.0	
74520	Profess.& Sci. Supplies	8.0	
77000	Grants	0.0	
		=====	
	TOTAL LINES 200 - 700	42.0	
	TOTAL PROJECT COST	477.6	

DATE PRINTED  
2/09/1993

PROJECT TITLE: Sockeye & Chum Salmon Coded-Wire Tag Recovery  
 PROJECT NUMBER: TF-KKK  
 FISHERY UNIT: Prince William Sound Salmon LEDGER CODE: 1101KKK1  
 COMPONENT: Commercial Fish PRINT ORDER: 206\_KKK1\_  
 LOCATION: Cordova REGION: 2  
 SUBCOMPONENT: PRIORITY: 1.00  
 LEGISLATIVE DISTRICTS: 6,2

PROGRAM ELEMENT: Stock Structure Analysis  
 FISHERIES AFFECTED: Gill Net

USER GROUPS AFFECTED: Commercial, PNP Cost Recovery

SPECIES AFFECTED: Sockeye (70%) Chum (30%)

PROJECT DESCRIPTION

Management complexity in PWS salmon fisheries in the western and northwestern portions of Prince William Sound (PWS) has increased due to the Main Bay Hatchery sockeye salmon program and chum salmon returns to Wallace H. Noerenberg Hatchery which must be managed concurrently. Hatchery returns to these two facilities mingle with wild returns in migratory corridors along the western shore of PWS. Fisheries directed at numerically superior hatchery returns in these mixed stock areas may overexploit wild fish which cannot sustain comparable harvest rates. To minimize interceptions of wild fish yet still permit some fishing in non-terminal areas fisheries managers must be able to identify time and area trends in abundance for both hatchery and wild fish. Management complexity in Copper River District sockeye salmon fishery may also increase as sockeye salmon returns to Main Bay Hatchery in western Prince William Sound multiply. Despite the distance separating the hatchery from the Copper River District, sockeye salmon returns to the hatchery do migrate through the Copper River fishery. Because timely escapement data are not available for local wild stocks contributing to this fishery management depends a great deal upon estimates of run strength provided by catch data. If large numbers of migrant Main Bay Hatchery fish are intercepted catch data may be misleading with respect to the abundance of local stocks. Managers may allow aggressive fishing in the district which ultimately overexploits resident wild stocks.

This project will recover coded-wire tags from the commercial gillnet and seine fisheries in the Coghill, Eshamy, Northwestern, and Southwestern districts of PWS and from the commercial drift gillnet fishery in the Copper River District. It will also recover tags from cost recovery harvest and broodstock at Main Bay and WHN Hatcheries. Tag recovery data will be used to make catch stock composition estimates from specific areas and times. These estimates will provide better understanding of stock intermixing among and within districts and weeks. This information can be used to regulate fisheries or modify district boundaries within PWS to control exploitation rates on wild and hatchery stocks. Recovery data from the Copper River fishery will be used to estimate the contribution of the Main Bay stock to the catches in the Copper River District. This information will provide managers with better estimates of catch, hence run strength, of local stocks.

PROJECT OBJECTIVES

To provide estimates of stock composition for specific area and time strata within the Eshamy, Coghill, Northwestern, and Southwestern districts of Prince William Sound and in the Copper River sockeye salmon fishery.

BUDGET MANAGER: PCN 1210 - Sam Sharr, PWS Research Project Leader

YELLOWBROOK PAGE 2 PROJECT DESCRIPTION  
Salaries computed using FY93 rates.

PROJECT TITLE: Western Prince William Sound  
and Copper River District  
Sockeye and Chum Salmon Stock ID  
UNIT: Prince William Sound Salmon  
COMPONENT: Commercial Fish

PROJECT NUMBER: TF-KXX  
LEDGER CODE: 1101XXX1  
PRINT ORDER: 206\_XXX1\_  
REGION: 2  
PAGE 2

BUDGET DETAIL

BUDGET DETAIL: CODE/LINE ITEM	PRIOR YEAR ALLOCATIONS			SUMMARY
	FY90	FY91	FY92	
100 PERSONAL SERVICES	0.0	0.0	0.0	
200 TRAVEL	0.0	0.0	0.0	
300 CONTRACTUAL	0.0	0.0	0.0	
400 COMMODITIES	0.0	0.0	0.0	
500 EQUIPMENT	0.0	0.0	0.0	
700 GRANTS	0.0	0.0	0.0	
PROJECT TOTALS	0.0	0.0	0.0	
FEDERAL RECEIPTS	0.0	0.0	0.0	
GENERAL FUND	0.0	0.0	0.0	
INTERAGENCY RECEIPTS	0.0	0.0	0.0	
PROGRAM RECEIPTS	0.0	0.0	0.0	
GENERAL FUND MATCH	0.0	0.0	0.0	
STAFF MONTHS	0.0	0.0	0.0	

PERSONAL SERVICES DATA

PCN	TITLE & NAME	R	S	Range		MM	SEA DUTY		Premium Pay			TOTAL COST	
				LOC	93		94	SWD	RDO	OT	HAZ		SHIFT
1210	FB III- Sharr, S	P	F	DWA	18F	18J	1.0	0	0	0.	0.	0.	\$6,492
1909	FB II - Peckham C	A	S	DWA	16A	14A	6.0	0	0	0.	10.	0.	\$28,607
7072	SM I - Evans D	A	S	EBA	17A	17A	1.0	0	0	0.	0.	0.	\$3,660
1571	FB I - Valdez	A	S	EAA	14A	14A	3.5	0	0	60.	10.	0.	\$17,140
1496	FT III- Speer N	A	S	DWA	11A	11A	4.0	0	0	80.	10.	0.	\$13,109
????	FT II - Cordova	A	S	DWA	09A	09A	3.5	0	0	60.	0.	0.	\$13,015
????	FT II - Cordova	A	S	DWA	09A	09A	3.5	0	0	60.	0.	0.	\$13,015
????	FT II - Cordova	A	S	DWA	09A	09A	3.0	0	0	60.	0.	0.	\$11,221
????	FT II - Cordova	A	S	DWA	09A	09A	3.0	0	0	60.	0.	0.	\$11,221
????	FT II - Anchorage	A	S	EBA	09A	09A	2.5	0	0	60.	0.	0.	\$8,883
????	FT II - Whittier	A	S	DWA	09A	09A	2.5	0	0	60.	0.	0.	\$8,883
????	FT II - Valdez	A	S	EAA	09A	09A	2.5	0	0	60.	0.	0.	\$9,735
????	FT II - Valdez	A	S	EAA	09A	09A	2.5	0	0	60.	0.	0.	\$9,735
????	FT II - Valdez	A	S	EAA	09A	09A	2.0	0	0	60.	0.	0.	\$8,005
????	FT II - Valdez	A	S	EAA	09A	09A	2.0	0	0	60.	0.	0.	\$8,005
7031	AP III- Juneau	A	S	AWA	17D	17D	3.0	0	0	20.	0.	0.	\$16,341
7042	FT III- Juneau	A	S	AWA	11C	11C	3.5	0	0	20.	0.	0.	\$12,815
7038	FT II - Juneau	A	S	AWA	09C	09C	3.5	0	0	20.	0.	0.	\$11,533
7040	FT II - Juneau	A	S	AWA	09B	09B	2.5	0	0	20.	0.	0.	\$8,249
Personnel Totals =							48.0	0	0	960.	30.	0.	\$219,664

YELLOWBCK PAGE 3 PROJECT DESCRIPTION  
 Salaries computed using FY93 rates.

PROJECT TITLE: Western Prince William Sound  
 and Copper River District  
 Sockeye and Chum Salmon Stock ID  
 UNIT: Prince William Sound Salmon  
 COMPONENT: Commercial Fish

PROJECT NUMBER: TF-KXX  
 LEDGER CODE: 1101KXX1  
 PRINT ORDER: 206\_KXX1\_  
 REGION: 2

PROJECT LINE ITEM DETAIL

PAGE 3

LINE #	DESCRIPTION	AMOUNT	COMMENT
72240	Supervisory travel	0.8	Cdv to Vdz, Swd, Wtr & Anch
72360	Per Diem	0.3	
73100	Communication	1.0	Phones (Valdez, Anch, Seward etc)
73400	Air Charter	5.0	
73420	Vehicle Rental	3.7	
73400	Transportation	2.7	
73500	Printing	1.0	
73600	Public Utilities	0.5	
73700	Minor Repair & Maint.	1.0	
73800	Office Rental (Valdez)	0.5	
74220	Office & Library Supplies	6.0	
74520	Profess.& Sci. Supplies	3.0	
77000	Grants	0.0	
TOTAL LINES 200 - 700		25.5	
TOTAL PROJECT COST		245.2	

DATE PRINTED  
 2/10/1993

APPENDIX 10

PWSAC Operational/Capital Cost Summary for 1993 Production &  
Planning Recommendations

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**APPENDIX 4 TABLE 14**

**OPERATIONAL / CAPITAL COST SUMMARY FOR 1993 PRODUCTION & PLANNING RECOMMENDATIONS**

RECOMMENDATIONS	FY 1993 OPERATING COST	FY 1994 OPERATING COST	FIRST TIME CAPITAL COST	OPS ADM HRS
<b>7.21 SHORT TERM PROJECTS</b>				
<b>7.21.10 WNH CHINOOK</b>				
Project: 1. Remote rear and release 100,000 chinook smolt at Cordova and Whittier. Transfer 200,000 smolts to Valdez for winter rearing and release.	\$24,000 (1)	\$24,000		24
<b>7.21.20 WNH CHUM</b>				
Project: 1. Remote rear and release 12 million chums at Port Chalmers on Montegue Island IN 1993. Six million will have had freshwater rearing and six million will not have had freshwater rearing.	\$25,500 (2)	\$25,500	\$37,000	40
<b>7.21.30 WNH COHO</b>				
Project: 1. Remote rear and release 100,000 coho smolt at Cordova and Whittier.		(3)		24
<b>7.21.40 MBH SOCKEYE</b>				
1993				
Project: 1. Remote rear and release 800,000 Coghill F-1 sockeye smolt at the mouth of Coghill River.	\$20,930		\$15,000	40
2. Remote rear and release 1,050,000 Eshamy F-1 sockeye smolt at Eshamy Lagoon.	\$17,410		\$10,000	40
3. Remote rear and release 450,000 Coghill F-1 sockeye smolt at Barry Arm.	\$15,030		\$37,000	40
			1993 OPS ADM HRS ---->	208
1994				
Project: 1. Remote rear and release 800,000 Coghill F-1 sockeye smolt at the mouth of Coghill river.		\$20,930		40
2. Remote rear and release 700,000 Eshamy F-1 sockeye smolt at Eshamy lagoon.		\$17,410		40
3. Remote rear and release 700,000 Coghill F-1 sockeye smolt at Barry Arm.		\$20,930		40
			1994 OPS ADM HRS ---->	120
<b>TOTAL ESTIMATED COST</b>	\$102,870	\$108,770	\$99,000	

OPERATIONAL / CAPITAL COST SUMMARY FOR 1993 PRODUCTION AND PLANNING RECOMMENDATIONS

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RECOMMENDATIONS	REQUIRED ACTION	HRS
7.22 LONG TERM PROJECTS		
7.22.10 PRIORITY 1	* Design complete; waiting funding and start	
7.22.11 AFK REBUILD AND EXPANSION	decision; additional incubators not included.	
7.22.12 MAIN BAY EXPANSION	* Seek funds for additional incubators.	
7.22.13 WNH CHUM EGGTAKE FACILITIES (incorporate under 7.22.21)	* Jan. 93 Phase 1 design completion; Spring 93	
7.22.14 GULKANA HATCHERY SOCKEYE REARING PROGRAM	constr. start if EIS final. Ready for BY94 eggs.	
7.22.15 VFDA (Naked Island early pink salmon release)	* Fund transfer and release.	
7.22.20 PRIORITY 2	* Cost recover reimbursement at Naked Island.	
7.22.21 WALLY NOERENBERG HATCHERY EXPANSION (with integrated chum egg take facilities)	* See completed concept reports: 1990, 1991.	300
7.22.30 PRIORITY 3	* Concept complete; design costs \$50,000-	200
7.22.31 CANNERY CREEK EXPANSION	\$100,000.	
	* CCH Improvement & Expansion Plan (1991).	
7.23 INVESTIGATIVE PROJECTS		
1.(a&b) Investigate feasibility and operational cost of increasing sockeye production at Main Bay through (a) stocking of pre-smolt in seine districts; (b) stocking untargeted fry in lakes. The added production should not require additional rearing space and should occur at RPT listed sites.	* Review MBH production limitations. * Team meeting with hatchery manager. * Fly to, observe, and report on likely lakes. * Develop budget for likely pre-smolt program.	8 8 12 12
2. Investigate and complete all required permits to remote release WNH chums at Port Chalmers in 1993.	* Investigate and list all required permits. * Complete all required permits. (4)	8 24
3. Investigate feasibility and operational cost, and complete all required permits to remote release WNH chums at Nelson Bay.	* Travel to, observe and report on Nelson Bay. * Investigate and list all required permits. * Complete all required permits. (4)	16 8 24
4. Provide costs to remote release coho in gillnet areas listed by RPT for example, Esther Bay.	* Travel to, observe and report on likely locat's. * Develop budget for likely rem. rel. program. * Investigate and list all required permits.	16 12 8

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OPERATIONAL / CAPITAL COST SUMMARY FOR 1993 PRODUCTION AND PLANNING RECOMMENDATIONS

RECOMMENDATIONS	REQUIRED ACTION	HRS
5. Investigate feasibility of late churn and early pink production at CCH prior to and following expansion.	**Complete paper evaluation of CCH water for early pink development and churn FW rear. **Capital Projects.	16 30
6A. Review and comment on ADF&G "white paper" on the Gulkana hatchery and Copper River.	* Review, literature search, and comment.	60
6B. Provide operational costs to short term rear sockeye at Gulkana and complete necessary R&D for the Copper River.	* Capital Projects. **Inspect Gulkana hatchery. **Determine costs to short term rear. **Determine questions relative to hatchery prod. in the Copper River. **Assess current R & D program. **Design future R & D program. **Determine annual cost of R & D program.	40 8 8 80 24 40 24
7. Investigate and report on Cascade Bay as a remote release site and egg take and egg eyeing station.	**Travel to, observe and report on Cascade Bay. **Prepare concept study report (capital).	16 60
8. Investigate and report on options for early pink stock development at PWSAC facilities, including remote releases.	**Literature search of all PWS early pink stocks. **Travel to, observe and report on likely stocks. * Travel to, observe, report on rem. rel. locat's. **Complete paper evaluation of PWSAC water for early pink egg/alevin development. **Write report	8 24 16 8 16
9. Investigate and report on possible remote release sites for late stock pink salmon.	**Travel to, observe, report on rem. rel. locat's. listed by the RPT.	24
10. Investigate and report on RPT listed remote release locations for PWSAC cost recovery, for example, Soil Lake.	* Travel to, observe, report on rem. rel. locat's. listed by the RPT.	24
11. Pursue funding for the otolith marking program.	**Research alternative funding. **Complete and submit proposals.	40 40
(ADDITIONAL REQUIREMENTS TO FULFILL INVESTIGATIVE & GENERAL RECOMMENDATIONS)		
a. Investigate options and costs for developing a third rearing module at MBH for 1.4 million age 1 smolts.	**Team mtg with Capt'l, Ops & Hatch. Manager **Identify & list fish culture & capt'l issues. **Submit proposals for cost estimation.	12 16 8
b. Investigate the feasibility of remote releasing Eyak stock sockeye at Port Wells.	**Travel to, observe and report on Port Wells. **Investigate and list required permits.	16 8

OPERATIONAL / CAPITAL COST SUMMARY FOR 1993 PRODUCTION AND PLANNING RECOMMENDATIONS

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RECOMMENDATIONS	REQUIRED ACTION	HRS
c. Evaluate the feasibility of establishing a gillnet fishery at Kings Bay, particularly on Coghill stocks and Eshamy stocks.	<ul style="list-style-type: none"> <li>* Travel to, observe and report on Port Wells.</li> <li>* Investigate and list required permits.</li> <li>* Analyze BOF process and issues.</li> </ul>	<ul style="list-style-type: none"> <li>16</li> <li>8</li> <li>8</li> </ul>
d. Discuss with ADF&G Eshamy Lake stocking guidelines or requirements for the long term.	<ul style="list-style-type: none"> <li>* Hold discussion with ADF&amp;G managers and geneticist.</li> </ul>	<ul style="list-style-type: none"> <li>8</li> </ul>
<b>TOTAL ESTIMATED OPERATIONS HOURS FOR INVESTIGATIVE PROJECTS</b>		<b>862</b>
<b>7.30 GENERAL RECOMMENDATIONS</b>		
1. Develop draft brood stock policy based on state genetics policy and other necessary concerns.	<ul style="list-style-type: none"> <li>* Review state genetics policy.</li> <li>* Complete literature search.</li> <li>* Write draft policy.</li> </ul>	<ul style="list-style-type: none"> <li>8</li> <li>24</li> <li>24</li> </ul>
<b>TOTAL ESTIMATED OPERATIONAL HOURS FOR GENERAL RECOMMENDATIONS</b>		<b>56</b>

50

FOOTNOTES:

- (1) Approximately 20,000 chinook will be held and fed in the freshwater pond at Flemming spit in Cordova.  
- The remaining coho and chinook released at Cordova will not be held.
- (2) Staff recommends this project, if approved for funding, be carried out for a minimum of two years for adequate statistical comparison. The PPC recommends a 4 year release program.
- (3) The cost of remote releasing coho is included in the chinook project.
- (4) Permits required for each release will need to be investigated (FTP, EA, etc.)
- (5) If future remote releases increase beyond present recommendations, PWSAC will need to purchase more transportation equipment. Costs may be as high as \$150,000 for a new trailer. Any added remote releases to the already existing program will require purchase of equipment and material for a new remote release facility: costs may vary with location but could be generally estimated at \$37,100.

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FACILITY	CURRENT FRY/SMOLT PRODUCTION			PLANNED FRY/SMOLT PRODUCTION		
	PINK	CHUM	SOCKEYE	PINK	CHUM	SOCKEYE
AFK Hatchery	117000000			175000000		
Main Bay Hatchery			6955000			20000000
Wally H. Noerenberg Hatchery	168000000	102500000		336000000	285000000	
Cannery Creek Hatchery	156000000			196880000		
Solomon Gulch Hatchery	146700000			211600000		
Total	587700000	102500000	6955000	919480000	285000000	20000000

FACILITY	CURRENT ADULT PRODUCTION			PLANNED ADULT PRODUCTION		
	PINK	CHUM	SOCKEYE	PINK	CHUM	SOCKEYE
AFK Hatchery	5850000			8750000		
Main Bay Hatchery			1391000			4000000
Wally H. Noerenberg Hatchery	8400000	2050000		16800000	5700000	
Cannery Creek Hatchery	7800000			9844000		
Solomon Gulch Hatchery	7335000			10580000		
Total	29385000	2050000	1391000	45974000	5700000	4000000

APPENDIX 11

Main Bay Hatchery Production, Stocking and Evaluation Projects

TABLE 1  
Main Bay Hatchery Production and Stocking

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Release date	Stock	"F"	Number	Release locations			Barr Arm
				MBH	Cog Lk	Esh Lk	
1993	Eyak	F1/0	70,500	70,500	0	0	0
	Coghill	F1/1	1,250,000	0	800,000	0	450,000
		Fx/1	2,850,000	2,850,000	0	0	0
	Eshamy	F1/1	2,100,000	1,050,000	0	1,050,000	0
		Total		6,270,500			
1994	Eyak	F1/0	70,500	70,500	0	0	0
	Coghill	F1/1	1,500,000	0	800,000	0	700,000
		Fx/1	2,200,000	2,200,000	0	0	0
	Eshamy	F1/1	1,400,000	700,000	0	700,000	0
		Total		5,170,500			
1995	Eyak	Fx/0	70,500	70,500	0	0	0
	Coghill	F1/1	1,250,000	0	800,000	0	450,000
		Fx/1	2,362,000	2,362,000	0	0	0
	Eshamy	F1/1	1,445,000	745,000	0	700,000	0
		Total		5,127,500			
1996 A	Eyak	Fx/0	500,000	500,000	0	0	0
	Coghill	F1/1	1,250,000	0	800,000	0	450,000
		Fx/1	2,362,000	2,362,000	0	0	0
	Eshamy	F1/1	700,000	0	0	700,000	0
		Fx/1	745,000	745,000	0	0	0
Total		5,557,000					
1996 B 1	Eyak	Fx/0	0				
1997 A 2	Eyak	Fx/0	500,000	500,000	0	0	0
	Coghill	F1/1	2,110,000	0	0	0	2,110,000
		Fx/1	2,110,000	2,110,000	0	0	0
	Eshamy	F1/1	1,400,000	1,400,000	0	0	0
		Total		6,120,000			
1997 B 3	Eyak	Fx/1	4,220,000	2,100,000	0	0	2,120,000
	Coghill	F1/1	700,000	0	0	0	700,000
		Fx/1	700,000	700,000	0	0	0
	Eshamy	F1/1	1,400,000	1,400,000	0	0	0
		Total		7,020,000			
1998 - 2000	Eyak	F1/1	4,220,000	2,100,000	0	0	2,120,000
	Coghill	F1/1	700,000	0	0	0	700,000
		Fx/1	700,000	700,000	0	0	0
	Eshamy	F1/1	1,400,000	1,400,000	0	0	0
		Total		7,020,000			

- V1 Should the MBH Consensus Document evaluation program end in 1996, there will be the option to not release Eyak "0" age smolts, but to rear these for release in 1997 as "1" age smolts.
- V2 If funds are not available for construction of 2 additional raceways at MBH, Eyak stock will continue to be released as "0" age smolts.
- V3 Option "B" indicates a predominant Eyak production and release which would shift emphasis of MBH program to the earlier run timing stock.

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PRIORITY 1 <sup>a,b</sup>			PRIORITY 2 <sup>c</sup>			PRIORITY 3 <sup>d</sup>		
Project	Location	Stock Timing	Project	Location	Stock Timing	Project	Location	Stock Timing
Test fish Test fish	Barry Arm North Montague	Coghill Coghill	Test fish	Port Wells	Eyak	Test fish	King's Bay Solf Lake	Coghill Eyak Coghill Eyak
Management synthesis <sup>e</sup> Management synthesis	Barry Arm North Montague	Coghill Coghill	Management synthesis	Port Wells	Eyak	Enforcement needs	?	
Genetic analysis - 2 hatchery stocks	Main Bay Hatchery	Coghill Eshamy	Genetic analysis <sup>f</sup> - 4 wild stock systems	Cowpen Lake Miners Lake Billy's Hole Bainbridge				
- 3 progenitor stocks	Eyak Lake Coghill Lake Eshamy Lake	Eyak Coghill Eshamy	Harvest stock analysis	Eshamy/Esther (subdistricts)				
- 3 wild stock systems	Shrode Lake Esther Pass Lake Jackpot Lake							
Harvest stock analysis <sup>g</sup>	Copper River <sup>h</sup>							
Pathology studies <sup>i</sup>	Coghill Lake Eshamy Lake							

Notes:

- <sup>a</sup> Priority 1 projects must be conducted.
- <sup>b</sup> If priority 1 projects are not funded, only the Coghill and Eshamy smolt release programs that are now in place will be permitted to continue.
- <sup>c</sup> Priority 2 projects are high priority, but are not essential to go forward with hatchery programs.
- <sup>d</sup> Priority 3 projects should be considered, but are not required.
- <sup>e</sup> Management synthesis includes aerial surveys, ground surveys and annual reporting.
- <sup>f</sup> Genetic studies listed as priority 2 projects could be delayed until 1994 when they will become priority 1 projects.
- <sup>g</sup> Harvest stock analysis includes coded wire tag (CWT) recovery program.
- <sup>h</sup> CWT recovery program in Copper River fishery funded through Guikana Hatchery budget.
- <sup>i</sup> Kidney sample resident dolly varden, and adult sockeye for BKD.



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Main Bay Hatchery  
 Evaluation Projects 1995  
 12/1/92

PRIORITY 1 a,b		PRIORITY 2 c		PRIORITY 3 d	
Project	Location	Stock Timing	Project	Location	Stock Timing
Test fish	Port Wells	Eyak	Test fish	King's Bay	Coghill Eyak
Management synthesis & Management synthesis	Barry Arm Port Wells	Coghill Eyak	Test fish	Solf Lake	Coghill Eyak
Genetic analysis - 2 hatchery stocks	Main Bay Hatchery	Coghill Eshamy	Management synthesis	Kings Bay	Coghill Eyak
- 2 progenitor stocks	Coghill Lake Eshamy Lake	Coghill Eshamy	Management synthesis	Solf Lake	Coghill Eyak
- 3 wild stock systems	Shrode Lake Esther Puss Lake Jackpot Lake		Genetic analysis - 4 wild stock systems	Cowpen Lake Miners Lake Billy's Hole Bainbridge	
Harvest stock analysis & Harvest stock analysis	Copper River & Eshamy/Esther (subdistricts)				
Harvest stock analysis	Coghill Dist./Barry Arm				
Escapement monitoring	Coghill River				
					Enforcement needs
					?

Notes:  
 a Priority 1 projects must be conducted.  
 b If priority 1 projects are not funded, only the Coghill and Eshamy smolt release programs that are now in place will be permitted to continue.  
 c Priority 2 projects are high priority, but are not essential to go forward with hatchery programs.  
 d Priority 3 projects should be considered, but are not required.  
 e Management synthesis includes aerial surveys, ground surveys and annual reporting.  
 f Harvest stock analysis includes coded wire tag (CWT) recovery program.  
 g CWT recovery program in Copper River fishery funded through Gulkana Hatchery budget.  
 h Escapement monitoring at Coghill River includes the river weir operation.

APPENDIX 12

PWSAC Coded Wire Tag Quality Control Project

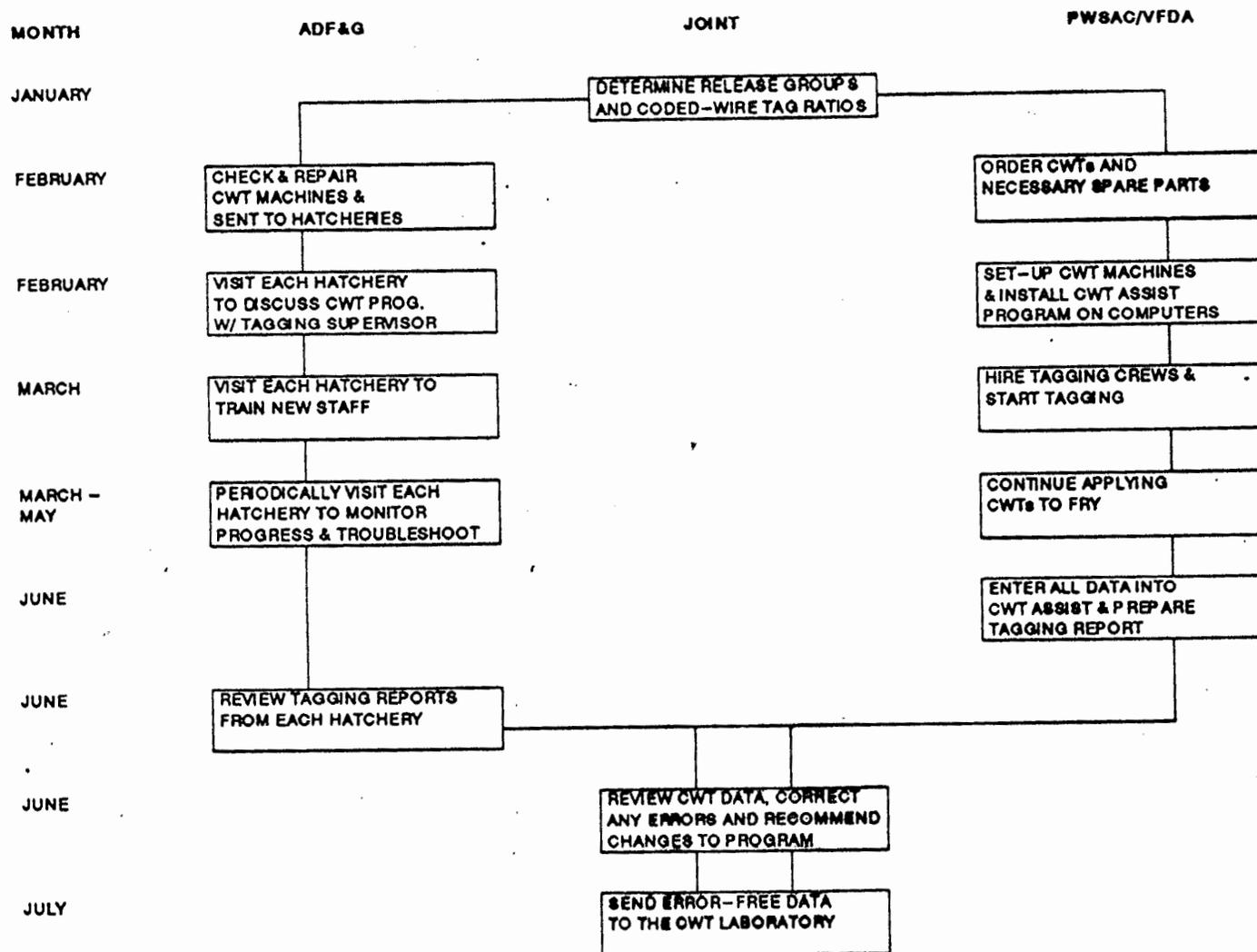
## **CODED–WIRE TAG QUALITY CONTROL PROJECT**

**Goal:** Assure that the accuracy of coded–wire tag data is maintained at a high level.

**Objectives:**

- 1. Maintain high quality tag placement and fin clips.**
- 2. Obtain accurate estimates of numbers of untagged fish.**
- 3. Insure that equal tag–to–untag ratios are maintained for each species produced at each facility.**
- 4. Insure that all data is properly recorded and entered into coded–wire tag database.**

## CODED-WIRE TAG QUALITY CONTROL PROJECT



PRINCE WILLIAM SOUND AQUACULTURE CORP.  
FY 93 PLANNED JUVENILE SALMON TAGGING PROGRAM

SITE	SPECIES	NO. FISH	RELEASE SITE	NO. FISH PER REARING UNIT	NO. REARING UNITS	TOTAL CODES	TAG RATIO	NUMBER VALID TAGS	TREATMENT GROUP	TAGGING DATES	
A.	PINK	40,000,000	A.F.	8,000,000	5	5	1\600	67,000	EARLY FED	3/22 - 5/03	
		49,000,000		7,000,000	7	7	1\600	82,000	EARLY FED		
		21,000,000		7,000,000	3	3	1\600	35,000	DIRECT REL		
		7,000,000		7,000,000	1	1	1\600	12,000	LATE FED		
		117,000,000			16	16	1\600	196,000			
C.C.H.	PINK	50,000,000	C.C.H.	10,000,000	5		1\600	83,000	EARLY FED	4/2 - 5/21	
		20,000,000		10,000,000	2		1\600	33,000	DIRECT REL		
		86,000,000		10,000,000	8		1\600	143,000	LATE FED		
		156,000,000			15	15	1\600	259,000			
V.N.H.	PINK	132,000,000	W.N.H.	12,000,000	11	11	1\600	220,000	EARLY FED	3/14 - 5/01	
		24,000,000		12,000,000	2	2	1\600	40,000	DIRECT REL		
		12,000,000		12,000,000	1	1	1\600	20,000	LATE FED		
		168,000,000			14	14	1\600	280,000			
	CHUM	24,000,000	W.N.H.	6,000,000	4	4	1\500	48,000	EARLY FED	2/28 - 5/01	
		24,000,000		6,000,000	4	4	1\500	48,000	SW / EARLY FED		
		20,500,000		6,000,000	4	4	1\500	41,000	MID RELEASE		
		6,000,000		6,000,000	1	1	1\500	12,000	SW / LATE FED		
		16,000,000		4,000,000	4	4	1\500	32,000	LATE FED		
		12,000,000		6,000,000	2	2	1\500	24,000	RR PORT CHALMERS		
		102,500,000			19	19	TOTAL	205,000			
	COHO	1,100,000	W.N.H.	1,100,000	BROOD	1	1\40	27,500	ON-STATION	11/9 - 11/24	
		100,000	CORDOVA	100,000	POND	1	1\40	2,500	CORDOVA		
		100,000	WHITTIER	100,000		1	1\40	2,500	WHITTIER		
		1,300,000			1	1	TOTAL	32,500			
	CHINOOK	380,000	W.N.H.	380,000		1	1\20	19,000	ON-STATION	11/24 - 12/9	
		100,000	CORDOVA	100,000	REMOTE	1	1\20	5,000	CORDOVA		
		100,000	WHITTIER	100,000	REMOTE	1	1\20	5,000	WHITTIER		
		200,000	VALDEZ	200,000	REMOTE	1	1\20	10,000	V.F.D.A.		
		780,000			4	TOTAL	39,000				
M.B.H.	SOCKEYE	100,000	M.B.H.	100,000		1	1\20	5,000	EYAK STOCK	(9/21-9/29) 2/8 - 3/19	
		ESH. L.	1,050,000	M.B.H.	1,050,000		1	1\40	26,250		TIME REL.
		MBH/COG	770,000	M.B.H.	770,000		1	1\40	19,250		TIME REL.
		MBH/COG	730,000	M.B.H.	730,000		1	1\40	20,000		6 GM. REL.
		MBH/COG	695,000	M.B.H.	695,000		1	1\40	26,250		10 GM. REL.
		MBH/COG	620,000	M.B.H.	620,000		1	1\40	11,250		14 GM. REL.
		COG. L.	800,000	COGHILL	800,000		1	1\40	17,500		COG REM REL
		ESH. L.	1,050,000	ESHAMY	1,050,000		1	1\40	17,500		ESH REM REL
		COG. L.	450,000	BARRY ARM	450,000		1	1\40	17,500		BAR REM REL
		MBH/COG	690,000	MARSHA LK.	690,000		1	1\40	17,500		MAR REM REL
		6,955,000			10	10	TOTAL	178,000			

PRINCE WILLIAM SOUND AQUACULTURE CORP.  
1993 HATCHERY CODED WIRE TAG ORDER

PRINTED

19-Jan-93

HATCHERY	SPECIES	TAG SIZE	VALID TAGS REQUIRED	TOTAL TAGS ORDERED	TOTAL RELEASED	TAGGED RATIO	EXPERIMENTAL GROUP TAG CODE
AFK	PINK	HALF	13,333	15,000	8,000,000	1/600	13-1-2-8-11 EF
AFK	PINK	HALF	13,333	15,000	8,000,000	1/600	13-1-2-8-12 EF
AFK	PINK	HALF	13,333	15,000	8,000,000	1/600	13-1-2-8-13 EF
AFK	PINK	HALF	13,333	15,000	8,000,000	1/600	13-1-2-8-14 EF
AFK	PINK	HALF	13,333	13,500	8,000,000	1/600	13-1-2-8-15 EF
AFK	PINK	HALF	11,667	13,500	7,000,000	1/600	13-1-2-9-1 EF
AFK	PINK	HALF	11,667	13,500	7,000,000	1/600	13-1-2-9-2 EF
AFK	PINK	HALF	11,667	13,500	7,000,000	1/600	13-1-2-9-3 EF
AFK	PINK	HALF	11,667	13,000	7,000,000	1/600	13-1-2-9-4 EF
AFK	PINK	HALF	11,667	13,000	7,000,000	1/600	13-1-2-9-5 EF
AFK	PINK	HALF	11,667	13,000	7,000,000	1/600	13-1-2-9-6 EF
AFK	PINK	HALF	11,667	13,000	7,000,000	1/600	13-1-2-9-7 EF
AFK	PINK	HALF	11,667	13,000	7,000,000	1/600	13-1-2-9-8 DR
AFK	PINK	HALF	11,667	13,000	7,000,000	1/600	13-1-2-9-9 DR
AFK	PINK	HALF	11,667	13,000	7,000,000	1/600	13-1-2-9-10 DR
AFK	PINK	HALF	11,667	13,000	7,000,000	1/600	13-1-2-9-11 LF

**TOTAL TAGS ORDERED** \* **218,000** \* **117,000,000**

CCH	PINK	HALF	16,667	19,000	10,000,000	1/600	13-1-2-9-12 EF
CCH	PINK	HALF	16,667	19,000	10,000,000	1/600	13-1-2-9-13 EF
CCH	PINK	HALF	16,667	19,000	10,000,000	1/600	13-1-2-9-14 EF
CCH	PINK	HALF	16,667	19,000	10,000,000	1/600	13-1-2-9-15 EF
CCH	PINK	HALF	16,667	18,500	10,000,000	1/600	13-1-2-10-1 EF
CCH	PINK	HALF	16,667	18,500	10,000,000	1/600	13-1-2-10-2 DR
CCH	PINK	HALF	16,667	18,500	10,000,000	1/600	13-1-2-10-3 DR
CCH	PINK	HALF	16,667	18,500	10,000,000	1/600	13-1-2-10-4 LF
CCH	PINK	HALF	16,667	18,000	10,000,000	1/600	13-1-2-10-5 LF
CCH	PINK	HALF	16,667	18,000	10,000,000	1/600	13-1-2-10-6 LF
CCH	PINK	HALF	16,667	18,000	10,000,000	1/600	13-1-2-10-7 LF
CCH	PINK	HALF	16,667	18,000	10,000,000	1/600	13-1-2-10-8 LF
CCH	PINK	HALF	16,667	18,000	10,000,000	1/600	13-1-2-10-9 LF
CCH	PINK	HALF	16,667	18,000	10,000,000	1/600	13-1-2-10-10 LF
CCH	PINK	HALF	10,000	10,000	6,000,000	1/600	13-1-2-10-11 LF

**TOTAL TAGS ORDERED** \* **268,000** \* **146,000,000**

MBH	SOCKEYE	FULL	3,750	5,000	75,000	1/20	31-21-50 EYAK - ST30
MBH	SOCKEYE	FULL	26,250	26,000	1,050,000	1/40	31-21-51 ESHAMY - RW2
MBH	SOCKEYE	FULL	19,250	19,000	770,000	1/40	31-21-52 EARLY - RW3A
MBH	SOCKEYE	FULL	18,250	18,000	730,000	1/40	31-21-53 6 Gram - RW4
MBH	SOCKEYE	FULL	17,375	17,500	695,000	1/40	31-21-54 10 Gram - RW5
MBH	SOCKEYE	FULL	15,500	16,000	620,000	1/40	31-21-55 14 Gram - RW6
MBH	SOCKEYE	FULL	20,000	20,000	800,000	1/40	31-21-56 RR COGHILL - RW7
MBH	SOCKEYE	FULL	26,250	26,000	1,050,000	1/40	31-21-57 RR ESHAMY - RW1
MBH	SOCKEYE	FULL	11,250	11,000	450,000	1/40	31-21-58 RR BARRY A. - RW8
MBH	SOCKEYE	FULL	17,250	15,000	690,000	1/40	31-20-49 RR MARSHA - RW3 / N

**TOTAL TAGS ORDERED** \* **158,500** \* **6,930,000**

WNH	PINK	HALF	20,000 *	22,000 *	12,000,000	1/600	13-1-2-10-12 EF
WNH	PINK	HALF	20,000 *	22,000 *	12,000,000	1/600	13-1-2-10-13 EF
WNH	PINK	HALF	20,000 *	22,000 *	12,000,000	1/600	13-1-2-10-14 EF
WNH	PINK	HALF	20,000 *	22,000 *	12,000,000	1/600	13-1-2-10-15 EF
WNH	PINK	HALF	20,000 *	22,000 *	12,000,000	1/600	13-1-2-11-1 EF
WNH	PINK	HALF	20,000 *	22,000 *	12,000,000	1/600	13-1-2-11-2 EF
WNH	PINK	HALF	20,000 *	22,000 *	12,000,000	1/600	13-1-2-11-3 EF
WNH	PINK	HALF	20,000 *	22,000 *	12,000,000	1/600	13-1-2-11-4 EF
WNH	PINK	HALF	20,000 *	22,000 *	12,000,000	1/600	13-1-2-11-5 EF
WNH	PINK	HALF	20,000 *	22,000 *	12,000,000	1/600	13-1-2-11-6 EF
WNH	PINK	HALF	20,000 *	22,000 *	12,000,000	1/600	13-1-2-11-7 EF
WNH	PINK	HALF	20,000 *	22,000 *	12,000,000	1/600	13-1-2-11-8 DR
WNH	PINK	HALF	20,000 *	22,000 *	12,000,000	1/600	13-1-2-11-9 DR
WNH	PINK	HALF	20,000 *	22,000 *	12,000,000	1/600	13-1-2-11-10 LF
WNH	CHUM	HALF	12,000 *	13,000 *	6,000,000	1/500	13-1-2-11-11 ER
WNH	CHUM	HALF	13,000 *	14,000 *	6,500,000	1/500	13-1-2-11-12 ER
WNH	CHUM	HALF	12,000 *	13,000 *	6,000,000	1/500	13-1-2-11-13 ER
WNH	CHUM	HALF	12,000 *	13,000 *	6,000,000	1/500	13-1-2-11-14 ER
WNH	CHUM	HALF	8,000 *	9,000 *	4,000,000	1/500	13-1-2-11-15 LR
WNH	CHUM	HALF	8,000 *	9,000 *	4,000,000	1/500	13-1-2-12-1 LR
WNH	CHUM	HALF	12,000 *	13,000 *	6,000,000	1/500	13-1-2-12-2 SR/ER
WNH	CHUM	HALF	12,000 *	13,000 *	6,000,000	1/500	13-1-2-12-3 SR/ER
WNH	CHUM	HALF	12,000 *	13,000 *	6,000,000	1/500	13-1-2-12-4 LR
WNH	CHUM	HALF	12,000 *	13,000 *	6,000,000	1/500	13-1-2-12-5 SR/ER
WNH	CHUM	HALF	12,000 *	13,000 *	6,000,000	1/500	13-1-2-12-6 RR PORT CHALMER
WNH	CHUM	HALF	12,000 *	13,000 *	6,000,000	1/500	13-1-2-12-7 SR/ER
WNH	CHUM	HALF	8,000 *	9,000 *	4,000,000	1/500	13-1-2-12-13 LR
WNH	CHUM	HALF	12,000 *	13,000 *	6,000,000	1/500	13-1-2-12-8 MR
WNH	CHUM	HALF	12,000 *	13,000 *	6,000,000	1/500	13-1-2-12-9 MR
WNH	CHUM	HALF	12,000 *	13,000 *	6,000,000	1/500	13-1-2-12-10 SR/LR
WNH	CHUM	HALF	12,000 *	13,000 *	6,000,000	1/500	13-1-2-12-11 RR PORT CHALME
WNH	CHUM	HALF	12,000 *	13,000 *	6,000,000	1/500	13-1-2-12-12 MR
WNH	CHUM	HALF	5,000 *	5,000 *	2,500,000	1/500	13-1-2-12-14 MR
WNH	COHO	FULL	27,500 *	34,000 *	1,100,000	1/40	31-20-48 / NOT ORDERED
WNH	CHINOOK	FULL	15,000 *	20,000 *	300,000	1/20	F&G / NOT ORDERED
WNH	CHINOOK	FULL	5,000 *	5,000 *	100,000	1/20	31-20-50 RR / NOT ORDERED
WNH	CHINOOK	FULL	5,000 *	5,000 *	100,000	1/20	31-20-51 RR / NOT ORDERED
<b>TOTAL TAGS ORDERED</b>			<b>536,000</b>	<b>274,600,000</b>			

**PINKS =**  
**EF = EARLY FED GROUP**  
**DR = DIRECT RELEASE**  
**LF = LATE FED**

**CHUMS =**  
**ER = EARLY RELEASE**  
**SR = SALT WATER RELEASE**  
**MT = MID RELEASE**  
**LR = LATE RELEASE**

## ATTACHMENT A: Groups and numbers of fish to be tagged in 1993 at Solomon Gulch Hatchery.

Species	No. Fish	Total Tags	Valid Ratio	Tagging Comments
Pink	30,000,000	50,000	1/600	SGH-E1
	30,000,000	50,000	1/600	SGH-E2
	50,000,000	83,333	1/600	SGH-E3
	20,000,000	33,400	1/600	SGH-L1
	20,000,000	33,000	1/600	SGH-L2
	10,000,000	16,667	1/600	SGH-L3
	20,000,000	33,400	1/600	NI
Chum	8,000,000	26,667	1/300	SGH1
	8,200,000	27,333	1/300	NI
Coho	475,000	0		SGH Release
	20,000	0		Tatitlek Release
Chinook	198,000	0		6.5 Mile Release

APPENDIX 13

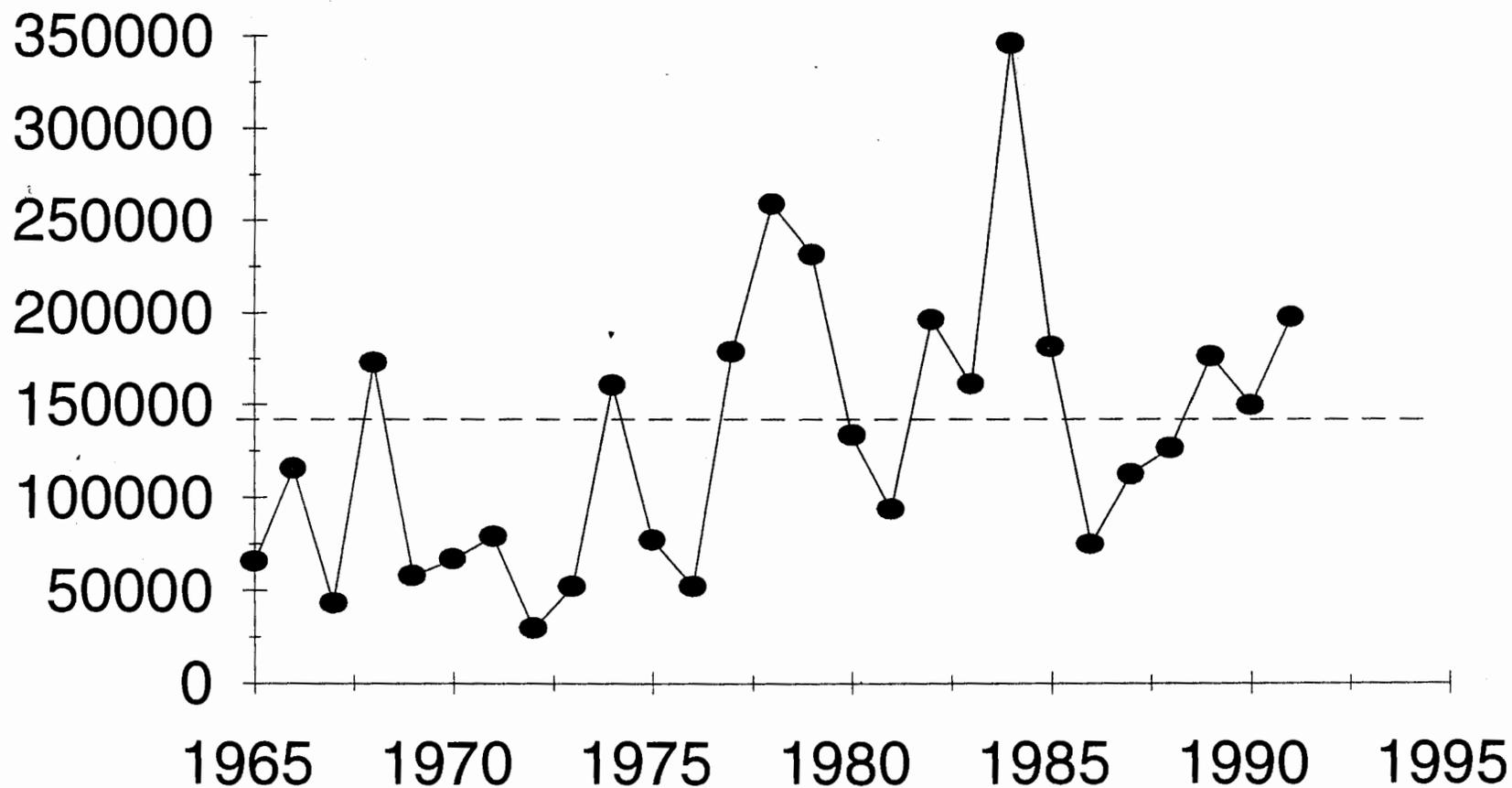
Run Reconstruction Preliminary Results

## **Bill's Run Reconstruction Preliminary Results**

- 1. I have all of the Greek letters and so forth for anyone interested in what they have so far...  
-- backwards deterministic model**
- 2. The weak link is the tagging data which is used to determine the movement and movement probabilities  
-- the 1992 radio data provided a guess at these**
- 3. As you shall see, we spent lots of money to find a complex way to point out the obvious....**

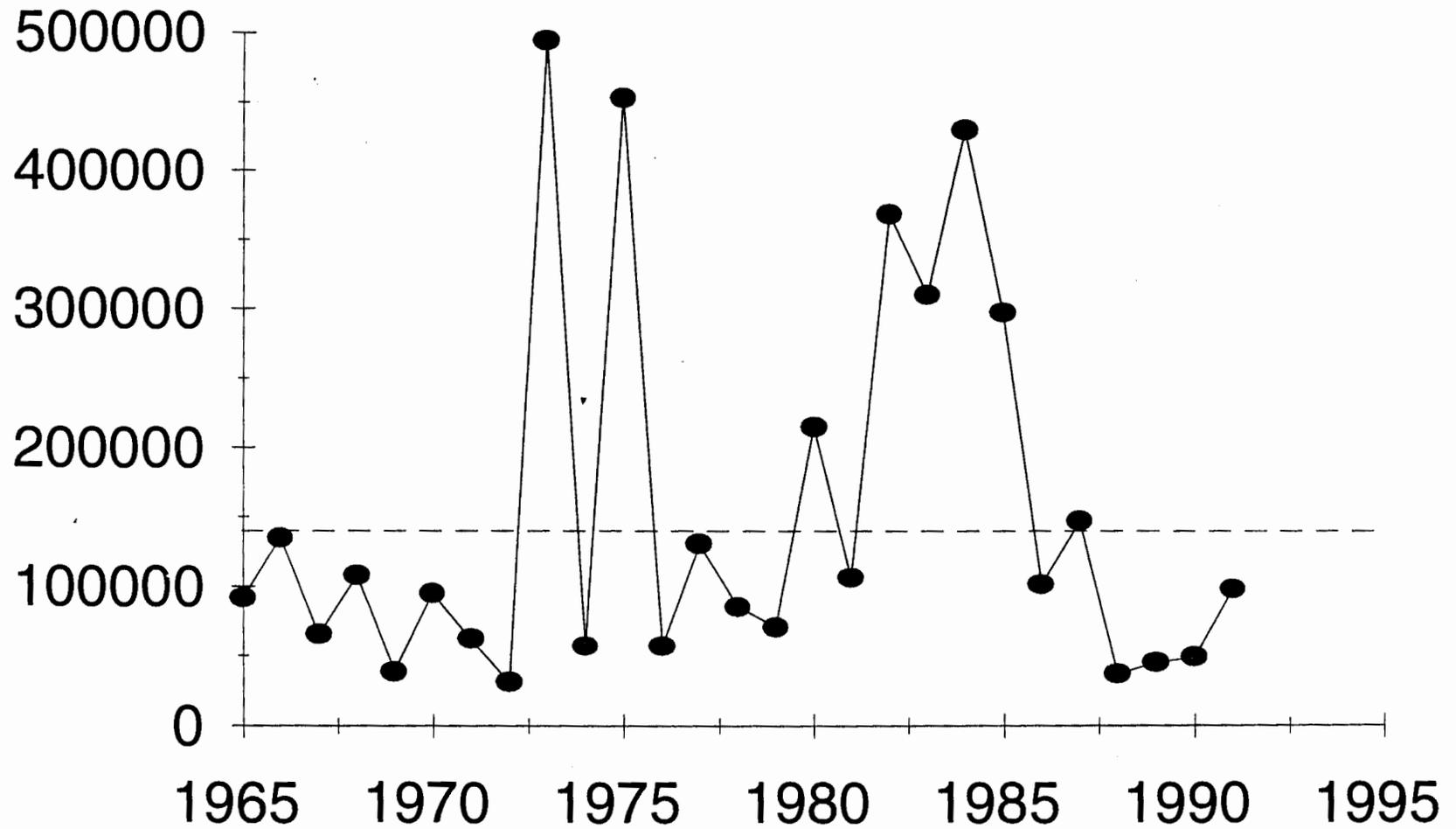
# Southwest Index Escapement Series

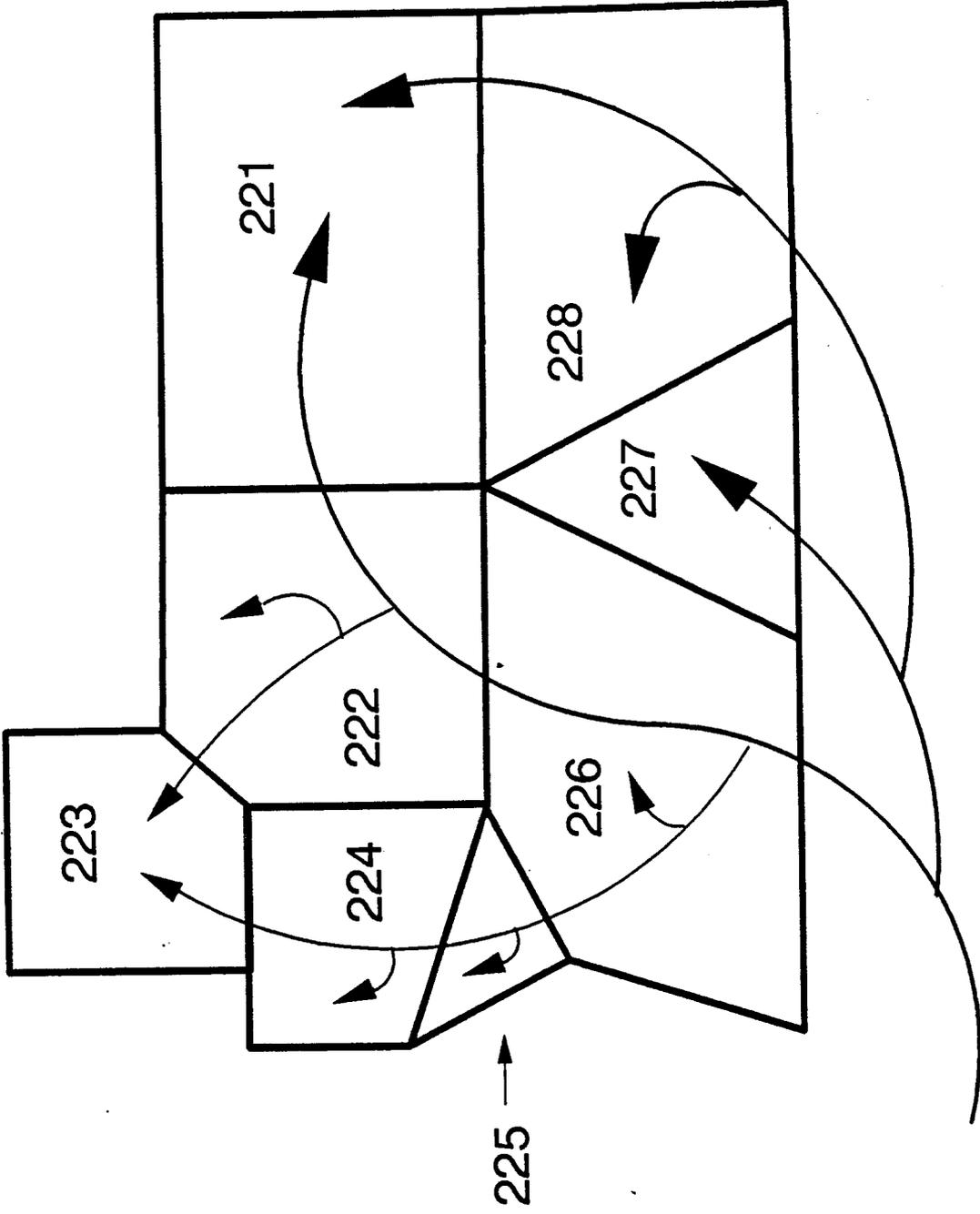
## Target Escapement 144 thousand



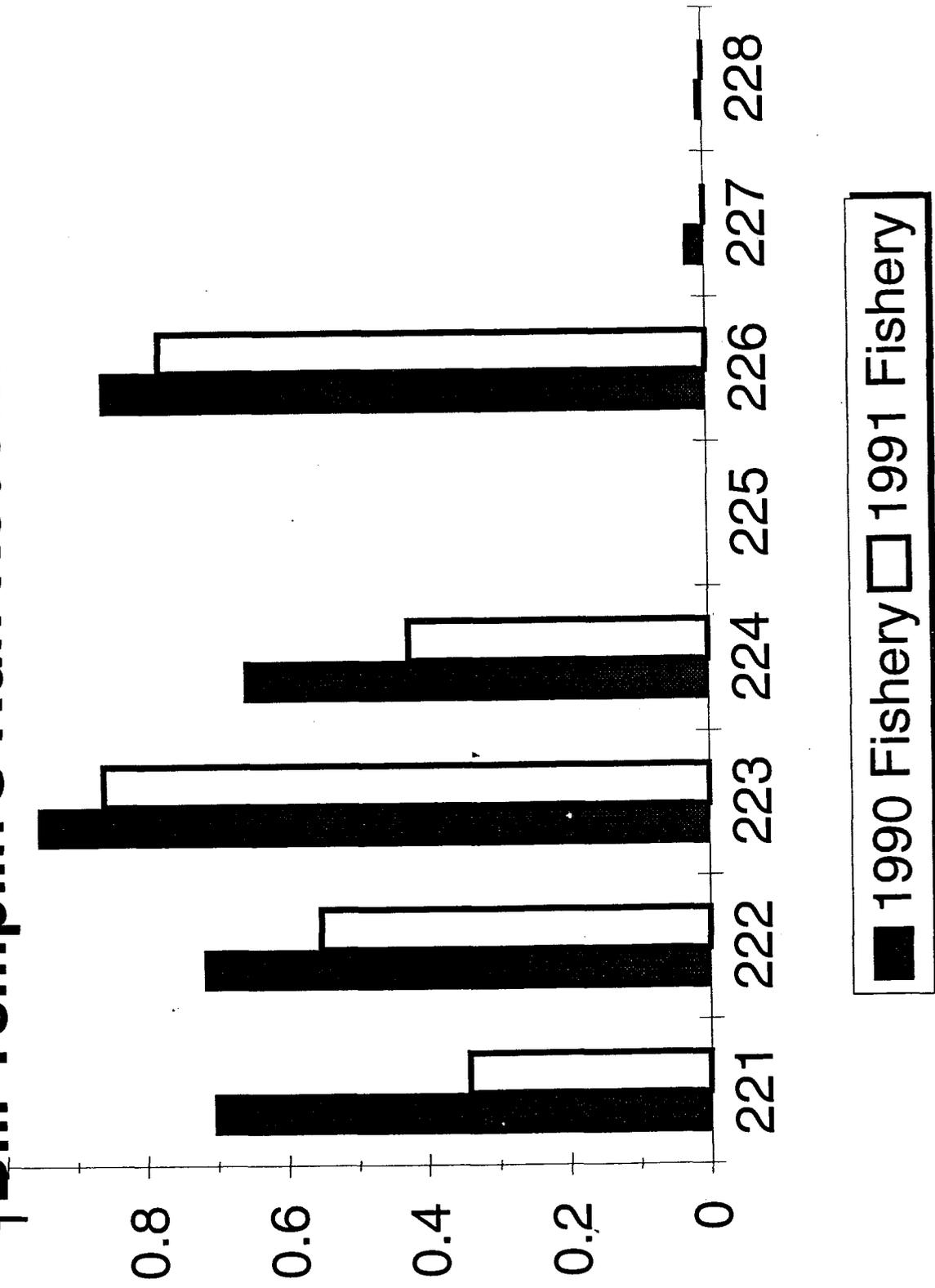
# Coghill Index Escapement Series

## Target Escapement of 143 thousand





# 1 Bill Templin's Run Reconstruction



## **The 1990 Fishery**

- 1. The 1990 catch of wild salmon was 487 thousand in the WHN Cost Recovery Fishery**
- 2. The escapement shortfall in the Coghill District (District 223) was 94 thousand, or 66% of the escapement goal of 143 thousand (in index units)**
- 3. The escapement shortfall in the Northern District (District 222) was 82 thousand or 39% of the escapement goal (index units)**

4. In the new units the combined escapement of the Northern and Coghill stocks is 409 thousand
5. Assume the total harvest rate is 75%-90%, then the total run was
- $409/(100\%-75\%)=1,640$  (if Bill's model is wrong),  
to  
 $409/(100\%-90\%)= 4,090$  thousand
6. This means the harvest rate on the Northern and Coghill stocks is nearly 10% to 25% in just the WHN hatchery cost recovery fishery!  
-- surely higher if only Coghill is considered

**7. The preliminary results from the Run Reconstruction study is the Coghill stock:**

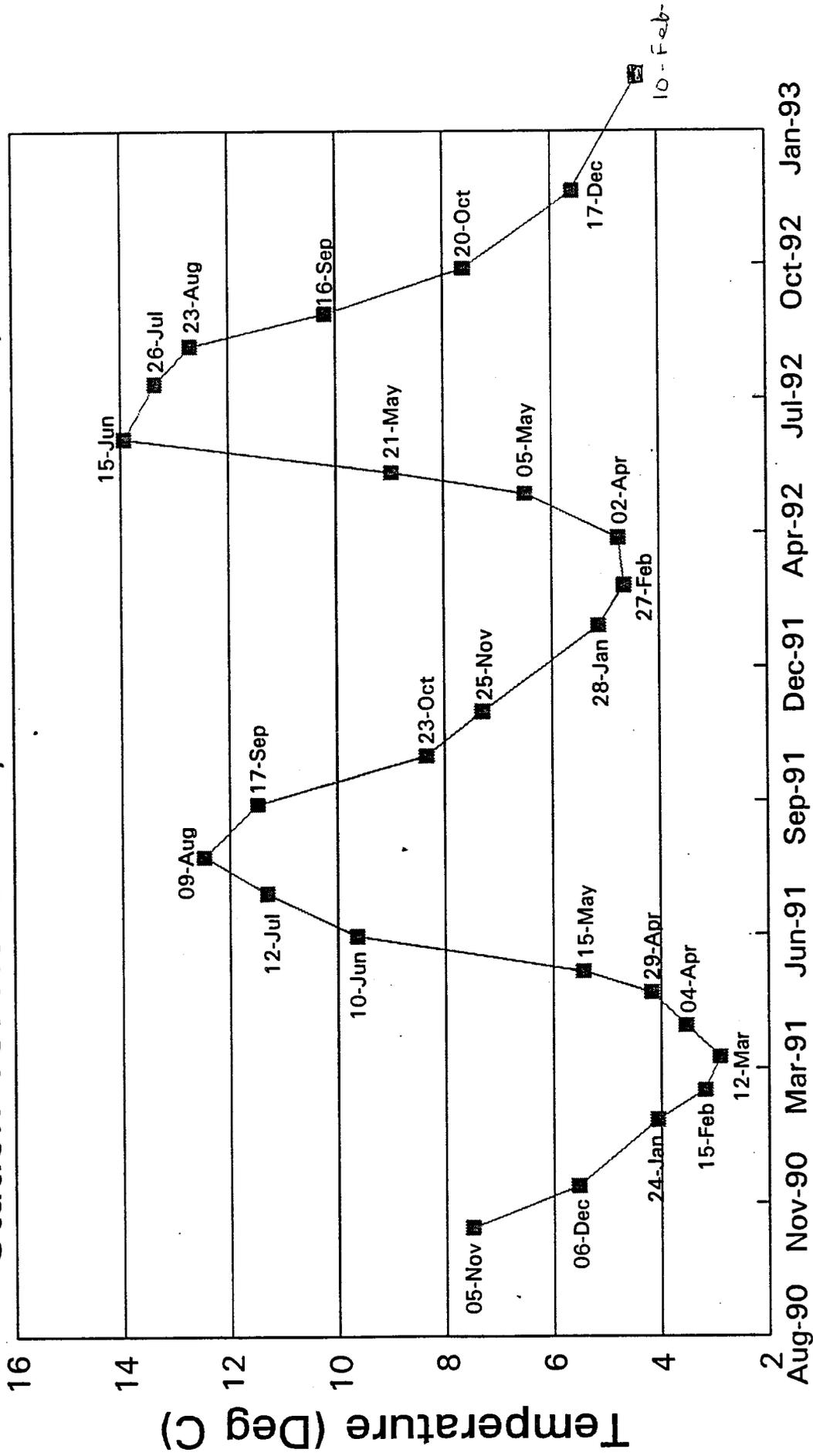
- a. may be over-harvested in the common property fishery (if Bill's model is correct), or**
- b. to a large extent is going to the cost recovery**

APPENDIX 14

Prince William Sound Temperature and Salinity History,  
Station 13, November 1990 - December, 1992

# PWS TEMPERATURE HISTORY

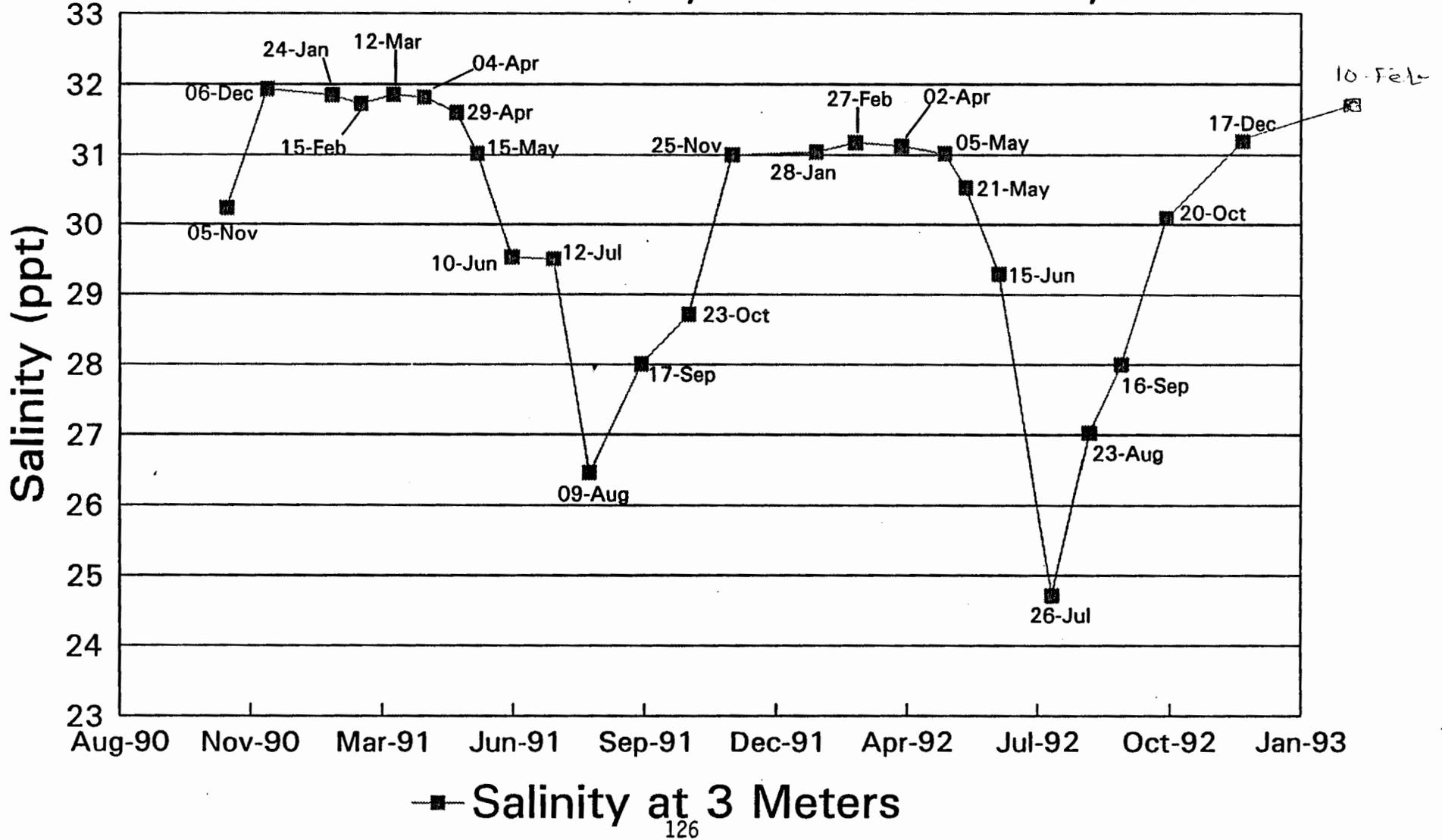
Station 13: November, 1990 - December, 1992



■ Temperature at 3 Meters

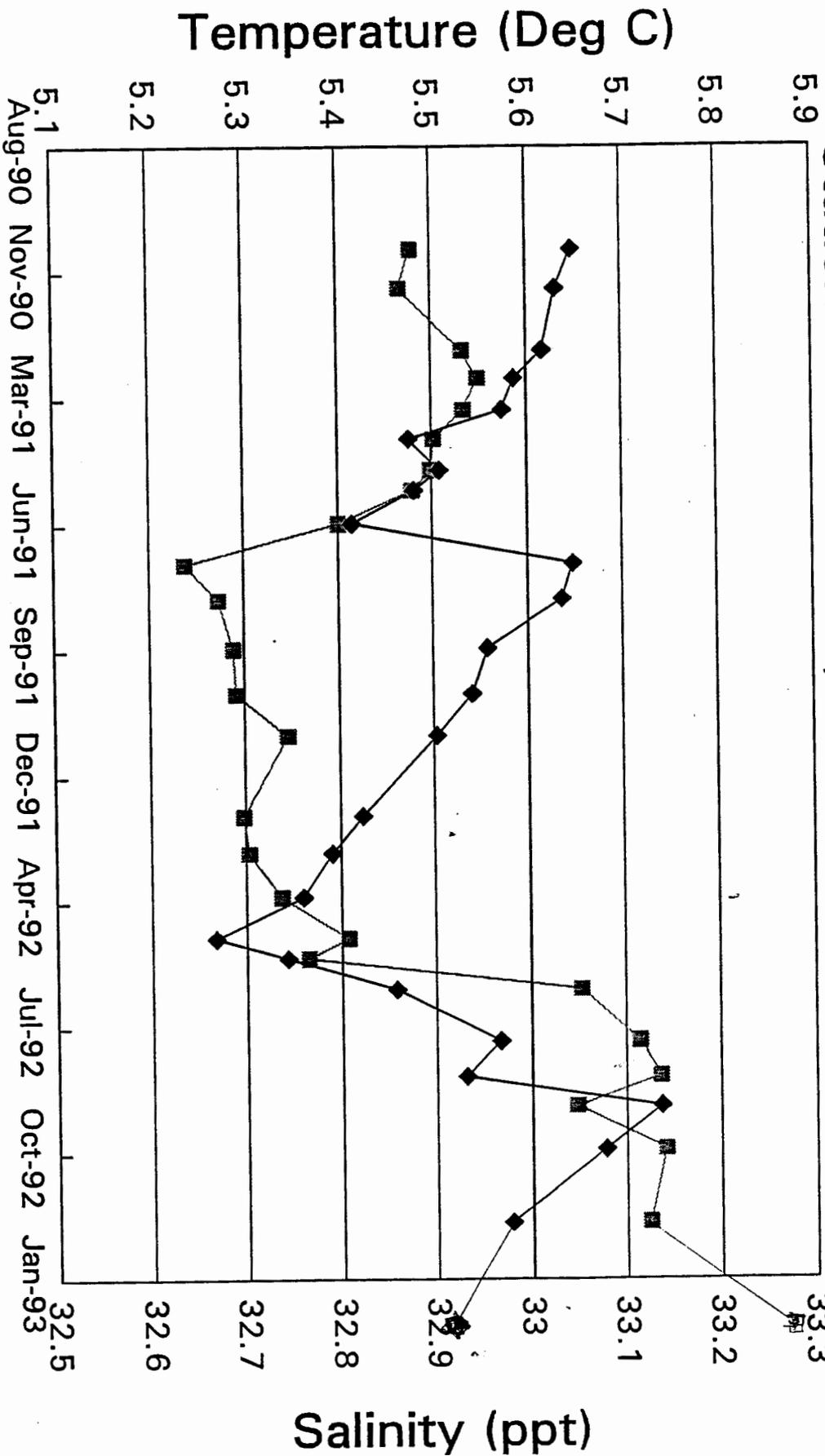
# PWS SALINITY HISTORY

Station 13: November, 1990 - December, 1992



# PWVS T/S HISTORY

Station 13: November, 1990 - December, 1992

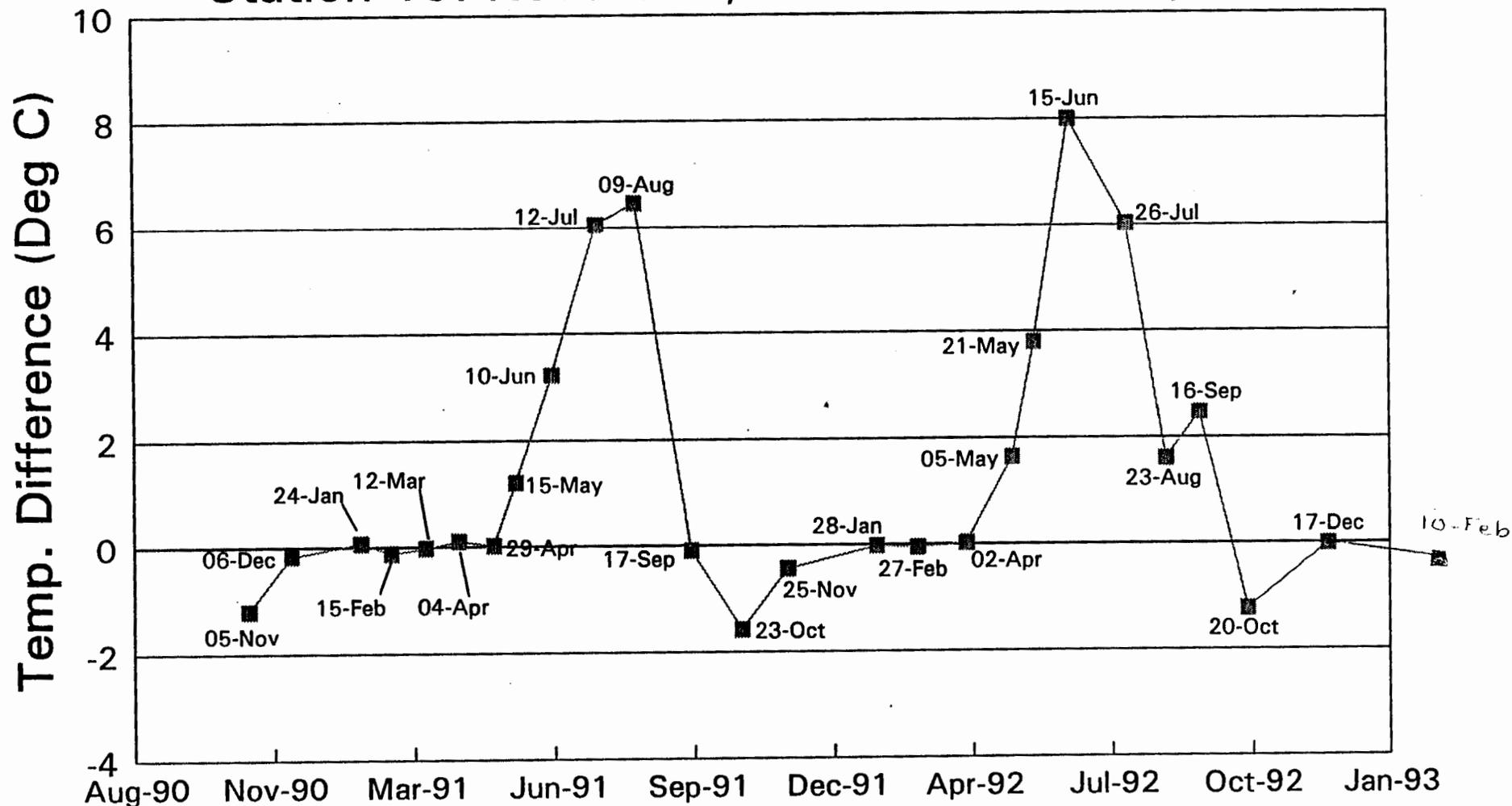


T350 S350

127

# PWS TEMPERATURE HISTORY

Station 13: November, 1990 - December, 1992



Relative Stratification Between 3 and 30 Meters

■ T03-T30

APPENDIX 15

Research Vessel Montague Schedule



R/V MONTAGUE

JANUARY 1993

SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18 HOLIDAY	19	20 ***** CFOS *****	21	22	23
24	25	26	27	28	29	30
31	*** CFOS TRIP EARLIER IF CTD IS RETURNED FROM ANNUAL CALIBRATION BEFOREHAND.					

FEBRUARY 1993

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11 ***** CFOS *****	12	13
14	15 HOLIDAY	16 *** PWS STAFF MEETING - ANCH. ***	17	18	19	20
21	22 ***** C-LAB 1 BUOY MAINTENANCE - APPROX. 5 SAILING	23	24	25	26	27
28	DAYS REQUIRED.					

R/V MONTAGUE

MARCH 1993

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
	***** C-LAB 1 BUOY MAINTENANCE *****					
7	8	9	10	11	12	13
				***** CFOS *****		
14	15	16	17	18	19	20
	***** PWS FRY DIG #1 *****					
21	22	23	24	25	26	27
*** PWS FRY DIG #1 *****				TURNAROUND		PWS FRY DIG #2
28	29	30	31			
PWS FRY DIG #2 *****						

APRIL 1993

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3 TRANS-FER TO PANDALUS
				* PWS FRY DIG #2*		
4	5	6	7	8	9	10
	***** PWS HERRING MGT. (EST. 21 DAYS TOTAL) *****					
11	12	13	14	15	16	17
***** PWS HERRING MGT. *****						
18	19	20	21	22	23	24
***** PWS HERRING MGT. *****						
25	26	27	28	29	30	
***** PWS HERRING MGT. *****						

R/V MONTAGUE

MAY 1993

SUN	MON	TUE	WED	THU	FRI	SAT
						1
2	3	4	5	6	7	8
***** PAINT MAINTENANCE *****						
9	10	11	12	13	14	15
***** PWS MARKER MAINTENANCE *****						
16	17	18	19	20	21	22
** PWS MARKERS **						
23	24	25	26	27	28	29
***** TRAWL SHRIMP SAMPLING ????? *****						
30	31 HOLIDAY					

JUNE 1993

SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7 LOAD	8 ***** COGHILL/ESHAMY WEIR *****	9	10	11	12
13	14	15 ***** CFOS *****	16	17	18	19 ESHAMY T. FISH
20 *** ESHAMY TEST FISH *****	21	22	23	24	25	26 ESHAMY T. FISH
27 *** ESHAMY TEST FISH *****	28	29	30			

R/V MONTAGUE

JULY 1993

SUN	MON	TUE	WED	THU	FRI	SAT
				1 ESHAMY DISTRICT GILLNET MGT	2	3 ESHAMY T. FISH
4 *** ESHAMY TEST FISH *****	5	6	7	8	9	10 ESHAMY T. FISH
11 *** ESHAMY TEST FISH *****	12	13	14	15	16	17 *** COPPER RIVER DUNGENESS *****
18	19 (IF NOT SOONER) ***** CFOS *****	20	21	22	23	24
25 *****	26 ***** PWS	27 PINK SALMON MGT -	28	29 (7-10 DAYS REQUIRED)	30	31 *****

AUGUST 1993

SUN	MON	TUE	WED	THU	FRI	SAT
1 *****	2 ***** PWS	3 PINK SALMON MGT	4	5	6	7 *****
8 *****	9 ***** PWS	10 PINK SALMON MGT	11	12	13	14 *****
15	16 ***** CFOS *****	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

R/V MONTAGUE

SEPTEMBER 1993

SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4
5	6 HOLIDAY	7	8	9	10	11
12	13	14	15 ***** CFOS *****	16	17	18
19	20	21	22	23	24	25
26	27 ***** PWS EGG DIG #1 *****	28	29	30		

OCTOBER 1993

SUN	MON	TUE	WED	THU	FRI	SAT
					1 *** EGG DIG #1 **	2
3 *** EGG DIG #1 **	4	5 TURNAROUND	6	7 *** PWS EGG DIG #2 *****	8	9
10 ***** PWS EGG DIG #2 *****	11	12	13	14	15	16
17	18 HOLIDAY	19 (EARLIER IF EGG DIG FINISHES BY 10/11) ***** PWS SPOT SHRIMP *****	20	21	22	23
24 ***** PWS SPOT SHRIMP *****	25	26	27	28	29	30

31	*** PLUS 3-5 DAYS FOR PWS BAIT HERRING AS TIME ALLOWS
----	---

R/V MONTAGUE

NOVEMBER 1993

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11 HOLIDAY	12	13
14	15 ***** CFOS *****	16	17	18	19	20
21	22	23	24	25 HOLIDAY	26	27
28	29	30				

DECEMBER 1993

SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13 ***** CFOS *****	14	15	16	17	18
19	20	21	22	23	24 HOLIDAY	25
26	27	28	29	30	31	

APPENDIX 16

Draft Salmon Harvest Task Force Recommendations for 1993

## DRAFT 1/25/93

### Salmon Harvest Task Force Recommendations to ADF&G for the 1993 Season

The Salmon Harvest Task Force recommendations are guidelines put forth by recognized members of the industry for management of the area's fisheries. All parties recognize that inseason adjustments to Task Force recommendations may be required as the season develops.

#### SEINE RECOMMENDATIONS

The wild stock pink salmon forecast for 1993 is 5.4 million fish or 2.3 million below the long term average run size. The escapement goal is 1.4 million and the projected harvest is 4 million. If the wild run develops as forecast, a harvest rate of 74% can be permitted and achieve escapement.

Actual run strength will be assessed as the season progresses. The primary method of wild stock assessment is by aerial survey of representative streams and bays in the area. Inseason assessment of escapement will be the major factor to determine the harvest strategy. Input from Task Force members will also be considered.

Wild salmon are taken in both the common property fishery and to a lesser extent during hatchery sales harvests. The Task Force recognizes that fishing in terminal harvest areas is necessary to decrease the wild stock harvest rate when the wild run is weak. Conversely, as the wild run size increases, the area can expand outside of terminal areas to raise the wild stock harvest rate.

<u>WILD RUN SIZE</u> (Millions)	<u>HARVEST RATE TO ACHIEVE ESCAPEMENT</u>
10	0.86
9	0.85
8	0.83
7	0.80
6	0.77
5	0.72
4	0.65
3	0.53
2	0.30
1	0.0

The forecast of hatchery pink salmon is 22.2 million. The VFDA run 2.22 million, and the PWSAC run 20 million. The common property harvest of PWSAC pink salmon is projected to be 14 million. The harvest rate (common property fishery and corporate sales) of PWSAC pink salmon is expected to be 95 percent.

Since in most years the desired harvest rate for wild and hatchery salmon will be different, the department must establish harvest areas that will reduce the harvest rate on wild fish and permit a higher rate on hatchery fish.

Goal: To provide a framework to ADF&G that provides for wild stock escapement, corporate escapement and timely harvest of surplus in areas that warrant harvest.

Objectives: Maintain department's ability to correct for wild stock escapement shortfalls.  
Establish acceptable levels of wild stock risk.  
Allow assessment of run entry.  
Improve quality to the extent escapement will allow.

The department will conduct aerial surveys beginning in late June. Depending upon funding, two aerial surveys per week will be employed to track escapement. The department will fund the personnel costs for the additional surveyor and industry will fund the airplane charter costs. The additional surveyor will supplement the existing pink and chum salmon escapement program that is in place by staggering surveys on opposite ends of the week from the normal department flights.

Management recommendations:

During early and mid-July the following scenario will be implemented in the Eastern and or Northern Districts.

#### Escapement level

- 1) Shortfall - Wild stocks (combined bay, mouth, stream) less than 80% of expected weekly escapement.  
  
No general district fishing. Area specific chum fisheries can occur if little impact to early pink escapement. VFDA return harvested in terminal area.
- 2) Adequate - Wild stocks between 80 - 90% of the expected weekly escapement.  
  
Two 12-hour periods/week will occur with enlarged bay closures. VFDA return harvested in near terminal area.
- 3) Achievement - District(s) performing at 90% of weekly escapement expectations or above.  
  
Allow fishing in eastern P.W.S to balance wild escapement with common property harvest. Valdez

Arm area managed for VFDA corporate escapement.

If by July 20 and July 30 escapement indices are less than 80% of the weekly goal, a SHTF subcommittee will meet with ADF&F management and research staff to review the status of wild stocks and exchange information.

If by July 27 wild stock escapement is below 80% of the weekly goal (unless the cumulative is more than 90%) then common property harvest will be confined to terminal harvest areas to help reduce the exploitation of wild stocks. This policy will remain in effect until escapement reaches 80%.

If by July 27 wild stock escapement is at least 80% of the weekly goal, the Task Force recommends that general district fishing be allowed in the southern half of the Southwestern District coinciding with periods in the hatchery subdistricts.

Beginning on or about August 1 periods in the general waters or terminal harvest areas should be scheduled frequently to keep pace with PWSAC run entry.

Periods in the terminal harvest areas and the general districts will be a minimum of 12-hours duration. Terminal harvest areas will be managed to balance corporate escapement with common property harvest.

This schedule is subject to inseason modifications based upon actual run entry, PWSAC's corporate escapement, wild stock assessment and processing considerations.

Qualifications:

- A) When calculating escapement percentages to determine the wild stock escapement level the Southwestern, Montague and Southeastern Districts will not be included.
- B) If any district, other than the Southwestern District, meets or exceeds an adequate level of wild stock escapement, then harvest will be permitted on surplus in the respective district.
- C) The Coghill, Northwestern and Eshamy Districts will be considered in aggregate when calculating escapement performance.
- D) If wild stock escapement in the Eastern, Northern or the aggregate Coghill/Northwestern/Eshamy Districts exceeds expectations, fishing will be permitted in that district(s) and will be excluded from the escapement performance calculation.

The predominance of pink or coho salmon in the waters of Lake and Quillion Bays of the Coghill District after September 4 will be based on the number of salmon as summarized by processor reports. Seine openings in Lake and Quillion Bays after September 4 will be of short duration (12-hours).

#### GILLNET RECOMMENDATIONS

- 1) Whenever possible, fishing periods in gillnet districts will be open simultaneously.
- 2) Prior to the wild pink and chum runs, when the common property fishery is open in the Eshamy District the Crafton Island and Main Bay Subdistricts shall be open to harvest Coghill stock returns to the Main Bay hatchery. The preferred schedule is two 36-hour periods per week.
- 3) Fishing periods in the Esther Subdistrict will be scheduled to harvest Noerenberg hatchery chum salmon and minimize interception of Coghill Lake sockeyes. Markers at the south end of Esther Pass will be moved up to the vicinity of Shoestring Cove to harvest milling chum salmon. It is recognized that wild stocks are present in Esther Passage and their escapement will be considered before action.
- 4) Eshamy Bay & Lagoon terminal fishing area. If necessary a terminal fishing area will be established to harvest excess sockeye in Eshamy Bay and/or Lagoon. The Task Force recommends that the harvest area boundaries be at prominent locations.
- 5) Port Wells terminal fishing area. When fesiabile a terminal fishing area will be utilized to harvest excess sockeye in Port Wells. The recommended area is north of a line from Harrison Lagoon to the east shore of Port Wells.

To successfully manage natural and enhanced stocks of the northwestern Sound the harvest strategy must be based upon the less abundant wild stocks. Due to the location of two major hatcheries in the northwestern Sound, this area is viewed as a unit for management purposes.

P.W.S. SALMON HARVEST TASK FORCE RECOMMENDATIONS TO ADF&G

<u>Jim Kallander, CDFU Seine Division</u>	<u>Date</u>
<u>Bill Bailey, CDFU Gill Net Division</u>	<u>Date</u>
<u>Glenn Carroll, PWS Seiners Association</u>	<u>Date</u>
<u>Mike Owecke, PWS Set Net Association</u>	<u>Date</u>
<u>John Johnson, CAMA Gillnet Division</u>	<u>Date</u>
<u>Jack Hopkins, CAMA Seine Division</u>	<u>Date</u>
<u>George Covell, PWS Fish and Game Advisory Committee</u>	<u>Date</u>
<u>Ray Cesarini, SeaHawk Seafoods</u>	<u>Date</u>
<u>Jim Poor, Peter Pan Seafoods</u>	<u>Date</u>
<u>Bill Terhar, St. Elias Ocean Products</u>	<u>Date</u>
<u>Ken Roemhildt, North Pacific Processors</u>	<u>Date</u>
<u>Jeff Poole, Seward Fisheries</u>	<u>Date</u>
<u>John McMullen, PWS Aquaculture Corporation</u>	<u>Date</u>
<u>Dave Cobb, Valdez Fisheries Development Assn.</u>	<u>Date</u>

APPENDIX 17

1992 Eshamy and Coghill Sockeye Escapements



# 1992 ESHAMY SOCKEYE ESCAPEMENT

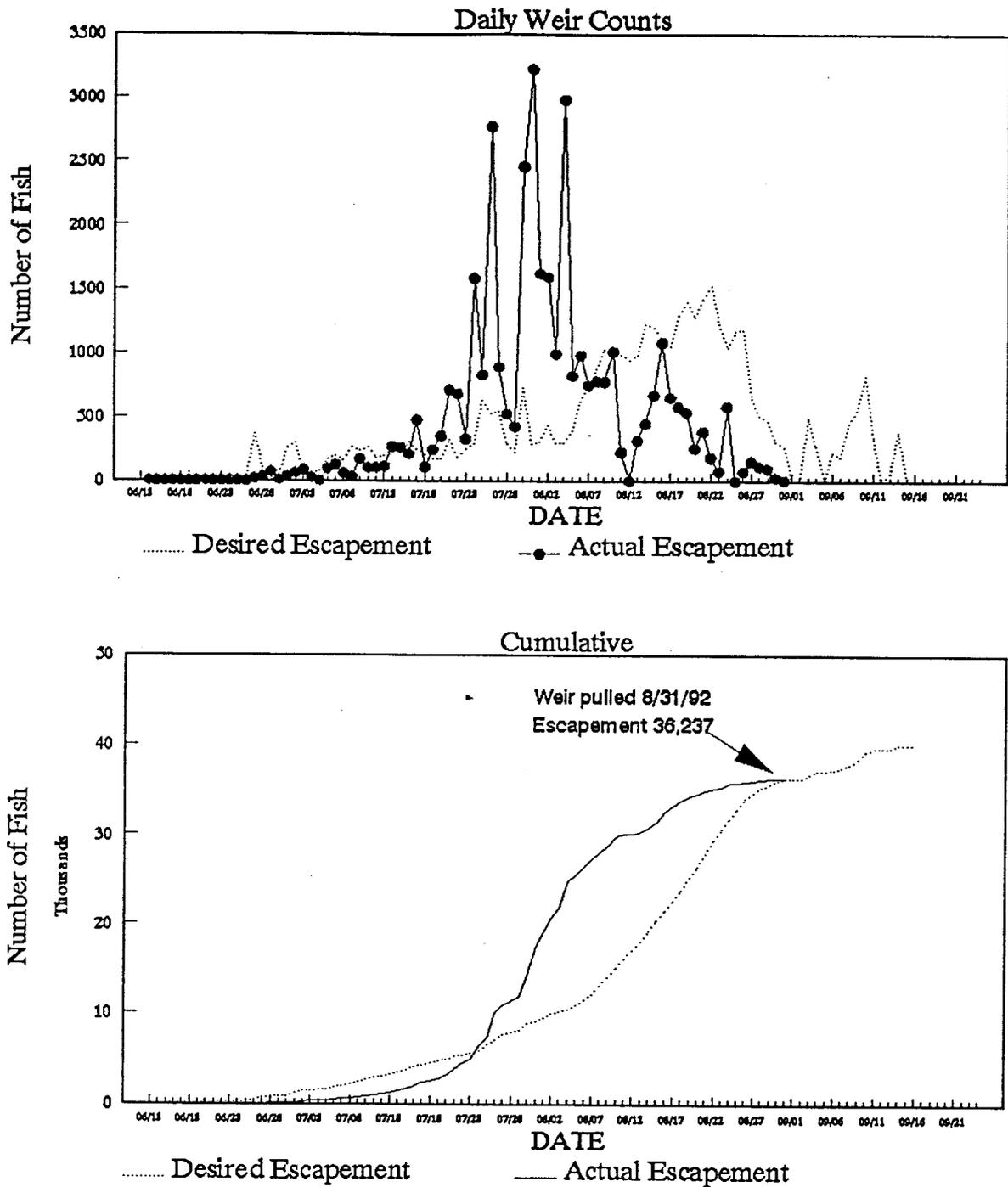


Figure 1. 1992 Eshamy sockeye salmon escapement, and desired escapement goal of 40,000.

# 1992 COGHILL SOCKEYE ESCAPEMENT

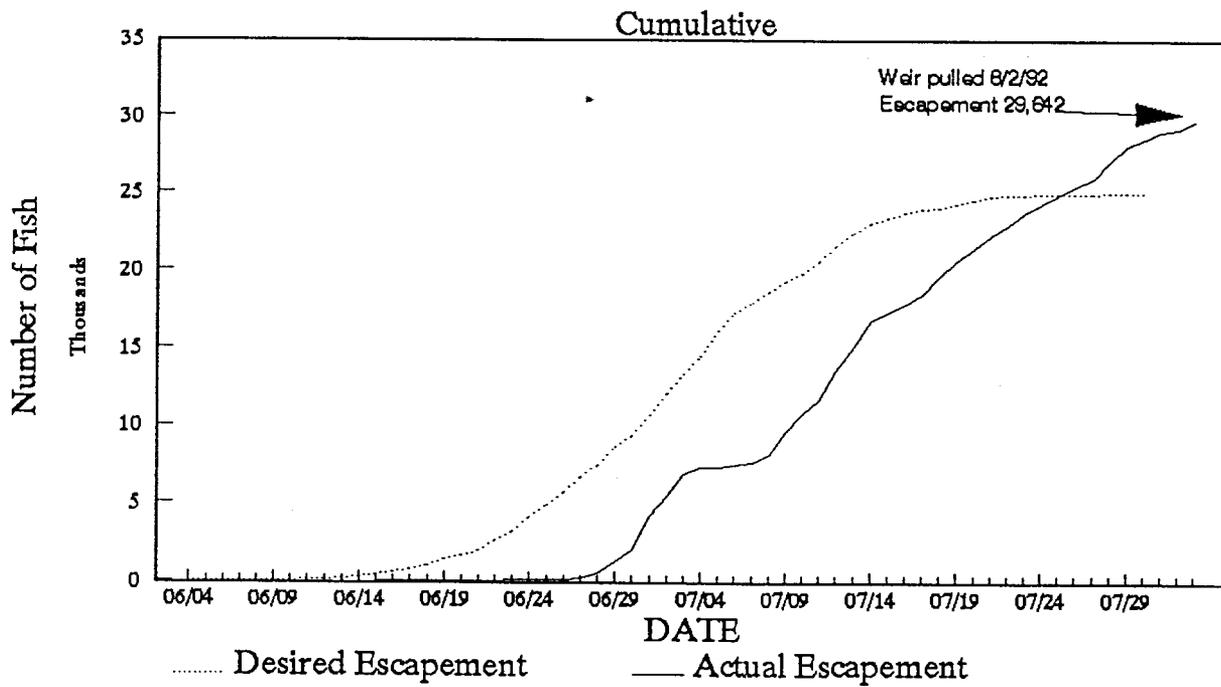
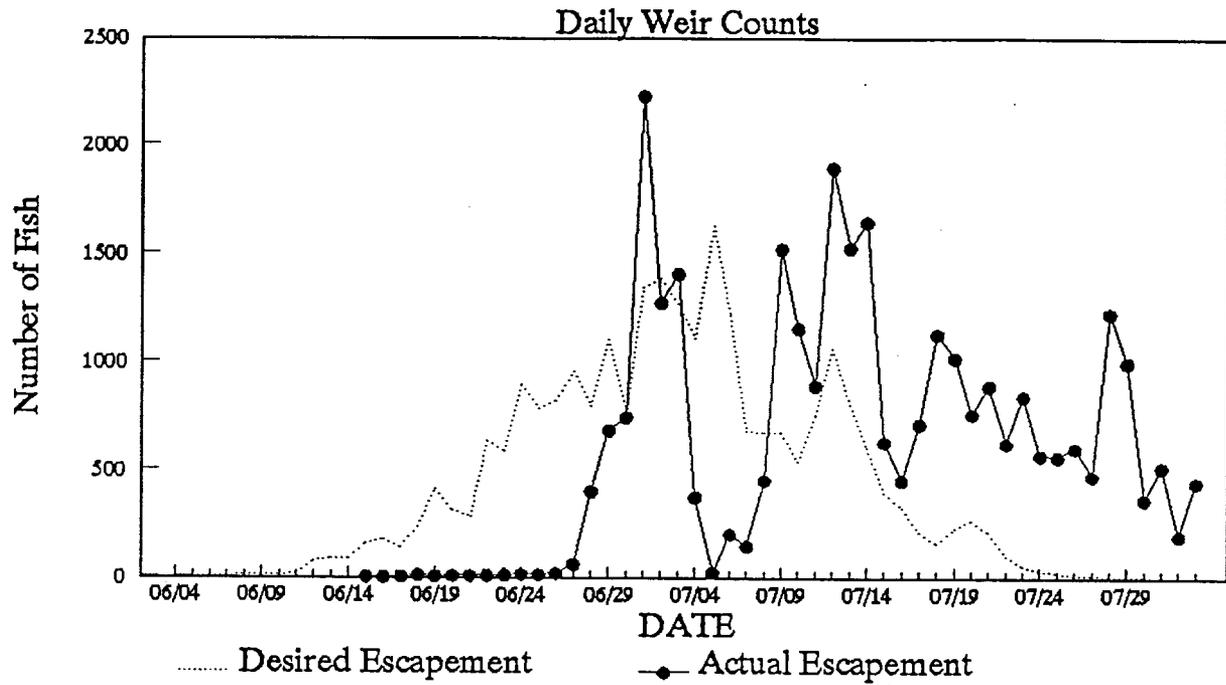


Figure 2. 1992 Coghill sockeye salmon escapement, and desired escapement goal of 25,000.

Table 1. Eshamy Lake sockeye smolt production for 1989 to 1992. Anticipated adult returns for 1992 and 1993, based on 20% marine survival.

<u>ANTICIPATED ESHAMY RETURNS</u>													
YEAR	TOTAL OUTMIGRATION		ESTIMATED 20% SURVIVAL		AGE GROUP / AVERAGE % RETURN						YEAR	ANTICIPATED ADULT RETURN	
	AGE 1	AGE 2	AGE 1	AGE 2	1.1 (0.76%)	1.2 (84.12%)	1.3 (7.76%)	2.1 (0.20%)	2.2 (6.34%)	2.3 (0.48%)			
1989	336,200	56,353	67,240	11,271								1989	
1990	587,674	73,542	117,535	14,708	552			321				1990	
1991	273,122	187,693	54,624	37,539	964	61,056		419	10,179			1991	
1992	232,932 *	107,127	46,586	21,425	448	106,725	5,632	1,069	13,284	771		1992	127,930
1993					382	49,601	9,845	610	33,902	1,006		1993	95,347

\* Includes 118,285 smolt from Main Bay, outmigrating as age 1 smolt, from a release of 406,983 pre-smolt in Eshamy Lake, November 1991.

Table 2. Eshamy Lake sockeye smolt production and remote release numbers for 1989 to 1992. Predicted returns for 1992 and 1993.

<u>ANTICIPATED ESHAMY WILDSTOCK AND ENHANCED RETURNS</u>													
YEAR	TOTAL OUTMIGRATION		ESTIMATED 20% SURVIVAL		AGE GROUP / AVERAGE % RETURN						YEAR	ANTICIPATED ADULT RETURN	
	AGE 1	AGE 2	AGE 1	AGE 2	1.1 (0.76%)	1.2 (84.12%)	1.3 (7.76%)	2.1 (0.20%)	2.2 (6.34%)	2.3 (0.48%)			
1989	336,200	56,353	67,240	11,271								1989	
1990	587,674	73,542	117,535	14,708	552			321				1990	
1991	1,316,478 *	187,693	263,296	37,539	964	61,056		419	10,179			1991	
1992	1,105,424 **	107,127	221,085	21,425	2,160	106,725	5,632	1,069	13,284	771		1992	129,641
1993					1,814	239,081	9,845	610	33,902	1,006		1993	286,258

\* Includes 1,043,356 age 1 smolt released in the intertidal area of Eshamy by PWSAC.

\*\* Includes 872,492 age 1 smolt released in the intertidal area of Eshamy by PWSAC, and the 118,285 smolt from the Main Bay release in Eshamy Lake, November 1991.

Table 3. Eshamy Lake sockeye smolt production for 1989 to 1992. Anticipated adult returns for 1992 and 1993, based on 15% marine survival.

ANTICIPATED ESHAMY RETURNS													
YEAR	TOTAL OUTMIGRATION		ESTIMATED 15% SURVIVAL		AGE GROUP / AVERAGE % RETURN						YEAR	ANTICIPATED ADULT RETURN	
	AGE 1	AGE 2	AGE 1	AGE 2	1.1 (0.76%)	1.2 (84.12%)	1.3 (7.76%)	2.1 (0.20%)	2.2 (6.34%)	2.3 (0.48%)			
1989	336,200	56,353	50,430	8,453								1989	
1990	587,674	73,542	88,151	11,031	414			241				1990	
1991	273,122	187,693	40,968	28,154	723	45,792		314	7,634			1991	
1992	232,932 *	107,127	34,940	16,069	336	80,044	4,224	802	9,963	578		1992	95,947
1993					287	37,200	7,384	458	25,427	754		1993	71,510

\* Includes 118,285 smolt from Main Bay, outmigrating as age 1 smolt, from a release of 406,983 pre-smolt in Eshamy Lake, November 1991.

Table 4. Eshamy Lake sockeye smolt production and remote release numbers for 1989 to 1992. Predicted returns for 1992 and 1993.

ANTICIPATED ESHAMY WILDSTOCK AND ENHANCED RETURNS													
YEAR	TOTAL OUTMIGRATION		ESTIMATED 15% SURVIVAL		AGE GROUP / AVERAGE % RETURN						YEAR	ANTICIPATED ADULT RETURN	
	AGE 1	AGE 2	AGE 1	AGE 2	1.1 (0.76%)	1.2 (84.12%)	1.3 (7.76%)	2.1 (0.20%)	2.2 (6.34%)	2.3 (0.48%)			
1989	336,200	56,353	50,430	8,453								1989	
1990	587,674	73,542	88,151	11,031	414			241				1990	
1991	1,316,478 *	187,693	197,472	28,154	723	45,792		314	7,634			1991	
1992	1,105,424 **	107,127	165,814	16,069	1,620	80,044	4,224	802	9,963	578		1992	97,231
1993					1,360	179,310	7,384	458	25,427	754		1993	214,694

\* Includes 1,043,356 age 1 smolt released in the intertidal area of Eshamy by PWSAC.

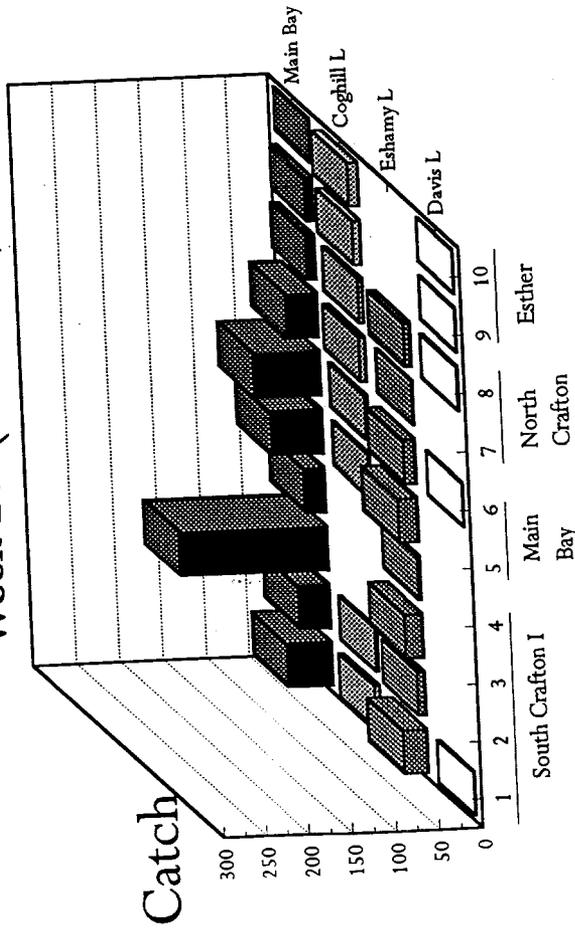
\*\* Includes 872,492 age 1 smolt released in the intertidal area of Eshamy by PWSAC, and the 118,285 smolt from the Main Bay release in Eshamy Lake, November 1991.

APPENDIX 18

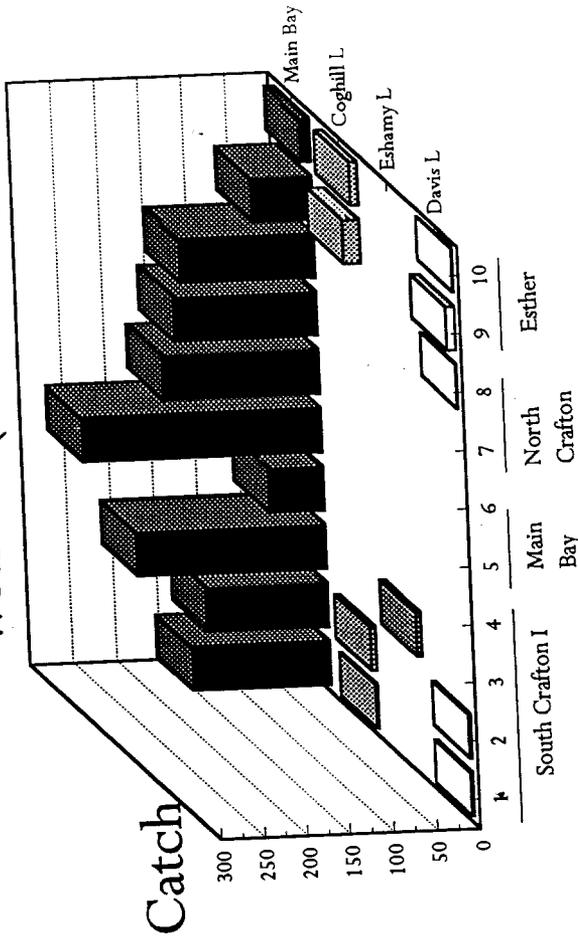
1992 Eshamy Test Fish Results

# Eshamy Test Fish - Catch by Location

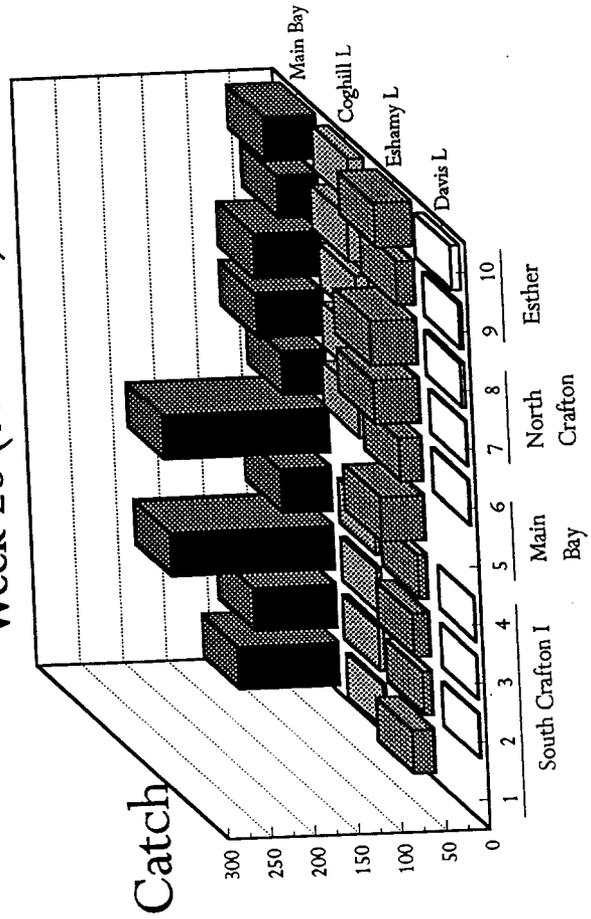
Week 26 (6/21/92)



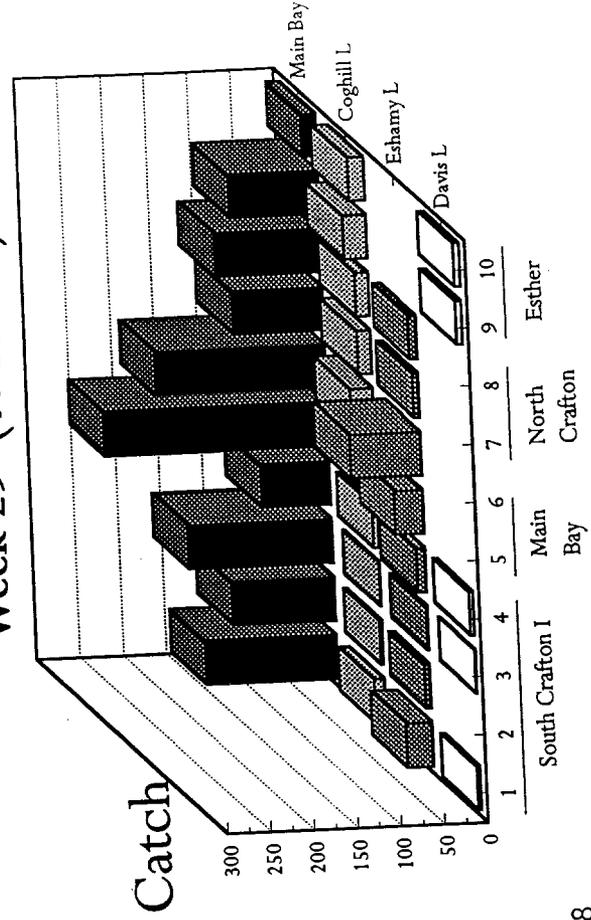
Week 27 (6/28/92)



Week 28 (7/5/92)

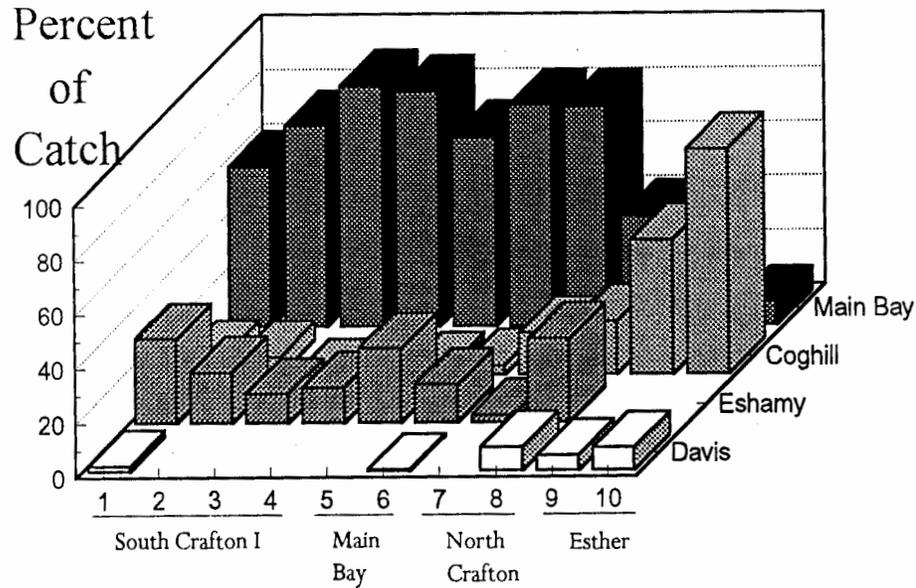


Week 29 (7/12/92)

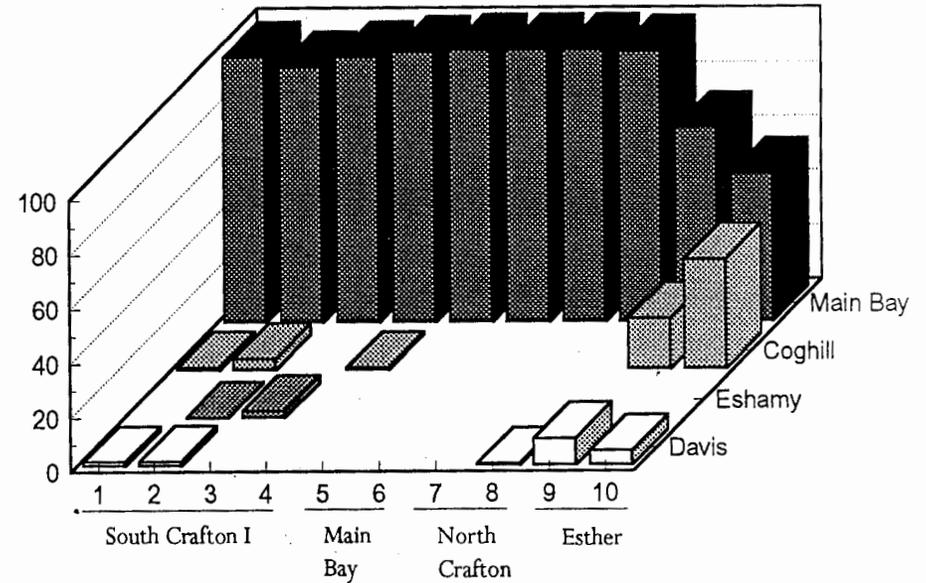


# Eshamy Test Fish - Percent by Location

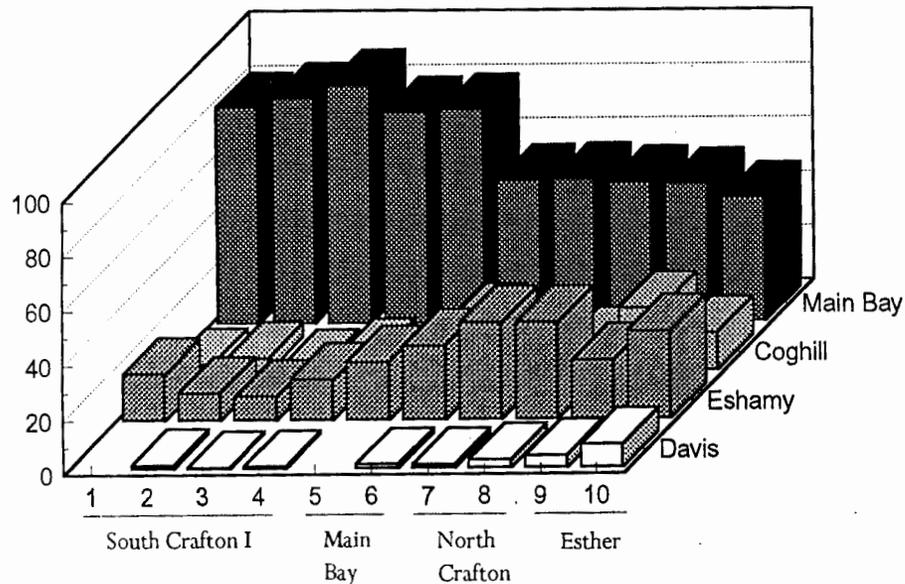
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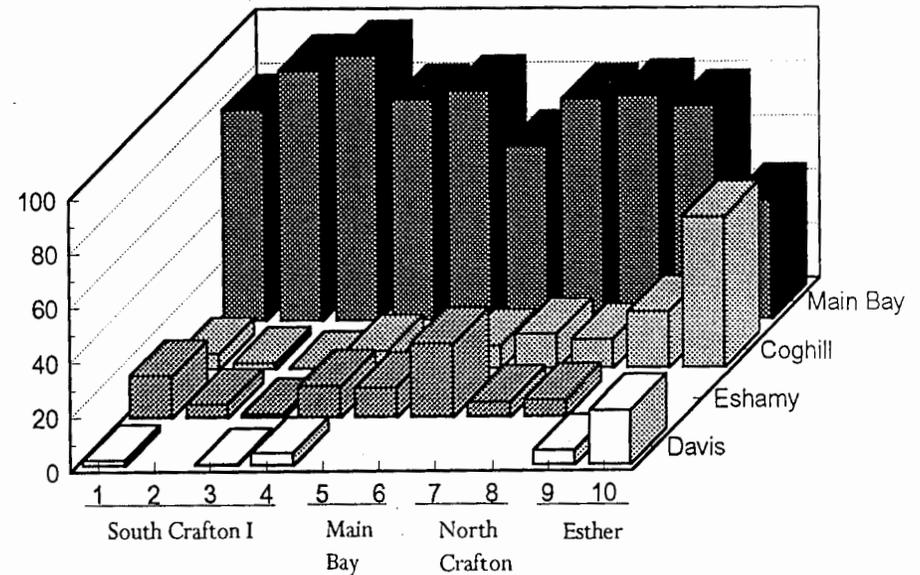
Week 27 (6/28/92)



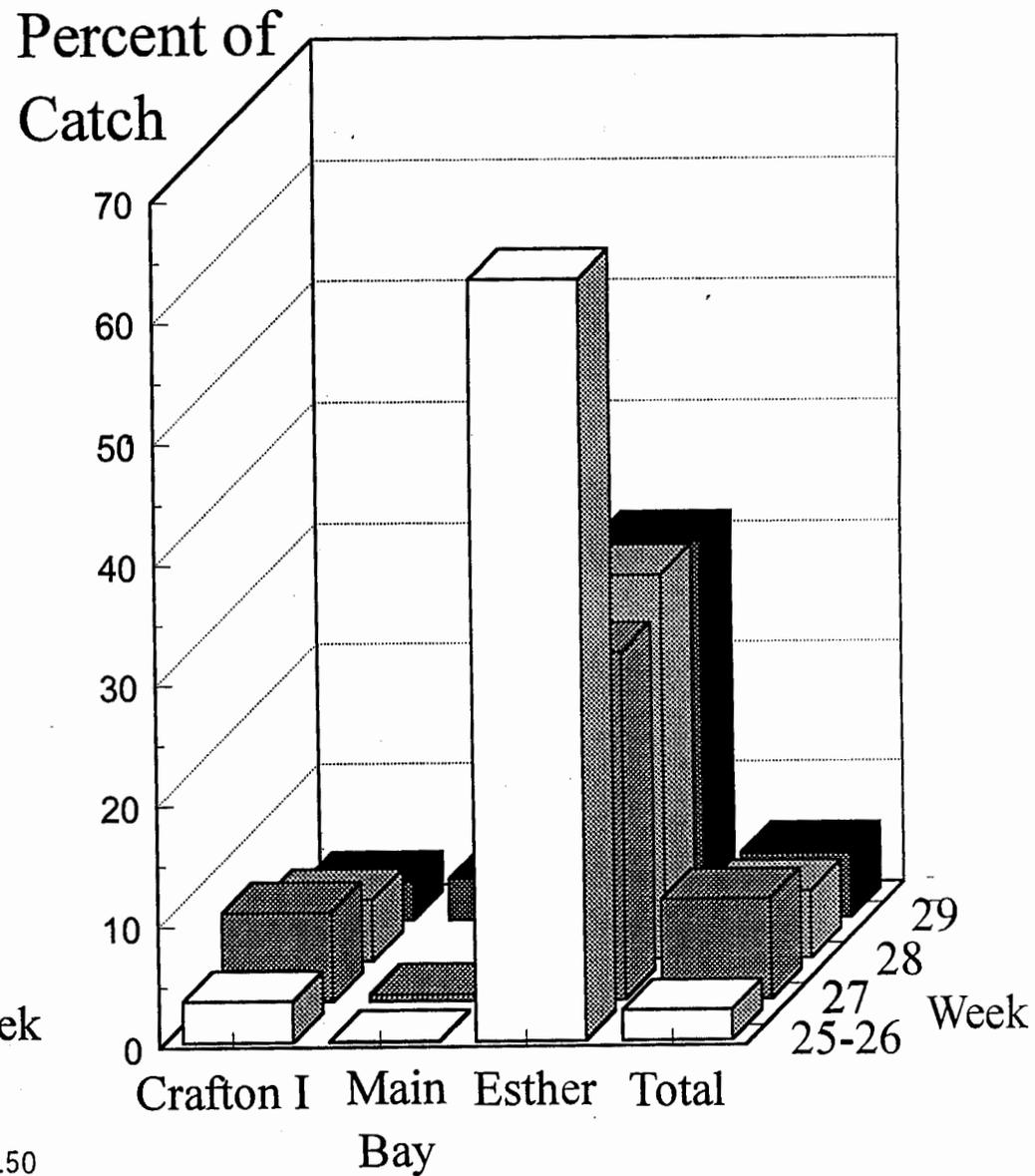
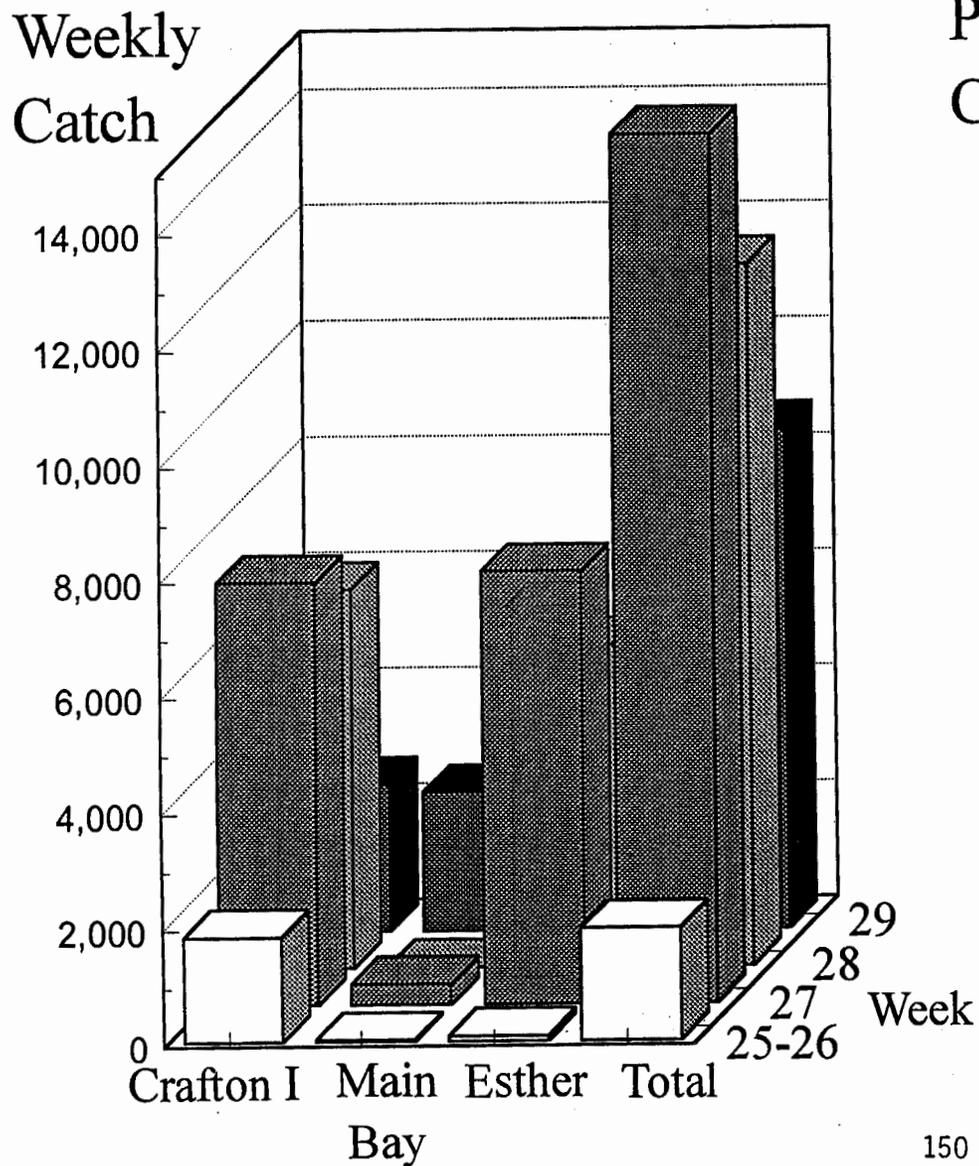
Week 28 (7/5/92)



Week 29 (7/12/92)

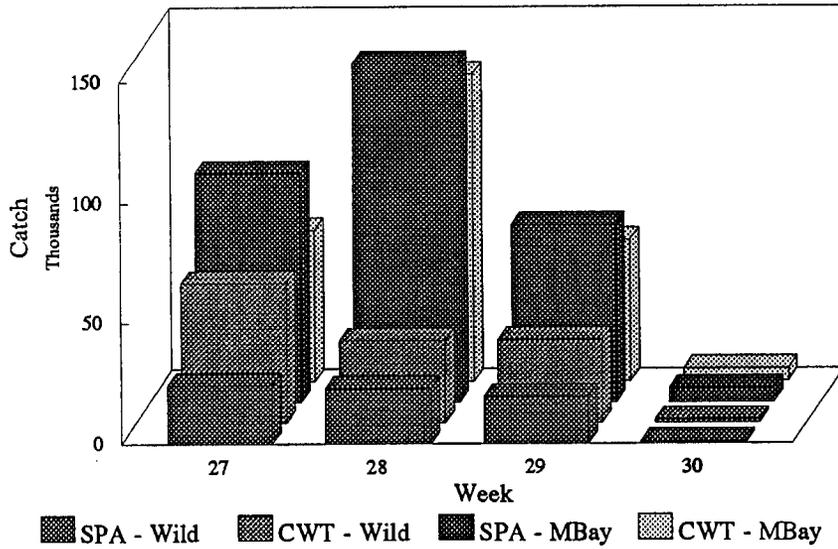


# Coghill Stock Interceptions - All Fisheries

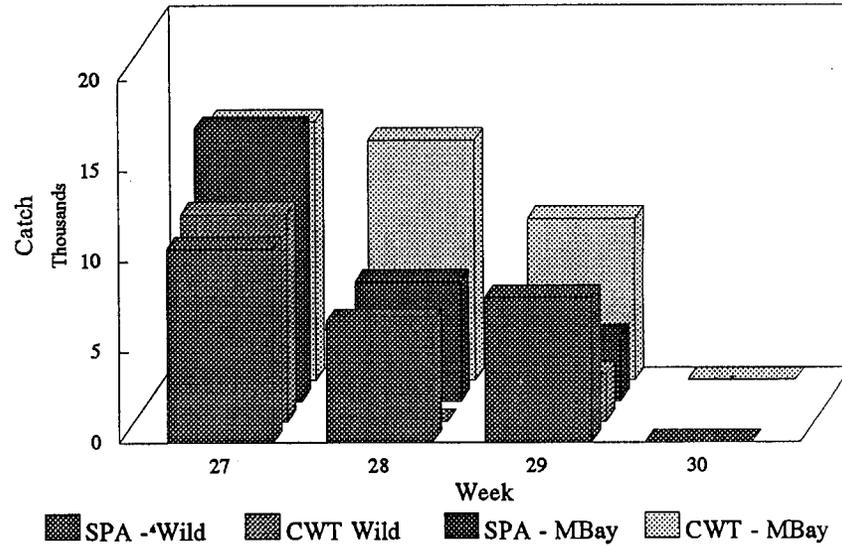


# Scale Patterns Analysis vs Coded Wire Tag Estimates

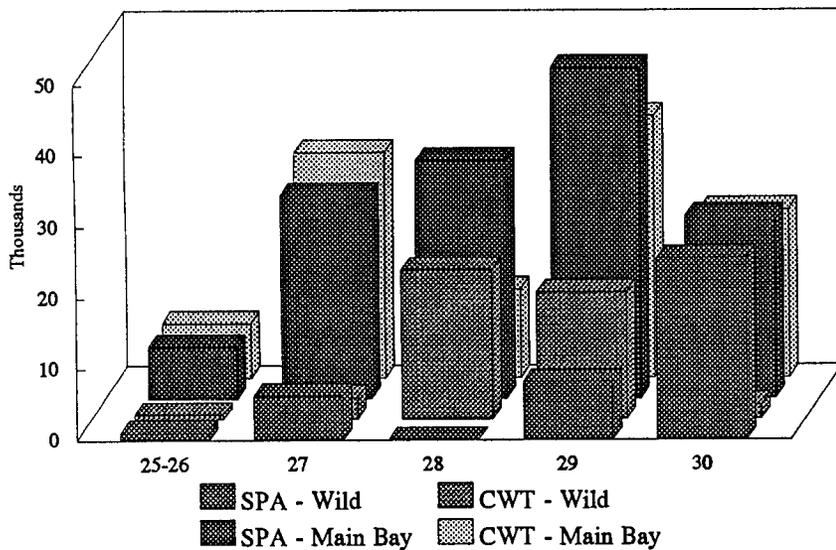
## CPF - District 225



## CPF - Esther Subdistrict



## HCR - Main Bay



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