

ALASKA LEGISLATURE COMMITTEE FILES DO 2

1206 ARRC GENERAL INFORMATION, TAPE LOGS - FISHERIES ISSUES

AS 24.40.031. Postponement of civil proceedings when a party or attorney is a member of the legislature. When it appears that a party or an attorney of record of a party to a civil action is a member of the legislature of this state, and that the legislature is in session, the action shall be continued until 10 days after the legislature has adjourned, unless the party or attorney upon the call of the action for trial waives the benefit of this section. When it appears that a party or an attorney of record of a party to a civil action is a member of the Alaska Legislative Council, the Legislative Budget and Audit Committee, or one of their subcommittees, the action shall be continued when the legislative council, budget and audit committee, or the subcommittee, as the case may be, is holding a meeting, unless the party or attorney upon the call of the action for trial waives the benefit of this section. When it is necessary to file a brief or memorandum of law in an action which has been continued under the provisions of this section, the action shall be continued for a time sufficient to prepare and file the brief or memorandum. (Sec 1 ch 131 SLA 1974)

Editor's note. - Section 2, ch 131, SLA 1974, provides: "In sec 1 of this Act, AS 24.40.031 has the effect of changing Rule 4C(f) of the Alaska Rules of Civil Procedure, by providing for the continuance of a trial of a civil action or other court proceeding when a party or attorney is a member of the legislature."

AS 29.18.590. Transfer of utilities to capital city. The development corporation, in cooperation with the capital city, shall arrange for and agree to an orderly schedule for transferring to the capital city ownership of, and financial and operational responsibility for utilities and any other facilities which the development corporation considers to be integral parts of the capital city infrastructure. Before January 1, 1985, the development corporation and the council of the capital city shall jointly retain independent consultants to study and determine an orderly schedule for transfer of these utilities and facilities to the capital city. The study shall consider the capabilities of the capital city and its existing and anticipated residents to finance the cost of these utilities and other facilities and their operating expenses. The consultants shall propose a recommended schedule for and terms of transfer which are commensurate with the capital city's existing and anticipated population, tax base and any other factors relating to its capability to finance and operate these facilities as they consider appropriate. The development corporation shall, after considering the consultants' report propose a schedule of and terms and conditions of the transfer to the capital city, which shall, upon review and approval by the

council, be included in an agreement between the development corporation and the capital city. If the development corporation and the capital city are unable to agree within six months after the development corporation submits its proposal, the development corporation shall submit the proposal to the Legislative Budget and Audit Committee which shall consider the proposal, and if the committee considers it appropriate to do so, shall recommend to the legislature legislation it considers desirable for the disposition of the utilities and other facilities. If the legislature does not enact legislation regarding the disposition within one year after the proposal is submitted to the Legislative Budget and Audit Committee, the development corporation may at any time thereafter sell or dispose of the utilities and facilities or any of them to a private person or entity or government body, or continue to operate them. (Sec. 3 ch 143 SLA 1978)

AS 37.05.210(2). The Department of Administration shall "file with the governor and with the legislative auditor before October 16 a report of the financial transactions of the preceding fiscal year and of the financial condition of the state as of the end of that year, with comments and supplementary data which he considers necessary; this report shall be printed for the information of the legislature and the public." (Sec 1 ch 11 SLA 1965)

AS 37.07.020. Responsibilities of the governor.

(d) The governor shall annually, before the convening of the legislature, report to the legislature through the Legislative Budget and Audit Committee the long-range fiscal and economic consequences of

(1) alternate levels of capitalization of the investment funds of the state; and

(2) alternative investment policy for the general fund surplus. (Sec 4 ch 18 SLA 1980)

AS 37.07.040. "The budget and management division shall...

(6) provide the legislative finance division with the budget information it may request; (7) provide the legislative finance division with an advance copy of the governor's budget workbooks by the first Monday in January of each year, except that following a gubernatorial election year the advance copy shall be provided by the second Monday in January.

AS 37.07.050. Each state agency, on the date and in the form and content prescribed by the division of budget and management, shall prepare and forward to the division and legislative finance division various program and budget information on the agency's program.

AS 37.07.080. Program execution.

(e) Transfers or changes between objects of expenditures or between allocations may be made by the head of a state agency upon approval of the division of budget and management. No transfers may be made between appropriations except as provided in an act making the transfers between appropriations.

(h) The increase of an appropriation item based on additional federal or other program receipts not specifically appropriated by the full legislature may be expended in accordance with the following procedures:

(1) the governor shall submit a revised program to the Legislative Budget and Audit Committee for review;

(2) 45 days shall elapse before commencement of expenditures under the revised program unless the Legislative Budget and Audit Committee earlier recommends that the state take part in the federally or otherwise funded activity;

(3) should the Legislative Budget and Audit Committee recommend with the 45-day period that the state not initiate the additional activity, the governor shall again review the revised program and if he determines to authorize the expenditure, he shall provide the Legislative Budget and Audit Committee with a statement of his reasons before commencement of expenditures under the revised program. (am sec 4, 5 ch 60 SLA 1979)

Effect of amendments. The 1979 amendment substituted "an act making the transfers between appropriations" for "(h) of this section" at the end of the second sentence of subsection (c) and rewrote subsection (h). As the rest of the section was not affected by the amendment, it is not set out.

Encroachment on executive power. - Vesting authority in the legislative Budget and Audit Committee to approve transfers between appropriation items violates the separation of powers doctrine and is an improper delegation of a legislative function to an interim committee. July 22, 1976, Op. Att'y Gen. Section 13(3) of the 1976 budget bill, which authorized the Budget and Audit Committee to supervise the governor's execution of the budget act, specifically over that portion of it which permitted him to transfer appropriation items, constituted an encroachment on executive power and offended the Alaska Constitution. July 22, 1976, Op. Att'y Gen.

AS 37.07.090(a) states in part, each agency shall submit a performance report to the budget and management division no later than September 1 for the preceding fiscal year. These reports shall be in the form prescribed by the division after consultation with the legislative finance division, and shall include identifying program objectives, assessment of program achievement, program accomplishments, etc. (Sec 1 ch 188 SLA 1970; am sec 5 ch 95 SLA 1971; am sec 6 ch 149 SLA 1977)

AS 37.10.087. Loans to bond construction funds. (a) When a construction fund or account established to receive the proceeds of state general obligation bonds is temporarily exhausted the commissioner of administration on recommendation of the state bond committee, and with the approval of the Legislative Budget and Audit Committee, may temporarily transfer money from the general fund to the bond construction fund or account.

(b) Transfers under (a) of this section may be made only when the commissioner of revenue determines and certifies to the state bond committee that there is in the general fund an amount sufficient to meet current cash expenditure needs of the state.

(c) The amount transferred to a construction fund or account under (a) of this section may not exceed anticipated receipts from the unsold general obligation bonds to be issued and the federal programs receipts estimated to be received from the general obligation bond construction program financed from the construction fund or account.

(d) Money transferred from the general fund under (a) of this section shall be immediately returned to the general fund as soon as sufficient money has been received in the bond construction fund or account to which the transfer was made. (Sec 1 ch 126 SLA 1972)

AS 37.10.088(c), in part, requires the Commissioner of Administration to submit a quarterly report of all advances and reimbursements under this section that are made to the University of Alaska against verified receivables from appropriations for grants and contracts from private or federal sources, to the Legislative Budget and Audit Committee. (Sec 8 ch 46 SLA 1977) (am sec 79 SLA 1978)

AS 37.12.100. The Alaska Renewable Resources Corporation "shall have its financial record audited annually by an independent outside auditor. The legislative auditor may prescribe the form and content of the financial record of the corporation and shall have access to these records at any time." (Sec 3 ch 179 SLA 1978)

AS 37.13.120(d). The board (of Trustees of the Alaska Permanent Fund) shall submit long-range and quarterly investment reports to the Legislative Budget and Audit Committee.

AS 37.13.120(k) "... the board (of Trustees of the Alaska Permanent Fund) shall establish and from time to time as necessary modify guidelines for the investment of the assets of the (Alaska Permanent Fund) corporation. Before adoption of any guidelines the guidelines shall be reported to the Legislative Budget and Audit Committee for review and comment.

AS 37.13.160 . Audits. The Legislative Budget and Audit Committee shall provide for an annual post audit and annual operational and performance evaluations of the corporation's investments and investment programs. (Sec 5 ch 18 SLA 1980)

Cross reference. - For the responsibilities of the Legislative Budget and Audit Committee, see AS 24.20.206.

AS 39.20.245(b). An employee of the legislature or of a legislative agency with the approval of the person authorizing the employment may donate accrued personal leave to another employee of the legislature or of a legislative agency only for use as leave for medical reasons. The official responsible for legislative employee accounts shall debit the donor's personal leave account and credit the donee's personal leave account, for medical reasons only, by converting the donated leave into cash value at the donor's rate of pay and reconverting the cash value to hours of leave at the donee's rate of pay. Leave donated under this subsection is not leave taken by the donor for purposes of AS 39.20.225'. (Ch 75 SLA 1981)

AS 43.08.035(b) states, in part, the commissioner of Revenue shall obtain approval of the Legislative Budget and Audit Committee for the expenditure of appropriations made from the general fund for the payment of interest and revenue anticipation notes issued under chapter 08.

AS 43.21.110(b) states, in part, the legislative auditor shall transmit to the legislature an annual report reviewing the actions of the Department of Revenue in administering AS 43.21 which relates to Oil and Gas Corporate Income Tax. (Sec 3 ch 110 SLA 1978). Repealed effective January 1, 1982, Sec 19, ch 116, SLA 1981.

AS 44.07.200. Money of the corporation. The legislative auditor may examine all the accounts and books of the Alaska Capital City Development Corporation and all other records and papers relating to its financial standing. The Legislative Budget and Audit Committee shall conduct an examination at least once every two years or may accept an independent audit of the corporation by a firm of certified public accountants made at the request of the corporation in satisfaction of the examination requirement. (Sec 2 ch 143 SLA 1978)

AS 44.07.270(5) states, in part, the Capital City Development Oversight Committee has the power to review all reports of the Alaska Capital City Development Corporation and of the Legislative Budget and Audit Committee relating to the corporation. (Sec 2 ch 143 SLA 1978)

AS 44.07.280 states, in part, the legislative audit division and the legislative finance division shall provide audits, reports and analyses requested by the Capital City Development Oversight Committee. (Sec 2 ch 143 SLA 1978)

AS 44.07.320. Annual report. The corporation shall submit to the governor and the Legislative Budget and Audit Committee, within three months after the end of the corporation's fiscal year, a complete financial report audited by a certified public accountant or firm of certified public accountants, which shows

- (1) its receipts and expenditures during its fiscal year;
 - (2) its assets and liabilities at the end of its fiscal year, including a schedule of its leases and mortgages and the status of reserve, special and other funds;
 - (3) the progress of fulfillment of the financial and economic projections contained in the general development and specific development plans; and
 - (4) its operations and accomplishments and any material problems encountered in implementing the development plan.
- (Sec 2 ch 143 SLA 1978)

AS 44.08.020(b) states, in part, the Commissioner of Community and Regional Affairs shall submit applications for reimbursement on business capital assets to the Legislative Budget and Audit Committee for a determination as to whether the decline in market value is attributable to the capital relocation initiative. (Sec 3 ch 59 SLA 1975)

AS 44.08.040(b) states, in part, the Commissioner of Community and Regional Affairs, or his designee, after consultation with the Legislative Budget and Audit Committee, may authorize withdrawals from the capital relocation revolving fund for the purpose of implementing the provisions of AS 44.08.020-AS 44.08.035. (Sec 7 ch 59 SLA 1975)

AS 44.46.090(a) states, in part, the Alaska Council on Science and Technology (established in the Office of the Governor) shall have its financial records audited by an independent certified public accountant. The internal auditor and the Legislative auditor shall jointly prescribe the form and content of the financial records of the council and shall be afforded access to these records at any time. (Executive Order No. 46 Sec 3 1980)

AS 44.66.020(b) relates to the "Sunset" process and states in part, that an agency program or activity designated in AS 44.66.020(a) shall be subject to termination during the regular legislative session convening four years after the preceding review and may be subject to termination during the

regular legislative session convening four years after the preceding review and may be subject to termination at any time upon the recommendation of the Legislative Budget and Audit Committee and the concurrence of the legislature as if under AS 44.66.030. (Sec 3 ch 149 SLA 1977)

AS 44.66.030 relates to selecting programs for Sunset purposes and states in part, that during the legislative session preceding each of the years set out in AS 44.66.020(a), the Legislative Budget and Audit Committee shall designate, not later than March 1 of those years, the programs and activities within each program category which shall be subject to termination in the next fiscal year. The recommendations of the Legislative Budget and Audit Committee shall be submitted to the respective houses of the legislature in the form of a bill which, if enacted into Law, would terminate those designated programs and activities on or before July 1 of the following year. (Sec 3 ch 149 SLA 1977).

AS 44.66.050(a) states, in part that the legislative committee of reference shall hold one or more hearings to evaluate agencies subject to "Sunset" review. The committee shall consider the performance audit of the activities of board, commission, or agency program, prepared by the Legislative Audit division as prescribed in AS 24.20.271(1). (Sec 3 ch 149 SLA 1977)"

AS 44.81.260(b)(1) states that the Legislative Audit Division has access to records of the Alaska Commercial Fishing and Agriculture Bank (CFAB) to perform an audit authorized under AS 44.81.270. (Ch 109 SLA 1981)

AS 44.81.270 relates to powers of the legislative auditor to audit CFAB. The legislative auditor may cause the bank to be audited in the manner and under the conditions prescribed by AS 24.20.271 for audits performed by the legislative audit division. The legislative audit division has free access to all books and papers of the bank that relate to its business and books and papers kept by a director, officer or employee relating to or upon which a record of its business is kept, and may summon witnesses and administer oaths or affirmations in the examination of the directors, officers or employees of the bank or any other person in relation to its affairs, transactions, and conditions, and may require and compel the production of records, books, papers, contracts, or other documents by court order if not voluntarily produced. (Ch 109 SLA 1981)

AS 44.81.280. The legislative auditor and his employees may not disclose information acquired by them in the course of an audit of the bank concerning the particulars of the business or affairs of a borrower of the bank or another person, unless the information is required to be disclosed by law or under a court order. (Ch 109 SLA 1981)

AS 44.82.180 states, in part, that the Alaska Gas Pipeline Financing Authority shall have its financial records audited annually by the legislative auditor or by a certified public accountant approved by the legislative auditor. The legislative auditor may prescribe the form and content of the financial records of the authority and is entitled to access to these records at any time. (Sec 2 ch 90 SLA 1978)

AS 44.83.190. Annual audit. The authority shall have its financial records audited annually by a certified public accountant. The legislative auditor may prescribe the form and content of the financial records of the authority and shall have access to these records at any time. (Sec 1 ch 278 SLA 1976)

AS 44.83.191. The Alaska Power Authority may not issue bonds except after 60 days notification of its intent to issue bonds is given to the governor and to the legislature, if the legislature is in session, or to the Legislative Budget and Audit committee, if the legislature is not in session. (Sec 24 ch 83 SLA 1980).

AS 44.88.200 '... the (Alaska Industrial Development) Authority shall have its financial records audited annually by the legislative auditor or by a certified public accountant approved by the legislative auditor. The legislative auditor may prescribe the form and content of the financial records of the authority and shall have access to these records at any time. (Sec 1 ch 64 SLA 1967)

AS 47.30.370 states, in part, that before implementation, the programs, plans and actions of the Department of Health and Social Services made under AS 47.30.350, which relate to the construction and equipping of mental health hospitals, except for the proposed geographic location of the mental health hospital, shall be reviewed by the Legislative Budget and Audit Committee.

AS 47.40.030 states, in part, anyone who solicits or receives funds from the Department of Health and Social Services for the cost of services for persons for whom the state has assumed legal responsibility, shall (1) upon request, submit a complete financial statement by an independent, certified public accountant to the division of legislative audit; (3) upon request, furnish the division of legislative audit all fiscal information, books, records, and accounts pertaining to services paid for under AS 47.40. (Sec 1 ch 136 SLA 1970)

FISHERIES ISSUES

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER

JAY S. HAMMOND, GOVERNOR

APR 24 1982

P.O. BOX 3-2000
JUNEAU, ALASKA 99802
PHONE (907) 465-4100

April 22, 1982

The Honorable Dick Randolph
Representative
Chairman, Administrative
Regulation Review Committee
Alaska State Legislature
Pouch V
Juneau, AK 99811

Dear Representative Randolph:

I am unsure about your April 1, 1982, letter's reference to my statements on the Alaskan chinook troll salmon Optimum Yield (OY). You state that I said that the reductions in OY were made for "purely political reasons." If I left you with that impression, I certainly regret it. The fact is that chinook salmon stocks up and down the Pacific Coast from Alaska to the Columbia River are in very serious biological trouble. Unless all appropriate management entities take some form of immediate action, I personally believe that the Alaska troll fishery will be drastically reduced within the next one or two cycles of chinook salmon.

Information available to us indicates that Southeastern Alaska chinook salmon stocks have been seriously depressed below minimum escapement levels for several cycles. Despite action to close terminal area fisheries to directed gill net pressure on these stocks and substantial closure in inside troll and recreational fisheries, these stocks have not significantly recovered. This lack of response to these other conservation measures is due primarily to expanding offshore troll effort intercepting these fish both as immatures and as matures some distance from their spawning grounds.

Last year further restrictions on the commercial troll fishery were instituted primarily as a measure to reverse this declining trend in Alaskan chinook stocks. The troll fishery was closed for the first month of the season during a time when Alaskan mature chinook spawners were thought to be migrating through our waters. Additionally, a ceiling was put on the troll fishery to prevent the fishery from making up the fish lost during this early period out of stocks of immatures later in the season--in effect taking this year's reduction out of next year's pocket. These actions were taken as part of a conscious plan to start rebuilding our Alaskan chinook stocks over three cycles (15 years). In point of fact, rebuilding our Alaskan chinook stocks in the short term could have required near total closure in the fishery--certainly an unacceptable socio-economic disruption of this fishery regardless of the purely biological merit of doing so.

The Department, the Alaska Board of Fisheries, and the North Pacific Fishery Management Council received considerable testimony this year on the status of chinook stocks. Last year's effort in Alaska did have a beneficial effect on Southeastern Alaska chinook escapements, but that was one of the few bright spots along the coast. This year's Southeastern Alaska chinook run is expected to be less than last year and, while the continued early closure will be beneficial, the results will probably not be as dramatic as they were in 1981. In addition to these factors, it appears that Canadian chinook escapements may be on the order of one-third of the desired level due to fishing pressure from both the United States and Canadian fleets. Rough estimates indicate that the Alaskan troll fishery is dependent primarily (perhaps up to 80%) on non-Alaskan chinook stocks and that perhaps half of these originate in British Columbia. If this is the case, Alaskans must take very seriously the severely depressed nature of these stocks.

The Board and Council additionally received information on problems with Columbia River chinook. The majority of the decline of these stocks over history is undoubtedly due to environmental disturbances caused by the dams on the Columbia. Dams result in very high losses of immature fish migrating downstream. On top of this, there is an unexplained problem with loss of mature spawners between The Dalles and McNary dams. Nearly half of the spawners passing The Dalles do not make it over McNary. This unexplained loss has skyrocketed in the last two years. Some fish are lost to uncounted spawning in lateral streams, but this is probably not significant. There are also undoubtedly errors in the accuracy of counting fish at both these dams, but it is hard to see why this should be so directional. The other two possible explanations, environmental problems and illegal fishing, are not at present evaluated. There is little doubt, however, that if the total number of fish reaching the Columbia or available to legal fisheries and escapement increased, many of the conservation and allocation problems in the Columbia River would be rectified. The States of Washington and Oregon have indicated they will be conducting research and expanded enforcement efforts on the river in an effort to both explain and reverse this recent phenomena. Nevertheless, despite extreme closures in Washington and Oregon commercial and recreational fisheries, insufficient chinook salmon are reaching the Columbia for tribal Indian allocation mandated by the United States Federal courts and escapement requirements. Clearing up the unexplained spawner loss will help, but not totally solve, the problem.

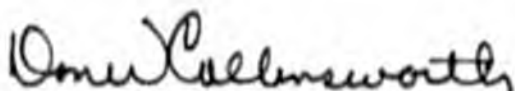
I concur that much of the data on the percentage of various stocks harvested in the Alaska fishery is weak. One of the few things that is clear is that we are severely dependent on stocks originating elsewhere and, therefore, on conservation of those stocks by other people. We are bringing as much influence to bear as possible through the Alaska Board of Fisheries, the North Pacific Fishery Management Council, US/Canada negotiations, and other forums, to assure that conservation objectives will be met. It is certainly true that we cannot conserve these stocks by ourselves; nevertheless, we do have a responsibility as one of the harvesters to contribute to that conservation.

April 22, 1982

We have made moves to assist our own stocks and we probably are going to have to share in the conservation reductions on some of the other stocks we are harvesting. Due to the uncertainties in the data and a lack of definitive response at this time from other entities, both the Board and Council felt it was unwarranted to dramatically reduce the Alaskan troll fishery by going to the lower end of the OY range. They did indicate some movement in a multiyear approach was desirable, assuming that other agencies and jurisdictions will follow suit, and reduced the catch limits some 13,000 chinook below last year's catch of 268,000. Allowance was made for Alaska hatchery produced chinook to not count against this quota. It appears likely that Canadian authorities will make one of their first really significant efforts toward conserving both their own chinook stocks and the Columbia River stocks by instituting a two week closure of their fishery in Northern British Columbia this summer. We certainly do not think this is a totally adequate response, but it is a step in the right direction.

I have included some information regarding the escapement statistics data you requested and the information used to compute the initial OY ceiling of 320,000 chinook in 1980. I wish to emphasize that this initial OY was an arbitrary average chosen to represent some stability in the troll fishery while the conservation needs of the stocks and the various stock contributions to this fishery were being assessed. Reductions from that point have been made in response to conservation requirements and the sharing by contributing fisheries in reaching those conservation goals. The reports enclosed include: the Department's Southeastern Chinook Salmon Management Plan for 1981 that sets forth background escapement data and our objectives for rebuilding these stocks; our 1981 season report to the Alaska Board of Fisheries that shows the results of 1981 management; and an interagency joint report on coastwide chinook salmon escapement concerns.

Sincerely,



for
Ronald O. Skoog
Commissioner

Enclosures

The years 1971-1977 were used for this derivation of ABC because (1) the use of recent catch data (7 years as opposed to 25 years) is essential in understanding changes and trends which occur in biological systems over time and (2) a seven-year period takes into account a recent full cycle of spawning for major chinook and coho stocks. Additionally, 1971 was the initiation of the first reliable fish ticket information which clarified landings by area for the first time.

Cape Suckling is an established boundary for management and statistical areas and separates Southeastern Alaska waters from the remainder of Alaskan waters. There is no known information which shows a significant mixing of stocks originating west and east of Cape Suckling.

4.9 Estimates of Future Stock Conditions

The future status of salmon in the offshore Alaska troll fishery is unclear. Non-Alaska fall chinook in the fishery presently are strongly supported by West Coast hatchery production. The future condition of these stocks will be closely tied to existing hatchery programs and the success of new coast-wide rehabilitation and enhancement programs. Hatcheries for spring chinook have generally been financially unsuccessful. Until this problem is solved, maintaining spring chinook stocks will depend largely on natural production. Reversing the severely depressed status of Southeastern Alaska chinook can only be achieved by stern conservation efforts that eliminate or restrict further harvest of these fish. Efforts are underway in Southeastern Alaska to develop spring chinook brood stocks for artificial propagation programs. However, these efforts will remain small until successful techniques are established. Until that time, conserving these stocks with an ABC approaching zero is vitally important.

Prospects for enhancement of coho production in Southeastern Alaska. In addition to conventional hatchery programs, include several different approaches to artificially recruiting smolts to ocean nurseries. These include utilizing estuarine and freshwater culture in net pens, floating raceways, and unused natural rearing areas. There may be a significant number of unused freshwater nurseries for coho production in Southeastern Alaska that are not accessible to natural runs due to geologic features of the area. Active research on these approaches is underway at several locations. Caution should guide their use and development, especially in relation to simultaneously maintaining viable native stocks in adjacent areas (Heard, in press).

4.10 Non-target Species Mortality: Other Than Salmon

This is not a serious problem with the ocean salmon fishery. Although species such as the Pacific halibut (*Hippoglossus stenolepis*), rockfish (genus *Sebastes*), and lingcod (*Ophiodon elongatus*) may be caught, the total catch is minor.

5.0 Catch and Capacity Descriptors

5.1 Data and Analytical Approaches (5.1.1, 5.1.2)

There is insufficient data to quantitatively define capacities. Harvesting characteristics (section 3.5.2) and catch trends (section 3.2.1.3) substantiate the values for DAC and DAIH discussed below.

5.2 Domestic Annual Capacity (DAC)

Capacity of the power troll fishery to harvest salmon is exceedingly difficult to estimate. In 1978, approximately 100 vessels with a mean keel length of 41 feet made landings from offshore waters. Because of the increased efficiency of the vessels in the fishery, due to technological advances in electronic gear and increased hold capacity, it is estimated that the DAC is substantially greater than the largest catch that could be realized from the offshore fishery.

Provisions of limited entry will restrict the number of fishermen who could conceivably fish; this does not necessarily limit fishing effort.

Larger boats and increased experience on the part of the fishermen plus increasing sophisticated electronic gear is the means by which effort can increase without numbers of fishermen increasing.

5.3 Expected Domestic Annual Harvest (DAIH)

Based upon past performance of the troll fleet and market trends, the DAIH for chinook and coho is expected to be equivalent to OY.

5.4 Domestic Annual Processing Capacity

Domestic processors have in the past been able to process the entire domestic harvest of troll-caught salmon, and it is expected that they will be able to process the harvest of salmon allowed by this plan.

6.0 Optimum Yield (OY)

Optimum Yield (OY) may be obtained by a plus or minus deviation from ABC because of economic, social, or ecological objectives as established by law and the public participation processes. Ecological objectives where they relate primarily to biological purposes and factors are included in the determination of ABC. Where ecological objectives relate to resolving conflicts and accommodating competing uses and

values, they are included as appropriate with economic and social objectives in the determination of OY.

The optimum yield for all species in all areas is based on the acceptable biological catch for the years 1971-1977 modified by social and economic considerations. The OYs are expressed as ranges determined from past mean catches plus and minus one standard error.

It is necessary to take into consideration MSY, ABC, and OY based on all species, all areas, for purposes of management. The plan, however, is subdivided and deals primarily with the one active fishery in the FCZ off Southeast (east of Suckling) as this is the area of council jurisdiction as addressed by the FCMA.

Catches of pink, chum, and sockeye salmon are relatively insignificant in the troll fishery. The 1971-1977 average annual combined catch of pink, chum, and sockeye is less than five percent of the total offshore troll salmon harvest (Table 13, Appendix 4.0). Pink, chum, and sockeye salmon caught in the offshore are not considered significant in the overall optimum yield determination. Any catch likely to be realized in the troll fishery will be an acceptable-by-catch.

Alternatives Considered

Two other concepts of optimum yield were considered in the development of this plan: (1) a greatly restricted OY essentially prohibiting trolling in the FCZ by certain time and area closures and (2) allowing OY and effort to expand according to current trends in the fishery (see also EIS, Section 12.5). The argument to greatly restrict and reduce the OY was considered unacceptable given the basic definitions of OY which mandates a consideration of relevant socio-economic factors. The preponderance of public testimony and socio-economic data did support this conclusion by showing the grave social and economic dislocation and hardships that would occur in several geographic areas and villages in Southeast Alaska. Likewise any expansion of effort or greatly increased catch or catch potential was not consistent with a principle management objective of controlling the expansion of the fishery. Neither was this alternative considered optimal in terms of the carefully considered balance of social and economic values and the biological principles of mixed stock management.

West of Cape Suckling: The optimum yield for waters west of Cape Suckling addressed by this plan is fully utilized by existing inshore net fisheries. (Table 6)

East of Cape Suckling: The optimum yield for salmon east of Cape Suckling is set equal to ABC (See Table 6).

BILLING CODE 5010-22-01

TABLE 6

OPTIMUM YIELDFor Salmon East and West of Cape Suckling

| | Pounds (of fish in thousands) | Numbers |
|----------------|----------------------------------|----------------|
| Chinook | | |
| West | 5,063 - 6,390 | 225 - 284 |
| East | 4,424 - 4,950 | 286 - 320 |
| Sockeye | | |
| West | 43,531 - 65,811 | 6,697 - 9,817 |
| East | 3,566 - 4,717 | 669 - 885 |
| Coho | | |
| West | 3,636 - 4,600 | 505 - 631 |
| East | 7,420 - 9,053 | 841 - 1,100 |
| Pink | | |
| West | 29,972 - 45,599 | 7,382 - 11,051 |
| East | 25,716 - 37,489 | 6,494 - 9,467 |
| Chum | | |
| West | 30,288 - 35,687 | 4,071 - 4,796 |
| East | 12,232 - 17,813 | 1,292 - 1,883 |

PROPOSED MANAGEMENT PLAN FOR
SOUTHEAST ALASKA CHINOOK SALMON RUNS IN 1981

SOUTHEAST REGION
FISHERIES MANAGEMENT DIVISIONS
ALASKA DEPARTMENT OF FISH AND GAME

JANUARY 1981
JUNEAU, ALASKA 99801

PROPOSED MANAGEMENT PLAN FOR
SOUTHEAST ALASKA CHINOOK SALMON RUNS IN 1981

TABLE OF CONTENTS

| | <u>Page</u> |
|--|-------------|
| Considerations relating to the proposed management plan for Southeast Alaska Chinook Salmon Runs in 1981 | 1 |
| <u>Data Tables and Figures</u> | |
| Preliminary 1980 Southeast Alaska Salmon Harvest Data and Miscellaneous Historical Chinook Salmon Harvest Data | 5 |
| Chinook Salmon Escapements to Selected Southeast Alaska Systems Including Preliminary Data from 1980 Spawning Ground Surveys | 12 |
| Minimum Escapement Goals for Chinook Salmon Runs to Selected Southeast Alaska Systems, Estimated Potential Chinook Salmon Harvest from All Southeast Alaska Systems from Minimum Escapement Goals and from Current Escapement Levels | 19 |
| Estimated Potential Increase of Chinook Salmon Spawners to Southeast Alaska Systems from Proposed Regulations and Projected Future Increases in Chinook Salmon Harvests from Increased Escapements and from Supplemental Production | 25 |

Considerations Relating to the Proposed Management Plan
for Southeast Alaska Chinook Salmon Runs in 1981

Brief

Southeast Alaska chinook salmon runs continue to be depressed far below historical levels and recovery trends have not yet occurred in spite of significant restrictions imposed on Southeast Alaska fisheries, particularly since 1975. Regulations proposed for the 1981 season are directed primarily toward establishing the increasing trends in escapements required to rebuild these depressed runs.

A reduction of 10% or 32,000 fish from the 1980 Optimum Yield (OY) catch ceiling (the upper end of the OY range) of 320,000 established for Southeast Alaska commercial fisheries by joint action of the Alaska Board of Fisheries and the North Pacific Fisheries Management Council in March 1980 is being recommended for the 1981 season. This reduction will be achieved through selected time/area regulations designed to allow mature fish of Alaskan origin to reach spawning grounds in Southeast Alaska in 1981 and to reduce the harvest of immature salmon in 1981 thereby further increasing the number of available mature spawners in 1982-83.

On the basis of certain assumptions regarding current harvest and escapement levels, production rates and the effect of the proposed regulations, it is estimated that approximately three 5-year cycles or 15 years will be required to rebuild Southeastern Alaskan chinook salmon stocks to the point where minimum escapement goals are achieved. Increased harvestable surpluses would be expected in the 4th cycle.

Status of Southeast Alaska Chinook Salmon Stocks

Commercial catches of chinook salmon by Southeast Alaska fisheries averaged 320,000 fish annually during the 1970's or about half of the 610,000 average annual catch taken during the peak decade of the 1930's (Fig. 1, p. 7). Significant contributions to this harvest by non-Alaskan stocks and the absence of effective stocks separation techniques required to determine stocks components in these highly mixed stock fisheries prevent direct inferences being made from total catches as to the status of Southeast Alaska chinook salmon stocks. However, historical catches by Southeast Alaska fisheries operating in more terminal areas near local chinook producing systems such as the Alek, Taku and Stikine Rivers also reflect serious declining trends (Figs. 3-5, pp. 9-11).

Chinook salmon escapements to Southeast Alaska systems are estimated to have averaged some 25,000 to 34,000 fish during the last three year period 1978-80 or less than half of the total minimum escapement goal of 66,000 to 80,000 (Fig. 7, p. 29). As a result, production in terms of average annual harvest from Southeast Alaska stocks is also thought to be less than half of the harvest which might be expected if minimum escapement goals were being achieved (Tables 5-6, pp. 21-24). Although some improvement was observed in escapements to the Taku and Stikine Rivers in 1980, escapements to other surveyed systems were generally

poor (Table 2, p. 13). Evidence relating to production from the 1975-76 brood years suggest that while escapements to the Taku River in 1981 might be expected to be of the same relative magnitude as in 1980, escapements in 1982 will probably drop below the 1980 level in the absence of further catch restrictions.

Proposed 1981 Management Plan

In 1980 the Troll fishery took approximately 94% of the total Southeast Alaska commercial chinook salmon harvest of 321,000 (Table 1, p. 6). The remaining 6% was taken incidental to the harvest of other species by gillnet fisheries (2%) and seine fisheries (4%). There are currently no directed net fisheries for chinook salmon in Southeast Alaska, the last directed gillnet fisheries being closed in 1975-76. Thus, regulations designed to increase escapements of Alaskan chinook salmon are directed primarily toward the troll fishery, however regulations are also being proposed to further reduce the incidental catch of mature chinook spawners by the gillnet fishery and to reduce the port harvest of mature fish (Table 7, p. 26).

At current harvest levels, only minimal--if any--improvement is expected in the condition of Southeast Alaskan chinook salmon stocks. Therefore, a reduction of 10% or 32,000 fish from the 1980 Optimum Yield (OY) catch ceiling (the upper end of the OY range) of 320,000 is being recommended for the purpose of rebuilding depressed Alaskan chinook salmon stocks. This reduction made through selected area/time regulations is expected to result in an increase of approximately 4,800 spawners in 1981 increasing to 6,100 in 1982 and to 7,500 in 1983 as unharvested immature fish reach maturity (Table 9, p. 28).

The strategy being proposed for 1981 to achieve increased escapements to Southeast Alaska systems in 1981 consists primarily in delaying the opening of the troll fishery in outer coastal areas until May 15 (compared to April 15 in 1980) coordinated with an additional early May 8-day closure in the '8 on - 6 off" troll fishery schedule in the Icy Straits - Chatham Straits corridor areas (Table 7, p. 26). This is expected to allow spring spawning Alaska chinook salmon to move into inside terminal areas where current fishing regulations provide a high degree of protection.

Regulations are also being proposed for an outward adjustment of the inner Taku River gillnet fishery boundary to reduce the incidental catch of mature chinook during the first three weeks of the sockeye fishery beginning June 15 and a 10-14 day closure of the Juneau area sport fishery in early May.

The balance of the proposed 10% or 32,000 fish reduction remaining after the above regulations are implemented would be achieved by a final adjustment near the end of the summer troll fishing season in September or October. A tentative closing date of September 20 has been proposed coincident with the closing date for coho salmon. The magnitude of the end of the season adjustment is difficult to predict because of the unknown ability of the troll fishery to compensate for the early season time/ area restrictions by increasing effort in other time/area strata

thereby changing the seasonal/spatial distribution of the chinook harvest and because regulations required for management of coho salmon runs which also affect the chinook salmon fishery are not completely determined until inseason.

The end of the season adjustment would have the effect of reducing the harvest of immature Alaskan chinook stocks. Based on the estimate derived here for the expected increase of 7,500 Alaska spawners when the full effect of the proposed regulations is realized in 1983, the expected reduction in harvest of non-Alaskan stocks would be about 24,500 fish minus an estimated loss of 1,800 fish due to natural mortality in the immature Alaska stock component of the reduction (Table 8, p. 27) or about 22,700.

The proposed harvest reduction of 32,000 chinook salmon, the majority of which will result from a reduction of the troll fishery harvest, will represent an estimated reduction of approximately 7% of the total value of all species of salmon harvested by the troll fishery in 1980 (Fig. 9, p. 31).

Long Term Projections for Recovery of Southeast Alaska Chinook Runs

Minimum escapement goals for Southeast Alaska chinook salmon systems currently being surveyed have been established based on the maximum number of spawners observed since surveys were initiated in the early 1950's--except for the Situk River where weir counts date back to 1928 (Table 4, p. 20). Since the 1950's Southeast Alaska chinook stocks appear to have been substantially depressed below historical high levels and based on harvest patterns of fisheries in terminal areas, even maximum escapements observed during this latter period do not appear to have reached or exceeded optimum escapement levels.

Expanding average minimum escapement goals for surveyed systems to non-surveyed systems within each of the run size categories--major, medium and minor--results in an estimated total minimum escapement goal for all Southeast Alaska systems of 66,000 to 80,000 fish. Average escapements observed during 1978-80 are estimated to have been 25,000 to 34,000 indicating a 42,000 to 46,000 spawner deficit (Fig. 7, p. 29).

Assuming that escapements initially increase as predicted and that these additional spawners produce at the rate of 3:1 with 0.5 of the 3 fish being harvested by fisheries not currently included under the OY ceiling (thus resulting in an effective rate of increasing escapements of 2.5:1), minimum escapement goals would be expected to be reached during the third 5-year cycle or 1991-95 (Fig. 7, p. 29). While a small harvestable surplus above minimum escapement goals would be expected in 1991-95, an average harvestable surplus of approximately 70,000 fish would be expected in the fourth 5-year cycle 1996-2000.

In addition to the expected increased harvestable surplus of approximately 70,000 fish beginning in 1996-2000 as a result of rebuilding natural Alaska chinook runs, supplemental hatchery production in Southeast Alaska is expected to contribute an increasing number of chinook salmon to Southeast Alaska fisheries of up to 90,000 fish when planned capacity production is reached in the 1990's (Fig. 8, p. 31).

Evaluation of Effectiveness of Proposed Regulations

In the final analysis, effectiveness of the proposed fishery regulations must be evaluated in terms of achievement of increased production and harvest available to the fisheries. However, as indicated above, a significant harvestable surplus above increased production necessary for achieving minimum escapement goals would not be expected until the fourth 5-year cycle or 1996-2000. Thus, final evaluation is obviously a long term process.

For immediate and intermediate term evaluation, two basic approaches will be used. The first most immediate expected effect of the proposed regulations is increased chinook salmon escapements to Southeast Alaska systems. Spawning ground surveys are currently conducted on 9 of the 33 known chinook salmon spawning systems in Southeast Alaska (Fig.6, p. 14) and further expansion of the surveys is being planned. Increased escapements should be observed in these surveys. Second, catches of chinook salmon in both directed and incidental fisheries near terminal areas should reflect increases in the abundance of Alaska chinook salmon.

Evaluation of observed changes in spawner abundance resulting from reduction of the harvest of mature fish in 1981 will be made in the fall of 1981. However, evaluation of the effect of reducing the immature harvest in 1981 will not be possible until these fish mature and spawn in 1982 and 1983.

PRELIMINARY 1980 SOUTHEAST ALASKA SALMON HARVEST DATA
AND MISCELLANEOUS HISTORICAL CHINOOK SALMON HARVEST DATA

PRELIMINARY

Table 1. 1980 Southeast Alaska Region Commercial Salmon Harvest
(Based on Fish Tickets Compiled as of 11/18/80 - ADF&G)

| Gear | Numbers of Fish in 1000's | | | | | Total |
|---------------------|---------------------------|-------|---------|--------|-------|--------|
| | King | Coho | Sockeye | Pink | Chum | |
| Power Troll | 249 | 528 | 2 | 161 | 8 | 948 |
| Hand Troll | 51 | 180 | 1 | 116 | 5 | 353 |
| All Troll | 300 | 708 | 3 | 277 | 15 | 1,301 |
| Gill Net | 8 | 233 | 586 | 1,485 | 609 | 2,921 |
| Seine | 13 | 195 | 531 | 12,716 | 1,028 | 14,483 |
| TOTAL ^{1/} | 321 | 1,136 | 1,120 | 14,478 | 1,650 | 18,705 |

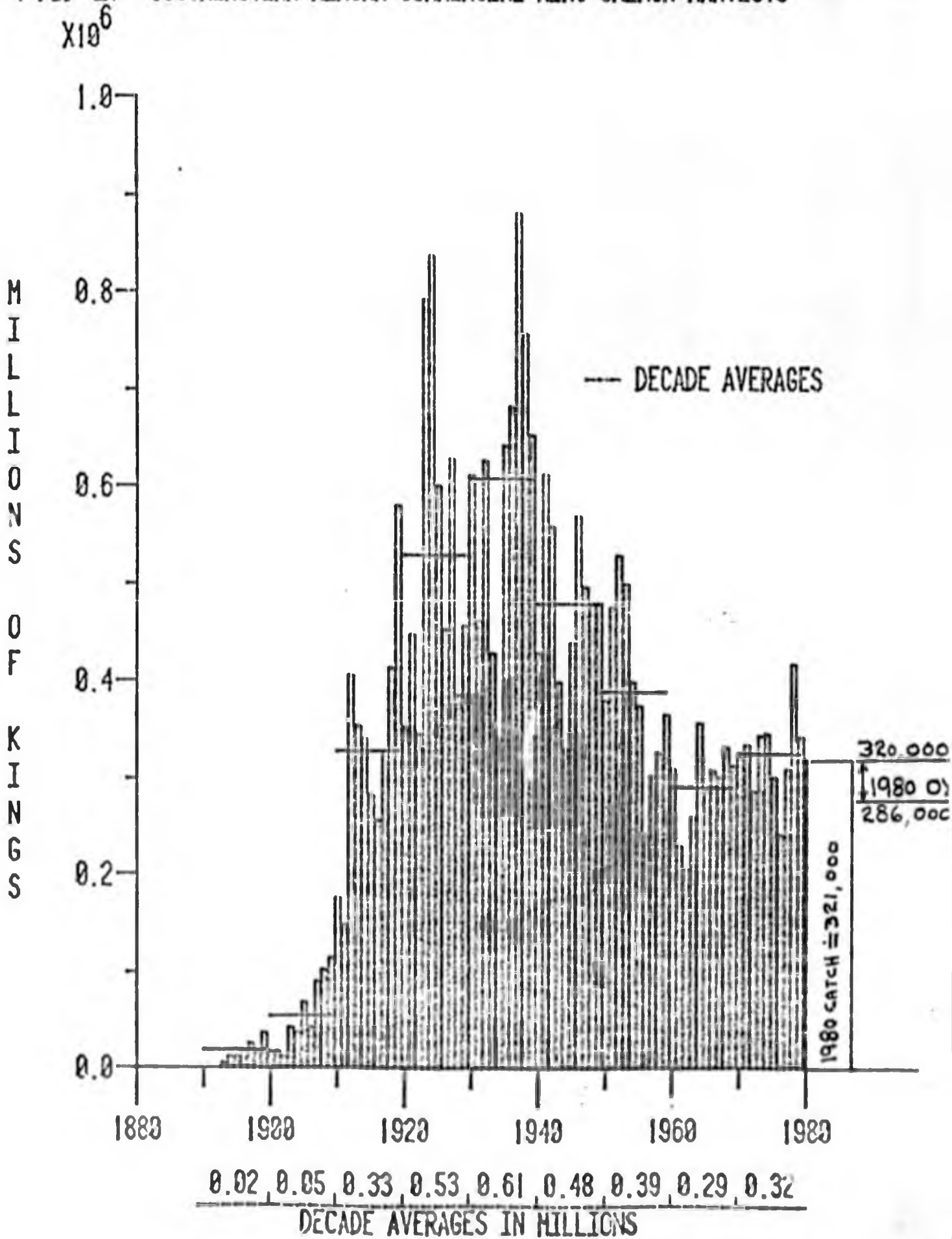
Percentage Harvest By Gear Type Within Species

| Gear | King | Coho | Sockeye | Pink | Chum | Total |
|-------------|------|------|---------|------|------|-------|
| Power Troll | 78% | 46% | + | 1% | + | 5% |
| Hand Troll | 16% | 16% | + | 1% | + | 2% |
| All Troll | 94% | 62% | + | 2% | 1 | 7% |
| Gill Net | 2% | 21% | 52% | 10% | 37% | 16% |
| Seine | 4% | 17% | 48% | 88% | 62% | 77% |
| TOTAL | | | | | | 100% |

Percentage Species Composition Within Gear Type

| Gear | King | Coho | Sockeye | Pink | Chum | Total |
|-------------|------|------|---------|------|------|-------|
| Power Troll | 26% | 56% | + | 17% | 1% | 100% |
| Hand Troll | 15% | 51% | + | 33% | 1% | 100% |
| All Troll | 24% | 54% | + | 21% | 1% | |
| Gill Net | + | 8% | 20% | 51% | 21% | 100% |
| Seine | + | 1% | 4% | 88% | 7% | 100% |
| TOTAL | 2% | 6% | 6% | 77% | 9% | 100% |

FIG. 1. SOUTHEASTERN ALASKA COMMERCIAL KING SALMON HARVESTS



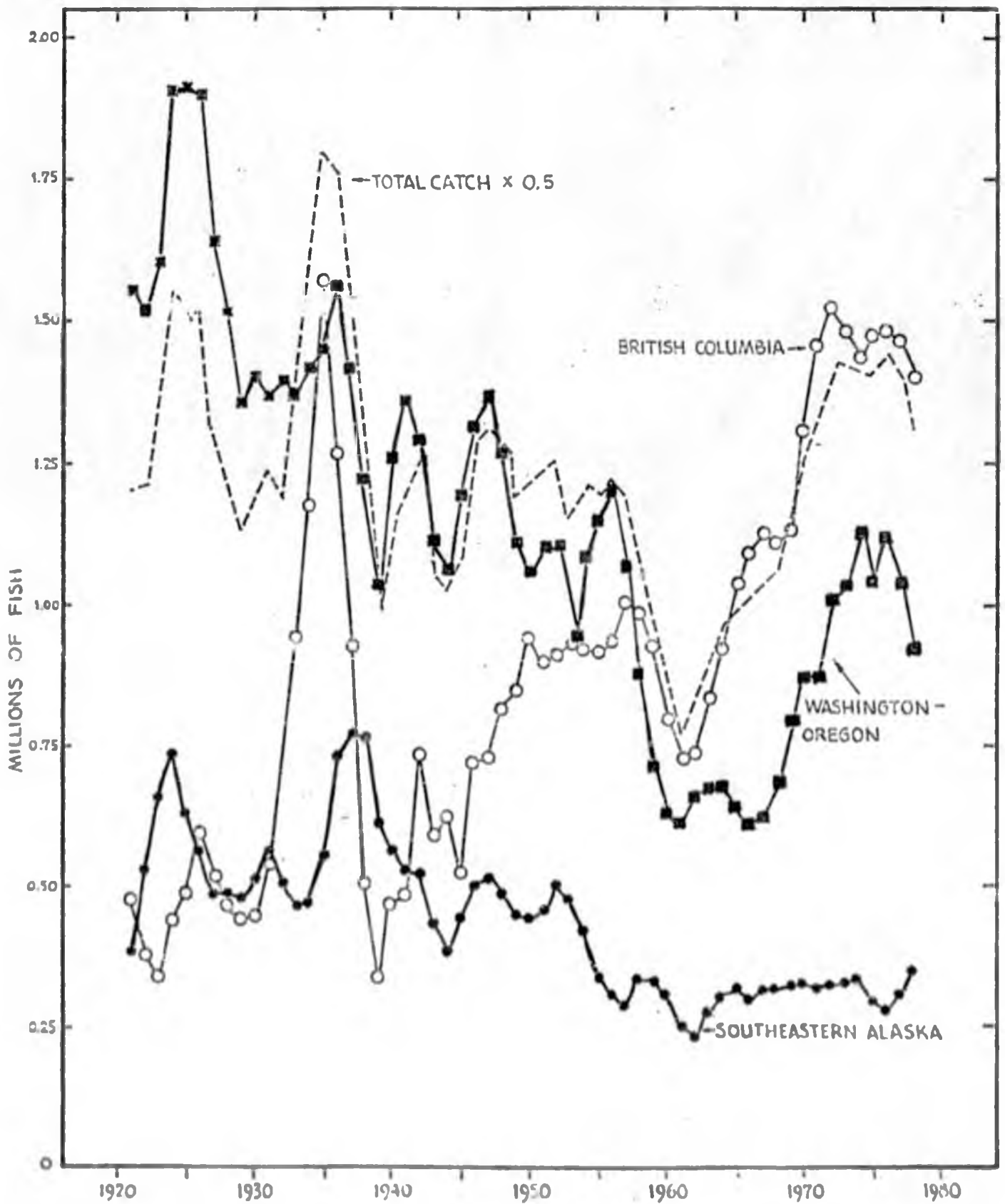


Figure 2. Annual catch of chinook salmon by commercial fisheries in Southeastern Alaska, British Columbia and Washington-Oregon, 1920-79, smoothed by moving averages of 3's. (Data are from INPFC Bull. 39, PFMC and Canada Dept. of Fisheries and Oceans.)

FIG. 3. SOUTHEASTERN ALASKA KING SALMON HARVESTS
 IN THE GILLNET FISHERIES
 $\times 10^5$

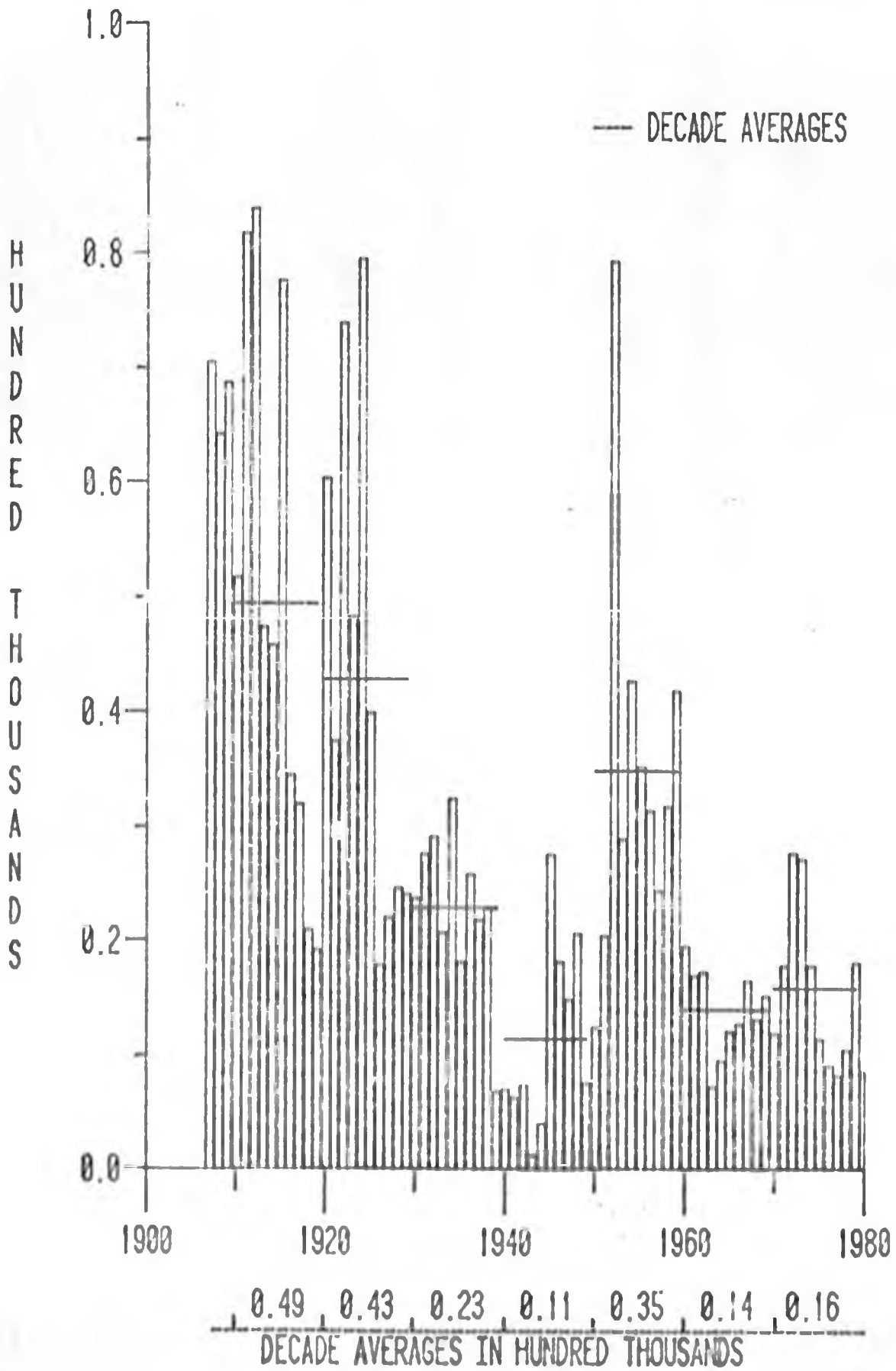
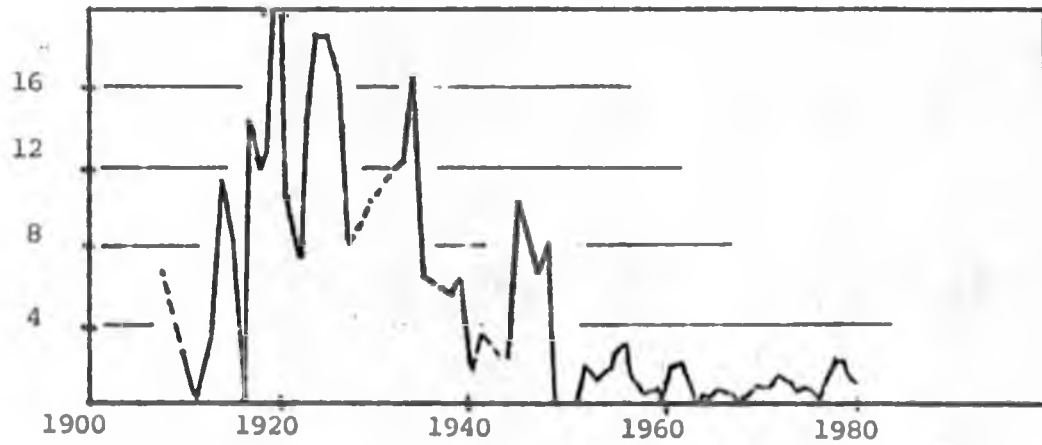
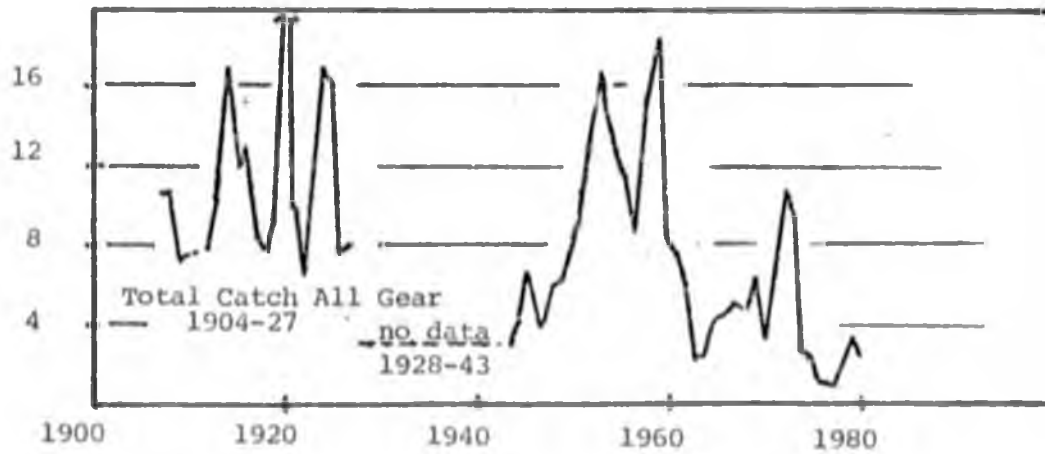


Figure 4. Historical Chinook Salmon Catches in Terminal Area Fisheries on the Alsek, Taku and Stikine Rivers

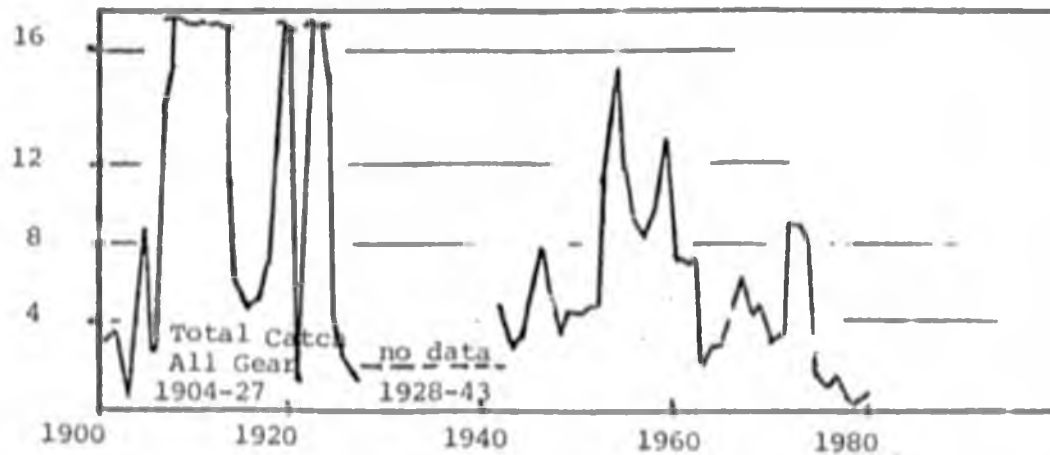
Alsek River Gillnet Harvest



Taku River Gillnet Harvest



Stikine River Gillnet Harvest



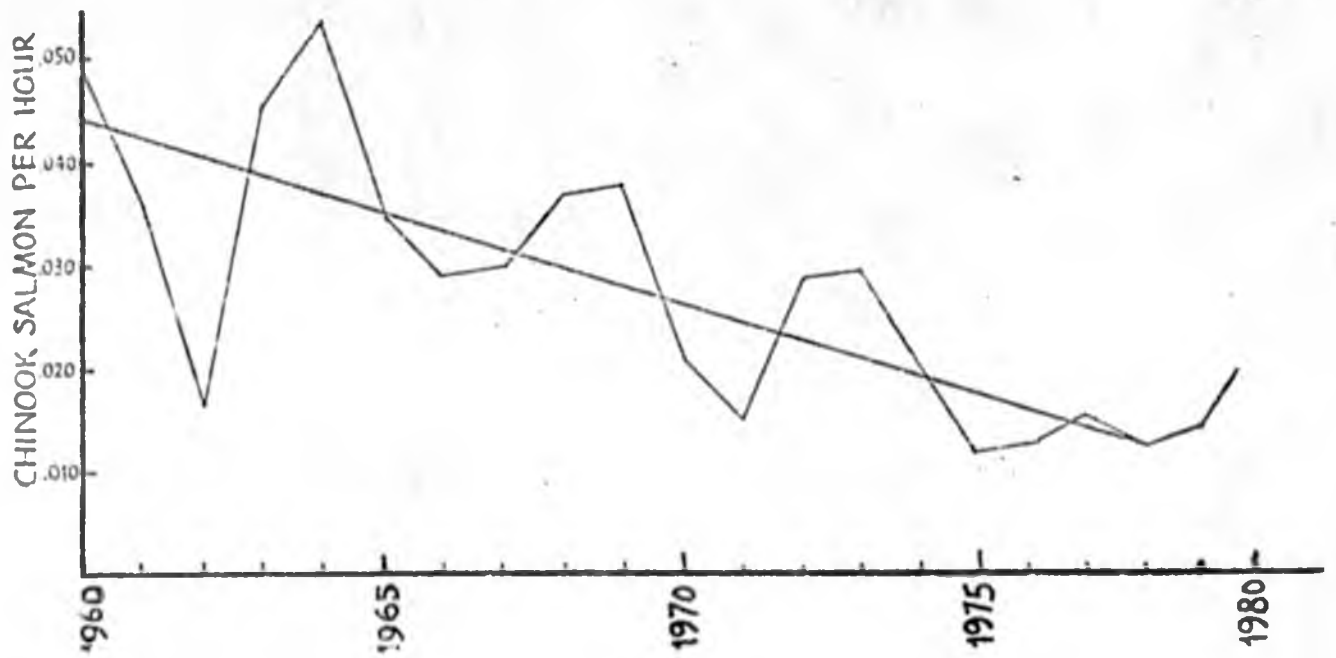


Figure 5. Trend in mean catch of chinook salmon per hour in the Juneau area sport fishery, 1960-1980. (Data are from ADFG.)

CHINOOK SALMON ESCAPEMENTS TO SELECTED SOUTHEAST ALASKA
SYSTEMS INCLUDING PRELIMINARY DATA FROM 1980 SPAWNING
GROUND SURVEYS

Table 2. Relative magnitude or ranking of 1980 chinook salmon escapements to surveyed Southeast Alaska systems (ADF&G-80).

Data Sources: ADF&G and Canadian Dept. Fisheries management records.

| <u>System (Tributary)</u> | <u>Year Records Began</u> | <u>Primary Type of Surveys</u> ^{1/} | <u>1980 Escapement Estimate</u> | <u>Ranking of 1980 Escape. Relative To Largest Observed</u> |
|---|---------------------------|--|---------------------------------|---|
| <u>Major Producers (runs of 10,000 and greater - 3 systems)</u> | | | | |
| Alsek (Kluckshu) | 1976 ^{2/} | Weir/Total | 1,401 | 4 of 5 |
| Taku (Nakina) | 1951 | Aerial/Peak | 4,500 | 5 of 21 |
| Stikine (Little Tahltan) | 1956 | Aerial/Peak | 2,137 | 1 of 12 |
| <u>Medium Producers (runs of 1500 to 10,000 - 8 systems)</u> | | | | |
| Situk | 1928 | Weir/Total | 1,125 | 28 of 37 |
| Unuk | 1961 | Aerial/Peak | 1,052 | 4 of 13 |
| Chickamin | 1961 | Aerial/Peak | 261 | 8 of 13 |
| Wilson/Blossum | 1961 | Aerial/Peak | 89 | 7 of 10 |
| Keta | 1948 | Aerial/Peak | 192 | 12 of 16 |
| <u>Minor Producers (runs of 1500 and less - 22 systems)</u> | | | | |
| King Salmon | 1957 | Aerial/Peak | 70 | 9 of 12 |

^{1/} "Weir/Total" counts are counts of fish moving past a weir and are generally considered total counts of spawning fish within the range of precision normally associated with weir counts, say +10%. "Aerial/Peak" counts are aerial survey estimates of fish on the spawning grounds during peak spawning periods. These estimates generally account for 50% or more of the total spawning population surveyed depending on physical characteristics of the watershed and migration and spawning characteristics of the particular stock. "Aerial/Peak" counts are used as indices or relative measures of total spawner abundance.

^{2/} Aerial/Peak counts for the Kluckshu tributary of the Alsek River began in 1965.

Figure 6. Chinook salmon systems in Southeastern Alaska.

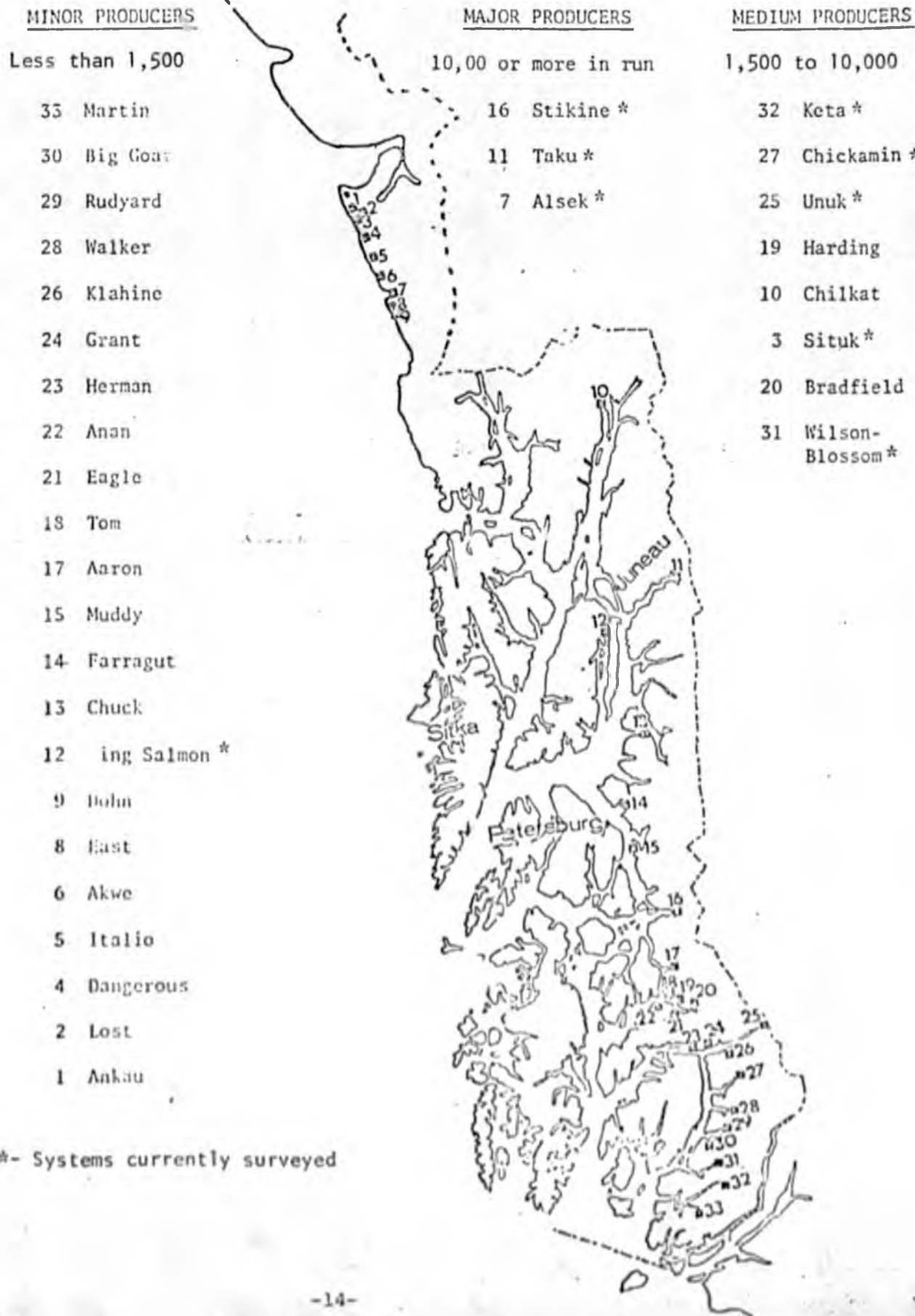


Table 3. Estimates of spawning abundance of chinook salmon for selected Southeast Alaska systems (cont.).

| Year | Taku River | | | | | | Method |
|------|------------|---------|------------|-----------|-------|--------|-------------|
| | Nakina | Kowatua | Tatsamenie | Dudidontu | Tseta | Nahlin | |
| 1951 | 5,000 | | | 400 | 100 | 1,000 | Aerial/Peak |
| 1952 | 9,000 | | | | | | Aerial/Peak |
| 1953 | 7,500 | | | | | | Aerial/Peak |
| 1954 | 6,000 | | | | | | Aerial/Peak |
| 1955 | 3,000 | | | | | | Aerial/Peak |
| 1956 | 1,380 | | | | | | Aerial/Peak |
| 1957 | 1,500* | | | | | | Aerial/Peak |
| 1958 | 2,500* | | | 4,500 | | 2,500 | Aerial/Peak |
| 1959 | 4,000* | | | | | | Aerial/Peak |
| 1960 | Poor | | | | | | Aerial/Peak |
| 1961 | Poor | | | | | | Aerial/Peak |
| 1962 | | | | 25 | 81 | 216 | Aerial/Peak |
| 1963 | | | | | | | Aerial/Peak |
| 1964 | | | | | | | Aerial/Peak |
| 1965 | 3,050 | 200 G | 50 G | 100 | 18 | 37 | Aerial/Peak |
| 1966 | | 14 G | 150 G | 267 | 150 | 300 | Aerial/Peak |
| 1967 | | 250 G | | 600 | 350 | 300 | Aerial/Peak |
| 1968 | | 1,100 E | 800 E | 640 | 230 | 450 | Aerial/Peak |
| 1969 | | 3,300 E | 800 E | | | | Aerial/Peak |
| 1970 | | 1,200 E | 530 E | 10 | 25 | 26 | Aerial/Peak |
| 1971 | | 1,400 E | 320 E | 165 | | 473 | Aerial/Peak |
| 1972 | 1,000 | 130 G | 170 G | 103 | 80 | 280 | Aerial/Peak |
| 1973 | 2,000 | 100 G | 250 G | 200 | | 300 | Aerial/Peak |
| 1974 | 1,800 | 235 G | 120 G | 20 | 4 | 900 | Aerial/Peak |
| 1975 | 1,800 | | | 15 | | 274 | Helicopter |
| 1976 | 3,000 | 341 G | 620 G | 40 | | 725 | Helicopter |
| 1977 | 3,850 | 580 G | 573 E | 18 | | 650 | Helicopter |
| 1978 | 1,620 | 490 G | 550 E | | 21 | 624 | Helicopter |
| 1979 | 2,110 | 430 G | 750 E | 9 | | 857 | Helicopter |
| 1980 | 4,500 | 450 G | 905 E | 152 | | 1,531 | Helicopter |

G = water glacial; E = water clear

*Counts of total river not conducted - comparison made from carcass weir enumeration.

Table 3. Estimates of spawning abundance of chinook salmon for selected Southeast Alaska systems (cont.).

| <u>Stikine River</u> | | | | |
|----------------------|--------------------------|----------------------------|----------------------|---------------|
| <u>Year</u> | <u>Little Tahltan R.</u> | <u>Mainstem Tahltan R.</u> | <u>Andrews Creek</u> | <u>Method</u> |
| 1956 | 493 | | | Air |
| 1957 | 199 | | | Air |
| 1958 | 790 | | | Air |
| 1959 | 198 | | | Air |
| 1960 | 346 | | | Air |
| 1967 | 800 | | | Air |
| 1975 | 700 | 2,908 E | | Helicopter |
| 1976 | 400 | 129 | 436(w) | Helicopter |
| 1977 | 800 | G | 448(w) | Helicopter |
| 1978 | 632 | 756 G | 430(w) | Helicopter |
| 1979 | 1,166 | 2,118 G/E | 433(w) | Helicopter |
| 1980 | 2,137 | 960 G | 593(w) | Helicopter |

G = water glacial; E = water clear; (w) = weir count

| <u>Situk River</u> | | | | | |
|--------------------|----------------|---------------|-------------|----------------|---------------|
| <u>Year</u> | <u>Chinook</u> | <u>Method</u> | <u>Year</u> | <u>Chinook</u> | <u>Method</u> |
| 1928 | 1,224 | Weir | 1950 | 2,011 | Weir |
| 1929 | 3,559 | Weir | 1951 | 2,780 | Weir |
| | | | 1952 | 1,459 | Weir |
| 1930 | 1,455 | Weir | 1953 | 1,040 | Weir |
| 1931 | 2,967 | Weir | 1954 | 2,101 | Weir |
| 1932 | 1,978 | Weir | 1955 | 1,571 | Weir |
| 1933 | | | | | |
| 1934 | 1,486 | Weir | 1971 | 964 | Float |
| 1935 | 638* | Weir | 1972 | 400 | Float |
| 1936 | 816 | Weir | 1973 | 510 | Float |
| 1937 | 1,293* | Weir | 1974 | 702 | Float |
| 1938 | 2,663* | Weir | 1975 | 1,180 | Float |
| 1939 | 2,117 | Weir | 1976 | 1,933 | Weir |
| | | | 1977 | 1,872 | Weir |
| 1940 | 903 | Weir | 1978 | 1,103 | Weir |
| 1941 | 2,594 | Weir | 1979 | 1,754 | Weir |
| 1942 | 2,543 | Weir | | | |
| 1943 | 3,546* | Weir | 1980 | 1,125 | Weir |
| 1944 | 2,906 | Weir | | | |
| 1945 | 1,458 | Weir | | | |
| 1946 | 4,284 | Weir | | | |
| 1947 | 5,077 | Weir | | | |
| 1948 | 3,744 | Weir | | | |
| 1949 | 1,978 | Weir | | | |

*Weir was washed out part of the time.

Table 3. Estimates of spawning abundance of chinook salmon for selected Southeast Alaska systems.

King Salmon River (Admiralty Island)

| <u>Year</u> | <u>Chinook</u> | <u>Method</u> |
|-------------|----------------|------------------|
| 1957 | 200 | Foot |
| 1961 | 117 | Foot |
| 1971 | 94 | Foot |
| 1972 | 90 | Foot |
| 1973 | 211 | Foot |
| 1974 | 104 | Foot |
| 1975 | 42 | Foot |
| 1976 | 65 | Foot, Helicopter |
| 1977 | 134 | Foot, Helicopter |
| 1978 | 57 | Foot, Helicopter |
| 1979 | 88 | Foot, Helicopter |
| 1980 | 70 | Foot, helicopter |

Keta River

| <u>Year</u> | <u>Chinook</u> | <u>Method</u> |
|-------------|----------------|---------------|
| 1948 | 500 | Foot |
| 1950 | 210 | Foot |
| 1951 | 120 | Foot |
| 1952 | 462 | Foot |
| 1953 | 156 | Foot |
| 1954 | 300 | Air |
| 1955 | 1,000* | Air |
| 1956 | 1,500* | Air |
| 1957 | 500* | Air |
| 1961 | 44 | Foot |
| 1975 | 203 | Helicopter |
| 1976 | 84 | Helicopter |
| 1977 | 230 | Helicopter |
| 1978 | 392 | Helicopter |
| 1979 | 426 | Helicopter |
| 1980 | 192 | Helicopter |

Blossom River

| <u>Year</u> | <u>Chinook</u> | <u>Method</u> |
|-------------|----------------|---------------|
| 1961 | 68 | Foot |
| 1963 | 825 | Air |
| 1972 | 500 | Air |
| 1974 | 166 | Helicopter |
| 1975 | 153 | Helicopter |
| 1976 | 68 | Helicopter |
| 1977 | 112 | Helicopter |
| 1978 | 143 | Helicopter |
| 1979 | 54 | Helicopter |
| 1980 | 89 | Helicopter |

*Probably mixed chinook & chum salmon

Chickamin River

| <u>Year</u> | <u>Chinook</u> | <u>Method</u> |
|-------------|----------------|---------------|
| 1961 | 336 | Foot |
| 1962 | 775 | Air |
| 1963 | 450 | Air |
| 1969 | 345 | Air |
| 1972 | 860 | Air |
| 1973 | 229 | Helicopter |
| 1974 | 176 | Helicopter |
| 1975 | 351 | Helicopter |
| 1976 | 122 | Helicopter |
| 1977 | 235 | Helicopter |
| 1978 | 181 | Helicopter |
| 1979 | 140 | Helicopter |
| 1980 | 261 | Helicopter |

Unuk River

| <u>Year</u> | <u>Chinook</u> | <u>Method</u> |
|-------------|----------------|-----------------------|
| 1961 | 673 | Foot |
| 1962 | 331 | Air |
| 1963 | 1,070 | Air |
| 1968 | 650 | Air |
| 1969 | 475 | Air |
| 1972 | 885 | Air |
| 1973 | 182 | Air |
| 1975 | 55 | Helicopter |
| 1976 | 198 | Helicopter, weir-foot |
| 1977 | 1,166 | Helicopter, weir-foot |
| 1978 | 1,765 | Helicopter, weir-foot |
| 1979 | 576 | Helicopter, weir-foot |
| 1980 | 1,052 | Helicopter, weir-foot |

MINIMUM ESCAPEMENT GOALS FOR CHINOOK SALMON RUNS TO SELECTED
SOUTHEAST ALASKA SYSTEMS, ESTIMATED POTENTIAL
CHINOOK SALMON HARVEST FROM ALL SOUTHEAST ALASKA SYSTEMS
FROM MINIMUM ESCAPEMENT GOALS AND FROM CURRENT
ESCAPEMENT LEVELS.

Table 4. Minimum chinook salmon escapement goals and percent achievement in 1980 for selected spawning systems in Southeast Alaska (ADF&G-80).

| <u>System (Tributary)</u> | <u>Type of Count</u> ^{1/} | <u>Minimum Escape. Goal</u> ^{2/} | <u>1980 Survey</u> | |
|---|------------------------------------|---|----------------------------|----------------------------------|
| | | | <u>Escapement Estimate</u> | <u>% of Minimum Escape. Goal</u> |
| <u>Major Producers (runs of 10,000 and greater - 3 systems)</u> | | | | |
| Alsek (Kluckshu) | Weir/Total | 3,200 ^{3/} | 1,401 | 44% |
| Taku (Naxina) | Aerial/Peak | 9,000 | 4,500 | 50% |
| Stikine (Little Tahltan) | Aerial/Peak | 2,100 | 2,137 | 100% |
| | | | Average | 65% |
| <p>Note: Management escapement goals are currently established only for the above tributaries of the major producing systems since these tributaries have been most consistently and extensively surveyed. These tributaries are currently thought to account for approximately 64%, 40% and 25% respectively of total system production.</p> | | | | |
| <u>Medium Producers (runs of 1,500 to 10,000 - 8 systems)</u> | | | | |
| Situk | Weir/Total | 5,100 | 1,125 | 22% |
| Unak | Aerial/Peak | 1,800 | 1,052 | 58% |
| Chickamin | Aerial/Peak | 900 | 261 | 29% |
| Wilson/Blossum | Aerial/Peak | 800 | 89 | 11% |
| Keta | Aerial/Peak | 500 | 192 | 38% |
| | | | Average | 32% |
| <u>Minor Producers (runs of 1,500 and less - 22 systems)</u> | | | | |
| King Salmon | Aerial/Peak | 200 | 0 | 35% |

^{1/} "Weir/Total" counts are counts of fish moving past a weir and are generally considered total counts of spawning fish within the range of precision normally associated with the weir counts, say +10%. "Aerial/Peak" counts are aerial survey estimates of fish on the spawning grounds during the peak spawning period. These estimates generally account for 50% or more of the total spawning population surveyed depending on physical characteristics of the watershed and migration and spawning characteristics of the particular stock. "Aerial/Peak" counts are used as indices or relative measures of total spawner abundance.

^{2/} The minimum escapement goals are maximum escapements observed during surveys conducted generally since the 1950's (except for the Situk River). These are not considered estimates of optimum escapement, but represent current minimum management goals.

^{3/} Similarities in early historical catch patterns for the Alsek, Taku and Stikine terminal fisheries suggest that the current minimum escapement goal for the Alsek may be proportionately lower than the optimum level than for the Taku and Stikine.

Table 5. Estimates of potential average annual harvest from current minimum escapement goals for natural chinook salmon runs to Southeast Alaska systems (cont. p. 1/2) (ADF&G-80).

| <u>Assumptions</u> | | | | | | | | |
|--|---|--------|-------------------------|---------|----------|--------------------------------|--------------------------------|-------------------------|
| Average Counting Rate for Aerial/1/ Peak Surveys | Average Return Per Spawner Ratio (Harvest Rate) | Alsek | Major Systems (3 Total) | | | Medium Systems (8 Total) | Minor Systems (22 Total) | All Systems Total |
| | | | Taku | Stikine | Subtotal | | | |
| 50% | 1.5:1 (33%) | 2,500 | 15,000 | 8,400 | 25,900 | 9,500 | 4,400 | 39,800 |
| | 2:1 (50%) | 5,000 | 30,000 | 16,800 | 51,800 | 19,100 | 8,800 | 79,700 |
| | 2.5:1 (60%) | 7,500 | 45,000 | 25,200 | 77,700 | 28,600 | 13,200 | 119,500 |
| | 3:1 (67%) | 10,000 | 60,000 | 33,600 | 123,600 | 38,200 | 17,600 | 179,400 |
| | 3.5:1 (71%) | 12,500 | 75,000 | 42,000 | 129,500 | 47,800 | 22,000 | 199,300 |
| 75% | 1.5:1 (33%) | 2,500 | 15,000 | 5,600 | 23,100 | 7,200 | 3,000 | 33,300 |
| | 2:1 (50%) | 5,000 | 30,000 | 11,200 | 46,200 | 14,400 | 5,900 | 65,500 |
| | 2.5:1 (60%) | 7,500 | 45,000 | 16,800 | 69,300 | 21,600 | 8,900 | 94,800 |
| | 3:1 (67%) | 10,000 | 60,000 | 22,400 | 92,400 | 28,800 | 11,800 | 133,000 |
| | 3.5:1 (71%) | 12,500 | 75,000 | 28,000 | 115,500 | 36,000 | 14,800 | 166,300 |
| Average | | | | | 75,500 | 25,100 | 11,000 | 111,700 |
| High | | | | | 129,500 | 47,800 | 22,000 | 199,300 |
| Low | | | | | 23,100 | 7,200 | 3,000 | 33,300 |
| Approximate Percent Contribution | | | | | 70% | 20% | 10% | |

1/ Unless specified otherwise in the explanatory notes below.

Table 5. Estimates of potential average annual harvest from current minimum escapement goals for natural chinook salmon runs to Southeast Alaska systems (cont. p. 2/2) (ADF&G-80).

Notes on Computations and Assumptions

1) Major Systems

Alesek - An average Kluckshu contribution of 64% is assumed based on the average observed Kluckshu escapement compared to escapement to other tributaries. Thus the total minimum escapement goal for the Alesek system is $3,200 \div .64 = 5,000$ fish.

Taku - An average Nakina contribution of 40% is assumed. An aerial/peak survey counting rate of 75% is assumed for the Nakina tributary. Thus, the total minimum escapement goal for the Taku system is $(9,000 \div .40) \div .75 = 30,000$ fish.

Stikine - An average Little Tahltan contribution of 25% is assumed. Thus, the total minimum escapement goal for the Stikine system is $2,100 \div .25 = 8,400$ plus an adjustment for the aerial/peak counting rate.

2) Medium Systems

The weir/total minimum escapement goal of 5,100 fish is used for the Situk River. Based on the other four medium systems surveyed, an average aerial/peak minimum escapement goal per system of 1,000 fish is assumed. At a 50% counting rate for aerial/peak surveys, this yields a total minimum escapement goal of 19,100 fish for all eight medium systems while a 75% counting rate yields 14,400.

3) Minor Systems

An average aerial/peak minimum escapement goal per minor system of 200 fish is used. At a 50% counting rate for aerial/peak surveys, this yields a total minimum escapement goal of 8,800 fish for all 22 minor systems while a 75% counting rate yields 5,900.

Table 6. Estimates of potential average annual harvest from average 1978-80 escapements to chinook salmon systems in Southeast Alaska (cont. p. 1/2) (ADF&G-80).

| <u>Assumptions</u> | | | | | | | | |
|---|--|--------------|--------------------------------|----------------------------------|-----------------|---------------------------------|---------------------------------|--------------------------|
| <u>Average Counting Rate for Aerial/1/ Peak Surveys</u> | <u>Average Return Per Spawner Ratio (Harvest Rate)</u> | <u>Alsek</u> | <u>Major Systems (3 Total)</u> | | | <u>Medium Systems (8 Total)</u> | <u>Minor Systems (22 Total)</u> | <u>All Systems Total</u> |
| | | | <u>Taku</u> | <u>Stikine</u> | <u>Subtotal</u> | | | |
| 50% | 1.5:1 (33%) | 1,620 | 4,570 | 5,250 | 11,440 | 3,500 | 1,580 | 16,520 |
| | 2:1 (50%) | 3,250 | 9,140 | 10,500 | 22,890 | 7,010 | 3,170 | 33,070 |
| | 2.5:1 (60%) | 4,880 | 13,710 | 15,750 | 34,340 | 10,520 | 4,760 | 49,620 |
| | 3:1 (67%) | 6,500 | 18,280 | 21,000 | 45,780 | 14,020 | 6,340 | 66,140 |
| | 3.5:1 (71%) | 8,120 | 22,850 | 26,250 | 57,220 | 17,520 | 7,920 | 82,660 |
| 75% | 1.5:1 (33%) | 1,620 | 4,570 | 3,500 | 9,690 | 2,560 | 1,060 | 13,310 |
| | 2:1 (50%) | 3,250 | 9,140 | 7,000 | 19,390 | 5,110 | 2,110 | 26,610 |
| | 2.5:1 (60%) | 4,880 | 13,710 | 10,500 | 29,090 | 7,660 | 3,160 | 39,910 |
| | 3:1 (67%) | 6,500 | 18,280 | 14,000 | 38,780 | 10,220 | 4,220 | 53,220 |
| | 3.5:1 (71%) | 8,120 | 22,950 | 17,500 | 48,470 | 12,780 | 5,280 | 66,530 |
| | | | | Average | 31,710 | 9,090 | 3,960 | 44,760 |
| | | | | High | 57,220 | 17,520 | 7,920 | 82,660 |
| | | | | Low | 9,690 | 3,500 | 1,060 | 13,310 |
| | | | | Approximate Percent Contribution | 70% | 20% | 10% | |

1/ Unless specified otherwise in the explanatory notes below.

Table 6. Estimates of potential average annual harvest from average 1978-80 escapements to chinook salmon systems in Southeast Alaska (cont. p. 2/2) (ADF&G-80).

Notes on Computations and Assumptions

1) Major Systems

Alsek - An average Kluckshu contribution of 64% is assumed based on the average observed Kluckshu escapement compared to escapements to other tributaries. The average 1978-80 weir/total escapement to the Kluckshu was 2,082 fish. Thus the estimated total 1978-80 average escapement to the Alsek system is $2,082 \div .64 = 3,253$.

Taku - An average Nakina contribution of 40% is assumed. An aerial/peak survey counting rate of 75% is assumed. The average 1978-80 aerial/peak escapement to the Nakina was 2,743 fish. Thus the estimated total 1978-80 average escapement to the Taku system is $(2,743 \div .40) \div .75 = 9,143$.

Stikine - An average Little Tahltan contribution of 25% is assumed. The average 1978-80 aerial/peak escapement to the Little Tahltan was 1,312 fish. Thus the estimated total 1978-80 aerial/peak escapement to the Stikine system is $1,312 \div .25 = 5,248$ plus an adjustment for the assumed aerial/peak counting rate.

2) Medium Systems

The average 1978-80 weir/total escapement for the Situk River is 1,327. The average 1978-80 aerial/peak escapement per system for the four medium systems thus surveyed is 406. Expanding these rates to all eight systems yields average 1978-80 total escapement estimates of 7,011 assuming a 50% aerial/peak counting rate and 5,114 assuming a 75% counting rate.

3) Minor Systems

The average 1978-80 aerial/peak escapement for the King Salmon River is 72 fish. Expanding this to all 22 minor systems yields 3,168 if a 50% counting rate is assumed and 2,112 if a 75% counting rate is assumed.

ESTIMATED POTENTIAL INCREASE OF CHINOOK SALMON SPAWNERS
TO SOUTHEAST ALASKA SYSTEMS FROM PROPOSED REGULATIONS
AND PROJECTED FUTURE INCREASES IN CHINOOK SALMON
HARVESTS FROM INCREASED ESCAPEMENTS AND FROM
SUPPLEMENTAL PRODUCTION

Table 7. Estimated Potential Increase of King Salmon Spawners to Southeast Alaska Systems in 1981 from Proposed Harvest Regulation Changes (ADF&G-80)

| <u>Proposed Regulation Changes</u> | <u>1978-⁸⁰ Average Period Catch</u> | | <u>Est. Increase of Alaskan King Spawners in 1981</u> |
|---|--|--------------------------------------|---|
| | <u>Mature and Immature of all Origins</u> | <u>Est. Mature of Alaskan Origin</u> | |
| 1) May 15 opening date for troll fishery in outer coastal areas (compared to April 15 in 1980) | 20,100 | 3,350 | 2,510 |
| 2) Eleven fishing days in May for troll fishery in intermediate corridor areas 9, 10, 12 and 14 (compared to 19 fishing days in 1980) | 2,780 | 2,080 | 1,560 |
| 3) Move inner boundary of Taku R. gillnet fishery outward to Bishop Pt./Cooper Pt. area during first 3 weeks of sockeye fishery (Compared to Jaw Pt. in 1980) | 1,270 | 640 | 480 |
| 4) Juneau area sport fishery closure from May (1) to (14). | 400 | 300 | <u>220</u> |
| | | TOTAL | 4,770 |

Notes and Assumptions

- 1) It is assumed that (i) one third of the kings harvested in outer coastal areas during Mid-April to mid-June are of Alaskan origin, (ii) 50% of the Alaskan kings are mature and (iii) 75% of the mature Alaskan kings will evade corridor and terminal area fisheries and spawn.
- 2) It is assumed that (i) 75% of kings harvested in corridor areas 9, 10, 12 and 14 in early May are mature spawners and (ii) 75% of these spawners will evade other corridor and terminal area fisheries and spawn. (A sample of king salmon harvested by troll gear in late April 1980 in the inside portion of district 14 (Icy Straits) consisted of 80% mature fish.)
- 3) It is assumed that (i) 50% of kings harvested incidentally during the first three weeks of the Taku/Snettisham gillnet sockeye fishery beginning the third Monday in June are mature spawners and (ii) 75% of these will evade this fishery and the Canadian river fishery and spawn. (A sample of 1,491 kings harvested in 1980 by the Taku/Snettisham gillnet fishery consisted of 47% mature fish.)
- 4) It is assumed that (i) 75% of kings harvested in the Juneau area sport fishery during early May are mature fish of Alaskan origin and (ii) 75% of these will evade other terminal area fisheries and spawn.

Table 8. Estimated Potential Increase in Chinook Salmon Spawners to Southeast Alaska Systems Per 10,000 Fish Reduction in the Harvest of Immature Fish (ADF&G-80).

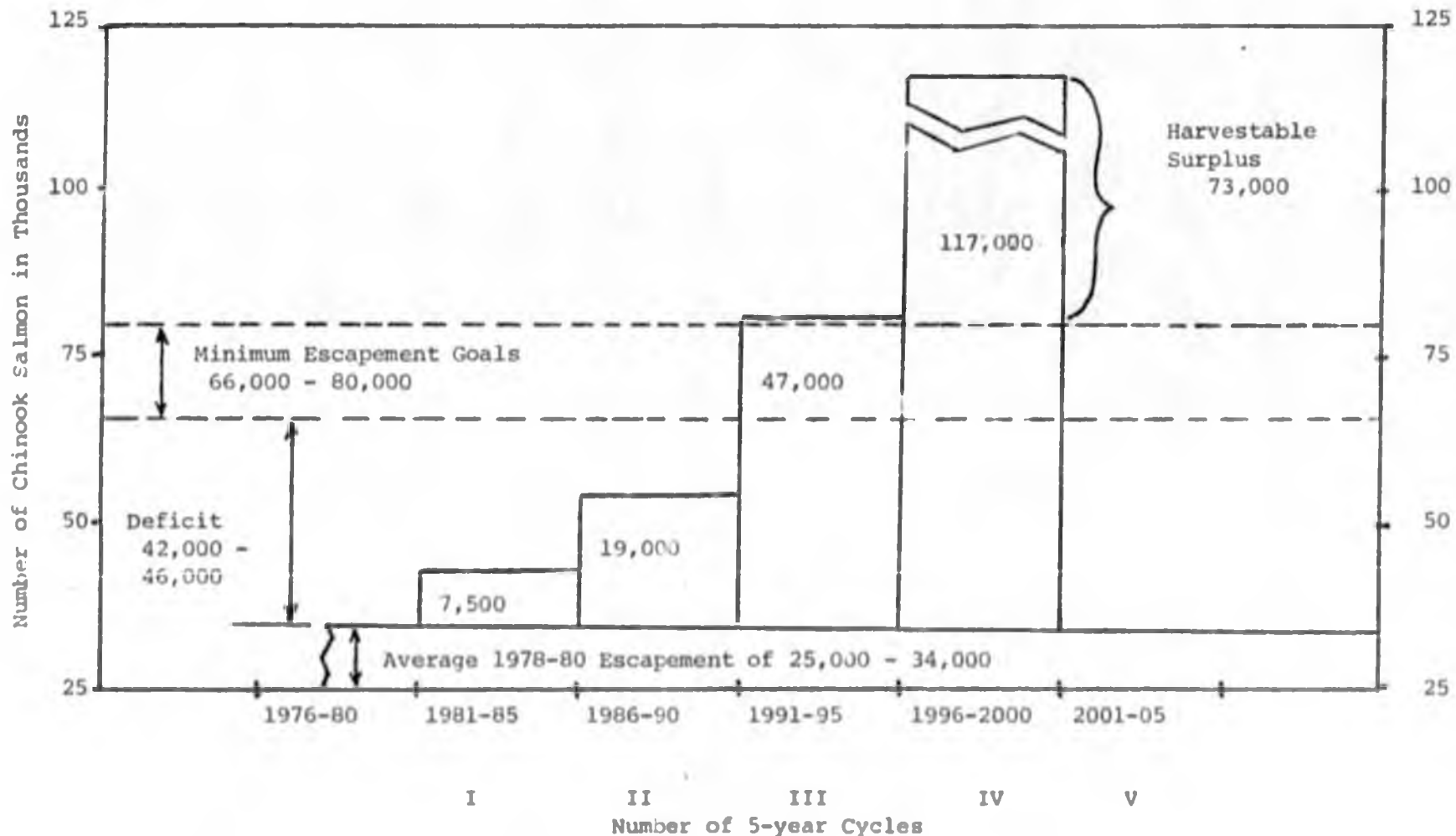
| | Assumed Percent of Immature Fish of Alaskan Origin | | |
|--|--|--------|--------|
| | 10% | 20% | 30% |
| | 10,000 | 10,000 | 10,000 |
| 1.) Reduction due to Non-Alaskan stocks | | | |
| 2.) Reduction due to Natural Mortality @ 33% per year | | | |
| 3.) Reduction due to Harvest of Mature Alaskan spawners @ 25% ^{1/} | | | |
| Remaining Alaska Spawners | 500 | 1,000 | 1,500 |
| <hr/> | | | |
| Estimated number of Alaska spawners from a reduction of 27,000 in the immature harvest | 1,350 | 2,700 | 4,050 |

^{1/} The assumed harvest rate of 25% for mature Alaskan spawners is based on the fishery regulations proposed by ADF&G for the 1981 season.

Table 9. Estimated Increase in Chinook Salmon Spawners to Southeast Alaska Systems in 1981 and Subsequent Years from Proposed Reductions of Mature and Immature Harvests by Southeast Alaska Fisheries.

| Proposed Reduction of Southeast Alaska Chinook O.Y. by 10% or 32,000 Fish | Year of Expected Increase | | | | |
|---|---------------------------|-------------|-------------|--------------|------|
| | 1981 | 1982 | 1983 | 1984 | 1985 |
| Estimated increase in spawners due to proposed regulations to reduce the harvest of mature fish by approximately 5,000 fish | 4770 | 4770 | 4770 | same as 1983 | |
| Estimated increase in spawners due to proposed reduction of immature salmon harvest by 27,000 beginning in 1981 | | | | | |
| 1. Assume 30% of immature fish are of Alaskan origin | <u>0</u> | <u>2025</u> | <u>4050</u> | | |
| Est. total increase in spawners | 4770 | 6795 | 8820 | | |
| 2. Assume 20% of immature fish are of Alaskan origin | <u>0</u> | <u>1350</u> | <u>2700</u> | | |
| Est. total increase in spawners | 4770 | 6120 | 7470 | | |
| 3. Assume 10% of immature fish are of Alaskan origin | <u>0</u> | <u>675</u> | <u>1350</u> | | |
| Est. total increase in spawners | 4770 | 5445 | 6120 | | |

Figure 7. Projected Average Increases in Chinook Salmon Escapements to Southeast Alaska Systems from Proposed 10% Reduction of the Southeast Alaska Commercial Chinook Salmon Harvest Ceiling from 320,000 to 288,000 in 1981.



Note: The projected increases in escapements are based on an assumed 3:1 adult return per spawner ratio adjusted downward to 2.5:1 for harvest in fisheries not currently limited by the O.Y. Catch ceiling.

Figure 8. Projected Future Increases in Southeast Alaska Chinook Salmon Harvests from Proposed Increased Escapements to Southeast Alaska Systems Beginning in 1981 and from Planned Supplemental Hatchery Production

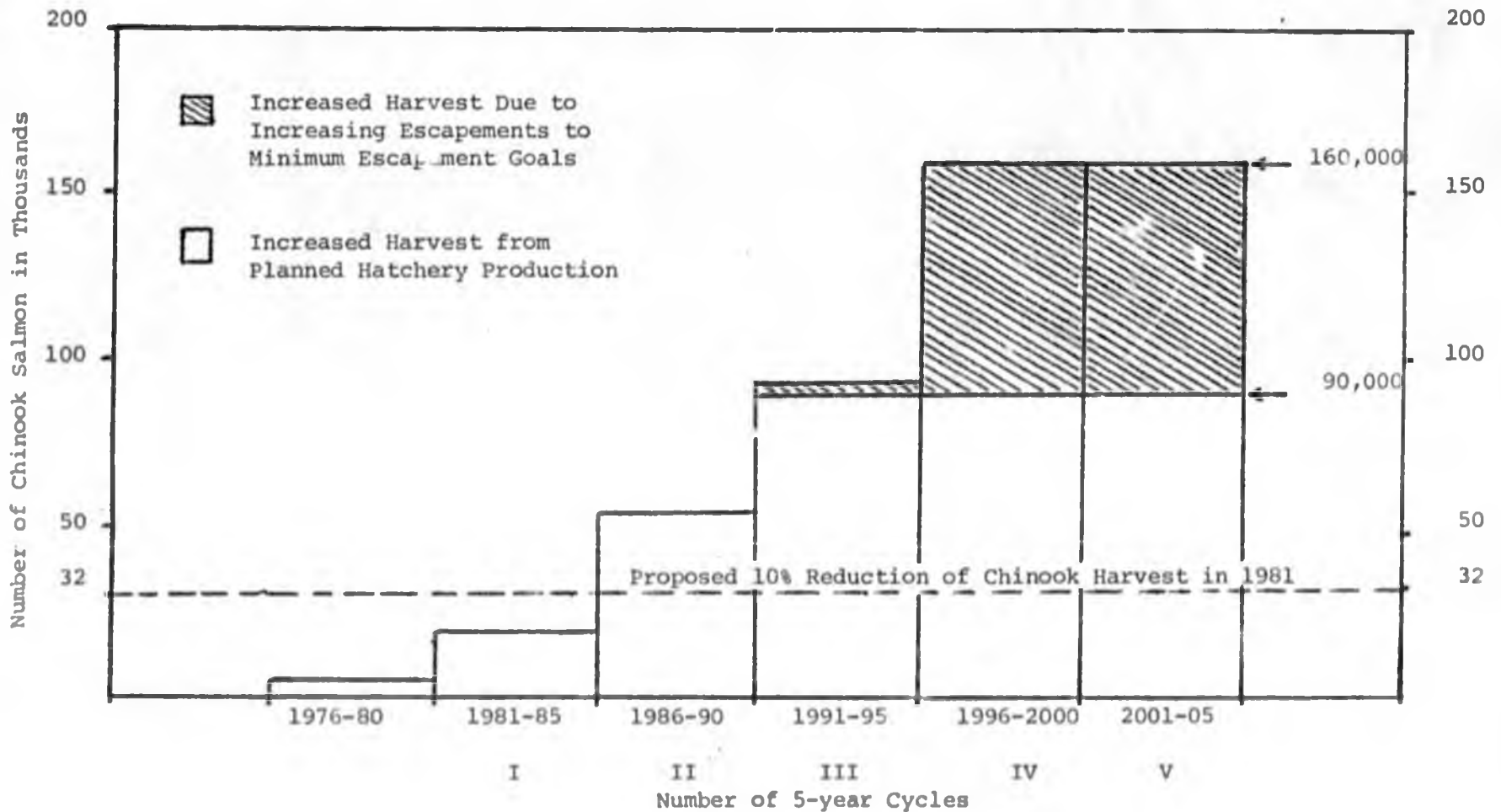
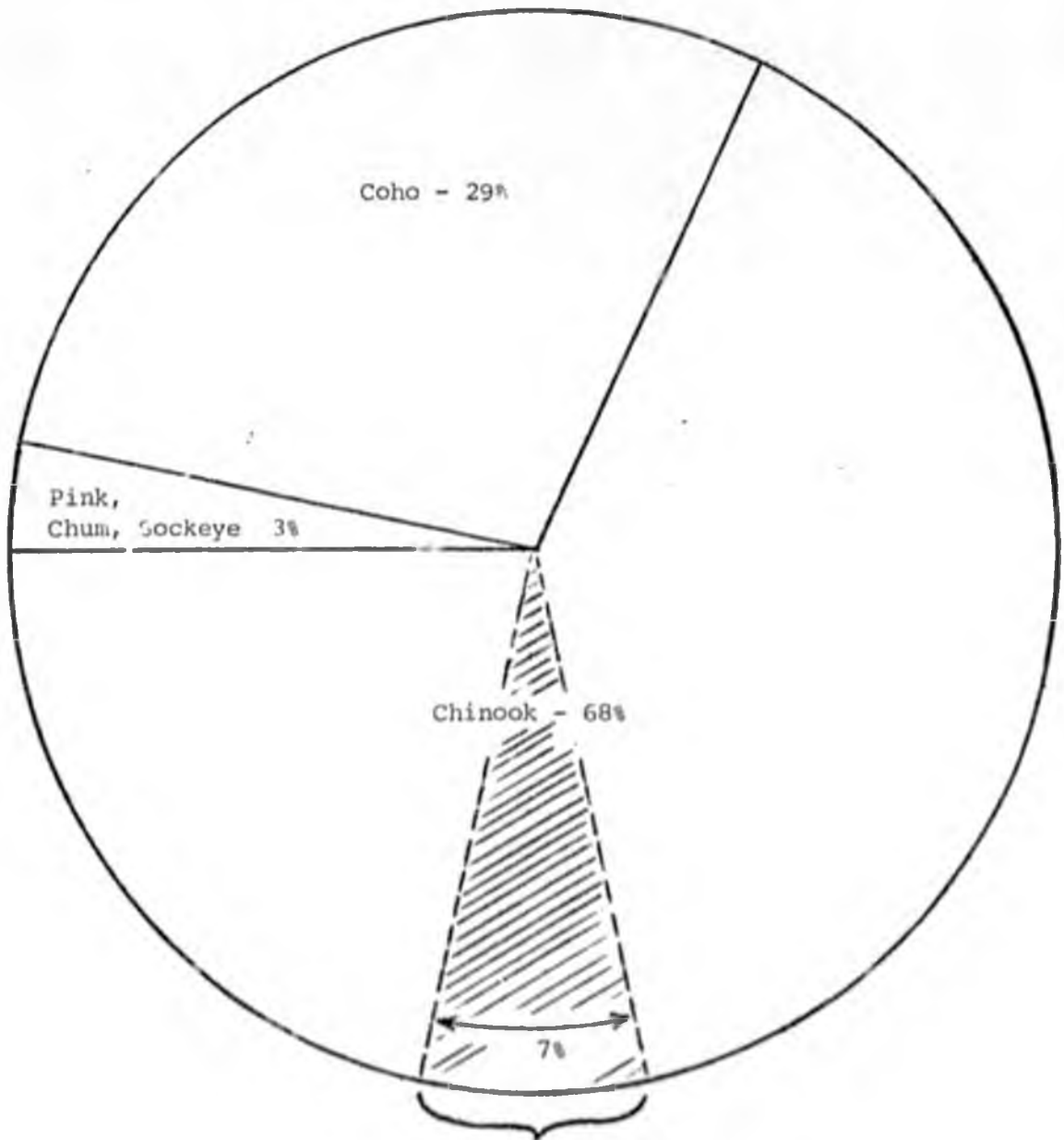


Figure 9. Relative Value to Fishermen of Chinook, Coho and Other Species of Salmon Harvested in the Southeast Alaska Troll Fishery in 1980 (Preliminary Data)

| | <u>Chinook</u> | <u>Coho</u> | <u>Pink, Chum & Sockeye</u> | <u>Total</u> |
|------------------------|----------------|-------------|---------------------------------|--------------|
| Catch in 1000's lbs. | 4,786 | 4,598 | 1,042 | 10,426 |
| Value in \$1000's | \$10,768 | \$4,598 | \$456 | \$15,822 |
| Percent of Total Value | 68% | 29% | 3% | 100% |



Relative Value of Proposed
10% Reduction in Numbers of
Chinook Salmon to be Harvested
in 1981.

REPORT TO THE BOARD OF FISHERIES

1981 SOUTHEAST ALASKA SALMON TROLL FISHERY

By:

Region I Staff

Southeast Region
Alaska Department of Fish and Game
Commercial Fisheries Division
November 1981

TABLE OF CONTENTS

| | Page |
|---|------|
| INTRODUCTION | 1 |
| 1981 Season Summary | 3 |
| In-season Management Strategy | 5 |
| Evaluation of In-season Management Strategy | 9 |
| Special Problems | 11 |
| Observations on Marked or Scarred Fish | 12 |
| Figures | 13 |
| Tables | 18 |

INTRODUCTION

The troll fishery in Southeast Alaska occurs in State and Federal waters from Cape Suckling southeast to Dixon Entrance (figure 1). Target species are primarily chinook and coho salmon although an increasing number of fishermen also target on pink salmon. Catches of chinook for the period 1970-1980 have averaged 301,000. The 1981 chinook catch by the troll fishery was 247,000. Catches of coho for the period 1970-1980 averaged 619,000. The 1981 coho catch was 861,000. Catches of other species by the troll fishery in 1981 included 576,000 pinks, 9,000 chums and 7,600 sockeye. Annual salmon catches by the troll fishery since 1970 are shown in Table 1. Fishing periods and period catches of chinook and coho for the 1981 seasons are shown in Table 2.

Historically trollers fished coastal and inshore waters but in the last 20 years a trend of increased fishing effort in offshore and coastal waters has occurred. Seventy-two percent of the 1981 troll catch of chinook was taken in coastal State and offshore Federal waters with 26% of the catch reportedly taken in offshore Federal waters (FCZ) only.

Troll gear, which annually harvests approximately 95% of the total all-gear chinook catch and 65% of the all-gear coho catch, is separated into two gear types; power and hand troll gear. The Alaska Commercial Fisheries Entry Commission currently issues 973 power troll permits and 2,150 hand troll permits. Preliminary estimates of gear actually fished during the 1981 season include approximately 850 power troll and 1,150 hand troll units. Hand troll gear permit holders accounted for approximately 13% of the chinook troll catch and 21% of the coho troll catch in 1981.

In recent years, several changes have occurred in the troll fishery that have affected management decisions and consequently the conduct of the fishery.

First, chinook salmon production from Southeast Alaska river systems has remained depressed as a result of decreased spawning escapements. In spite of severe curtailment of terminal area net fisheries, inside troll fisheries and sport fisheries beginning in the mid-1970's, escapements did not initially increase as increased effort by the troll fishery apparently offset inside and terminal area fishery restrictions. In 1980 and 1981, when more restrictive regulations were also extended to the troll fishery, some improvement in escapements occurred although the improvement was generally limited to two major systems, the Taku and Stikine Rivers. Escapements to many of the non-Alaskan chinook systems contributing to the S.E. Alaska troll fishery are also currently below optimum levels.

Second, coho escapements and production have generally declined although not as severely as chinook.

Third, increases in troll fishing effort have occurred. Increased numbers of participants during the 1970's as well as increased actual fishing power due to vessel and gear improvement produced this overall increase in fishing effort.

Fourth, recent restrictions placed on fishing time, gear and areas have resulted in more intense fishing effort during open periods.

Fifth, fishing restrictions, which were initially applied to terminal and inshore areas for the purpose of increasing escapements, transferred more fishing effort to coastal and offshore areas. As more fishermen became aware of better availability of fish in outer coastal areas, this outward shift of effort increased further. This further compounded mixed stock management problems. Harvests remained high in these areas while catches in inside fisheries and escapements of chinook and coho declined.

1981 Season Summary

Prior to the 1981 troll season, several regulatory changes were adopted by the Alaska Board of Fisheries and the North Pacific Fisheries Management Council. The two regulations that most influenced management strategy of the Department in 1981 were the reduction of the optimum yield or guideline harvest range for chinook and specification of the policy to curtail the outside coho catch to allow more fish to reach corridor and terminal areas.

The commercial chinook harvest guidelines established by the Board and Council for the 1981 season differed in that the range specified by the Board required approximately a 10% reduction over the 1980 range of 286,000 to 320,000 while the range specified by the Council required a 15% reduction. In numbers of fish, the Board's range was 272,000 to

285,000^{1/} and the Council range was 243,000 to 272,000. Since both of these ranges were significantly below recent years' chinook troll catches, but applied to both net and troll gear, the harvest ceilings represented a major step toward rebuilding Alaska's chinook stocks through providing increased escapements.

Winter and summer seasons were established for purposes of maintaining the traditional winter troll fishery and to facilitate enumeration of catches. The winter troll season was established as October 1 through April 14. To provide maximum benefit to depressed Alaskan stocks of chinooks the Board also specified a closure of the troll fishery to occur from April 15 to May 14. The summer season was established as May 15 through September 20.

A major problem complicating effective coho troll fishery management is the magnitude of catch that occurs in outer areas prior to the time the stocks are segregated and run strength can be assessed. A progressively larger segment of the annual catch has been taken in recent years from coastal and offshore areas as the fish migrate from the offshore feeding areas to the terminal areas and spawning streams. This phenomenon has resulted in more restrictive measures imposed on all gears in the terminal areas to insure escapement which has in turn changed the historical allocation balance of coho salmon between user groups as shown

^{1/} A harvest guideline of 272,000 to 288,000 initially considered by the Board at the January 1981 meeting, was shown in the 1981 Regulation booklet. However, the final harvest guideline established by the Board at the March 1981 meeting was 272,000 to 285,000.

in Figure 2 and Table 3. The Board adopted a policy in 1981 to return these inside district troll coho catches to pre-1978 levels by 1984, by specifying a 10-day troll closure to allow more coho to move further along their migration routes and to inside waters.

In-season Management Strategy

The 1981 troll fishery was managed to insure that the chinook salmon catch did not exceed the guideline harvest level established by the Board. The guideline harvest level of 285,000 fish included catches by all commercial gear types. This was the second year that a guideline harvest range was established to limit the total commercial harvest of chinook salmon in Southeast Alaska fisheries.

The Department's management plan included provisions for implementing a closure during the latter part of June, if necessary, to extend the chinook season through the end of August. This was to insure that the guideline harvest level was not achieved prior to mid-August, thereby increasing effort on coho stocks and a higher mortality on chinook hooked and released in the resulting coho only fishery. By June 15 it was apparent that the catch levels to that date were above 3 of the 4 most recent years' catches (Figure 3). This indicated that if recent years' catch patterns occurred throughout the rest of the season the harvest level would have been achieved by late July. The troll fishery was then closed for 9 days, June 26 through July 5.

The higher than normal early season catch level was due to a combination of several factors: (1) unusually good weather which allowed access to prime fishing grounds for all of the 42 days between May 15 and June 25, and (2) increased early season effort in numbers of vessels fishing due to predicted poor returns of chinook in Washington and Oregon and corresponding closures, and the reduction of the guideline harvest level in Alaska.

Following the reopening of the troll fishery on July 5, chinook and coho catches were monitored on a weekly basis. Catch projections based on fish ticket accounting systems and port sampling of deliveries were used to estimate fishery performance for chinook and coho.

A system was devised whereby normal fish ticket accounting and early landing reports from major ports were combined. This system provided weekly fishery performance estimates. These weekly estimates were then compared to the 77-80 fishery performance weekly averages and projections were made on chinook total catch and coho run strength.

By the first week of August it appeared that the chinook harvest was comparable to previous years and catch projections indicated that the chinook catch would probably reach the guideline harvest level by the first week of September. Coho returns to inside areas, as determined from inshore and terminal area catches, were poor and below the 10 year average while coho catches by the troll fishery in outer areas were relatively strong compared to recent years (Figure 4).

The troll fishery was closed again on August 10 for 10 days for the purpose of allowing more coho to reach inside areas. The National Marine Fisheries Service issued a similar regulation for the FCZ, but did not reopen the FCZ to trolling for the remainder of the 1981 season because of projections that the Council OY ceiling of 272,000 chinook would be met and significant mortality due to hook and release of chinook would occur during any coho directed fishery.

During the period from August 20 when the fishery reopened to September 3, catches of chinook and coho were monitored closely because catches appeared to be approaching the harvest ceiling for chinook and several districts continued to exhibit poor coho catches.

Historically, effort levels in numbers of vessels targeting on chinook in coastal waters have produced substantial catches during late August and early September. Numbers of vessels continuing to fish during this time period, in 1981, were greater than normal and the Department projected that the guideline harvest level would be achieved by the first week of September. The troll fishery was closed to the taking of chinook salmon in all areas and certain districts were also closed to trolling entirely for coho conservation on September 4. Districts closed to coho fishing to protect weak coho runs were 5, 6, 7, 8, 10, 15 and portions of 9 and 12.

Between September 4 and 10 concerted efforts were made to collect all fish tickets from remote buyers and landing ports to tabulate the chinook catch. By September 10 preliminary figures indicated that the catches of chinook were at the low end of the Board's guideline harvest range of 272,000-285,000. In order to prevent hooking and release mortality of chinook salmon during the ongoing coho fishery, the troll fishery was reopened to the taking of chinook in those areas opened to coho fishing. The fishery remained opened in those areas until the close of the summer season on September 20.

In addition to the foregoing description of actions taken by the Department during the 1981 troll season in Southeast Alaska, the following management measures were also taken.

The waters of District 9 in the near proximity to Little Port Walter and Big Port Walter were not closed on September 4 to allow harvest of coho returns resulting from a surplus of hatchery and lake stocking experiments.

In the Yakutat area, the weekly fishing period for trolling specified in the regulations was extended to seven days for the area between Dangerous River and Sitkagi Bluff in August when it appeared coho returns to the Situk River were near average and catches by troll gear were minimal. Following the opening of the area to 7 day per week fishing by troll gear a period of mild weather and reductions in fishing areas elsewhere in Southeast Alaska resulted in increased effort in the Yakutat area to more than triple from 6 to 20 power troll vessels and 18 hand troll vessels. Coho availability in the area was good and catches by power

troll vessels of 150-200 coho per day were reported. Trolling was returned to the weekly fishing period specified in the regulations on August 31 when the high effort levels and good catches began to affect inriver net fishery management before coho run strengths could be assessed.

Evaluation of In-season Management Strategy

The primary management goals in 1981 for the troll fishery were: (1) Increase chinook escapement and reverse the trend in declining production from systems in Southeast Alaska; (2) provide for a harvest of chinook by all gear types within the range established by the Board; and (3) reverse the trend of declining escapements of coho and increase the numbers of coho reaching inside areas while providing for a harvest level determined by in-season assessment of run strength.

Preliminary estimates of the total chinook catch by all gear, including that portion of the winter troll fishery from October 1 to December 31, 1980, indicate that a harvest of approximately 268,100 fish was achieved. This includes an estimated 19,500 fish taken incidentally in net and trap fisheries as shown in Table 4. It appears, therefore, that the final catch will probably be near the lower end of the Board harvest guideline range and the upper end of the Council range (Figure 5).

Based on catch projections made in late August and early September, a slightly larger total season chinook harvest near the mid to upper end of the Board range of 272,000 to 285,000 had been expected. The lower catch apparently occurred due to several factors, including differences between preliminary in-season catch estimates and final catches tabulated by computer from fish tickets, and lower than expected late season catch rates resulting from reduced availability of chinook combined with a shift of effort to the relatively strong coho runs in some areas. Other factors included the impact of the FCZ being closed from August 10 through the remaining part of the season and an apparent reduction in the number of boats holding and freezing fish during the season to be sold at the end of the season.

Chinook escapements to two of the three major river systems in Southeast Alaska were increased in 1981 (Table 5). The major Taku River tributaries, the Nakina River and the Nahlin River, showed substantial improvement. The major Stikine River tributaries, the Tahltan River and Little Tahltan River, also showed significant improvement. Escapements to several other lesser producing chinook salmon systems including the Chilkat River and the Farragut Bay streams appeared to have improved over recent years.

In the southern portion of Southeast Alaska, escapements to the medium sized streams in Behm Canal were mixed. The Blossom River and Keta River escapements were approximately twice the 1980 escapements, however, the Unuk River escapement was less than 1980 and the Chikamin River escapement showed little improvement. Escapements to the Behm Canal systems were all substantially below minimum escapement goals.

It appears that, for northern Southeast Alaska streams, the fishing restrictions between April 15 and May 14 contributed to the increased escapements. In the southern districts, which have slightly later run timing, the closure did not contribute significantly to increasing the escapements. The Department has submitted proposals to delay the fishing season opening in portions of District 1. These proposals, if adopted, should increase the chinook escapements to southern Southeast streams.

Coho escapements in 1981 appear to have generally improved over recent years, however, surveys are still being conducted and a more complete assessment will be provided at the Board meeting. Exceptions to these improvements were in the middle districts (5-10) where some systems declined in escapements. The northern and southern systems showed generally good escapements. Primary reasons for the increases in coho escapements were the August 10-20 troll closures and the late season net gear restrictions.

Special Problems

The periodic closures during the 1981 season reportedly caused some crowding of boats into certain areas. Many skippers reported that they could not move into distant areas because of the short time during openings. The result was concentrations of 100-200 vessels in several coastal areas. Additionally, problems were reported in landing of the catch when all of these boats came to port following a closure. Difficulties in unloading, re-icing and re-supplying were a direct result of

overcrowding. Processors reported difficulty in maintaining production quality when large volumes of fish were unloaded at the start of a closed period. Some problems also arose during the time beginning August 20 when the federally managed Fishery Conservative Zone remained closed to fishing while state waters were open. Many fishermen were confused regarding the exact delineation of boundaries for the FCZ area.

Observations on Marked or Scarred Fish

A number of chinook and coho caught in the 198 troll fishery were observed to be scarred. The Department will present a short report with visual aids on this subject at the Board and Council joint session in January.

The incidence of these external scars was about 1% for chinook and 3% for coho overall, although there were incidences as high as 10% for some deliveries sampled. The scars appear to be caused from encounters with predators and/or fishing gear, possibly nets, of unknown origin. The Department and National Marine Fisheries Service is continuing to investigate the possible sources of these scars.

FIGURES AND TABLES

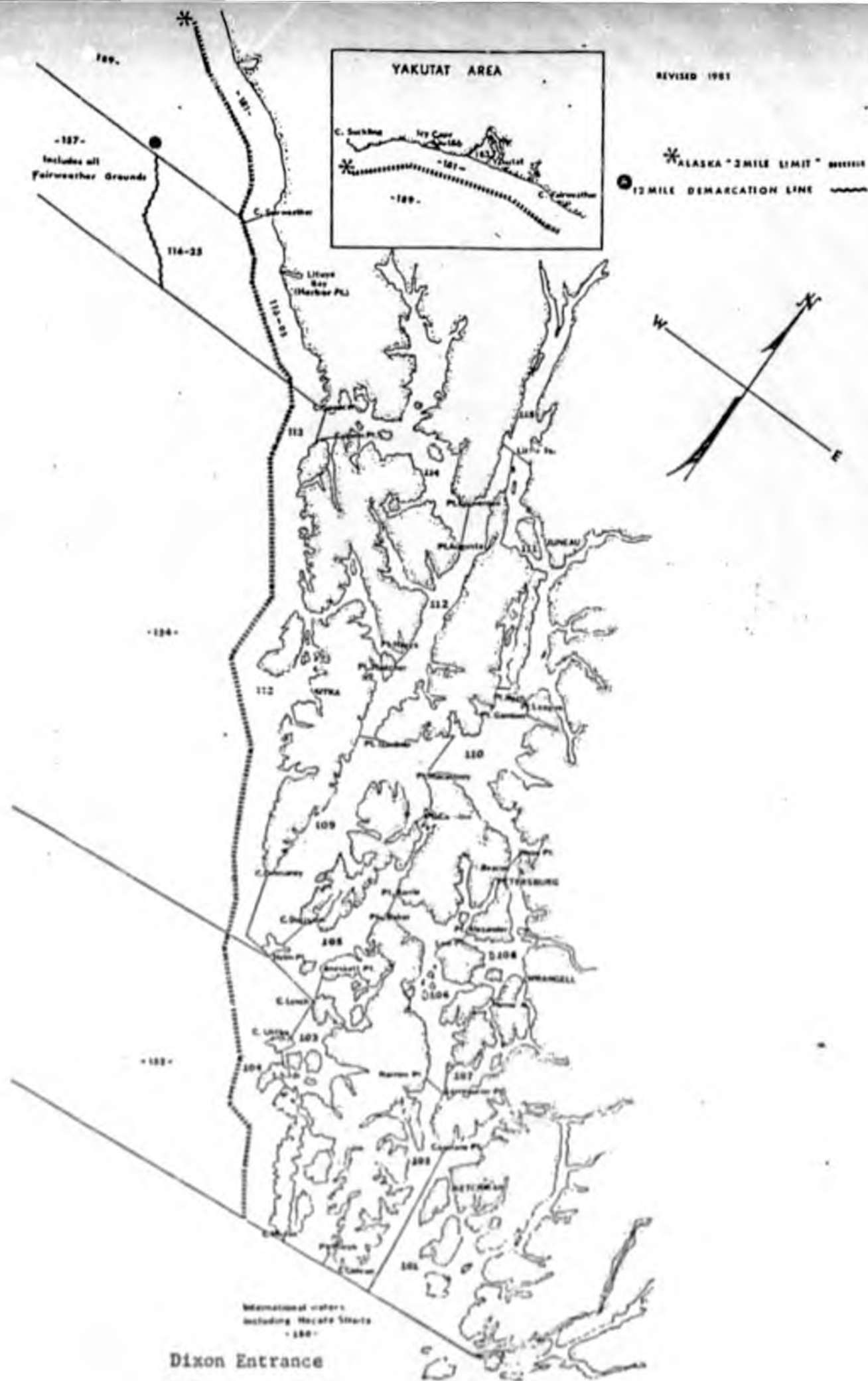


Figure 1 . Southeast Alaska Trawl Fishery Statistical Areas

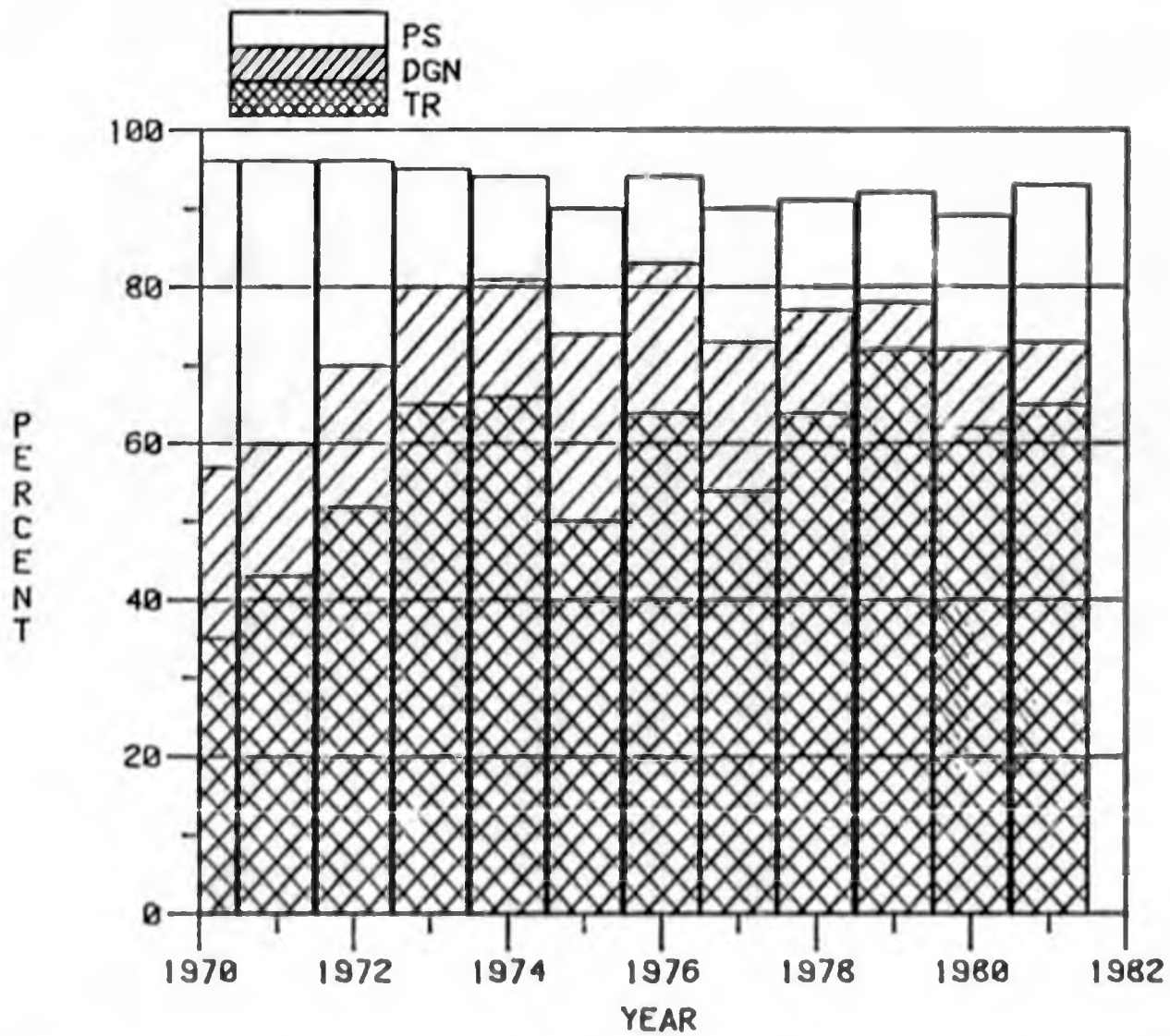


FIGURE 2. PERCENT OF TOTAL SOUTHEAST ALASKA REGION COHO SALMON HARVEST TAKEN BY PURSE SEINE (PS), DRIFT GILLNET (DGN) AND TROLL (TR) GEAR, 1970-81 (ADF&G)

PREPARED 11/18/81

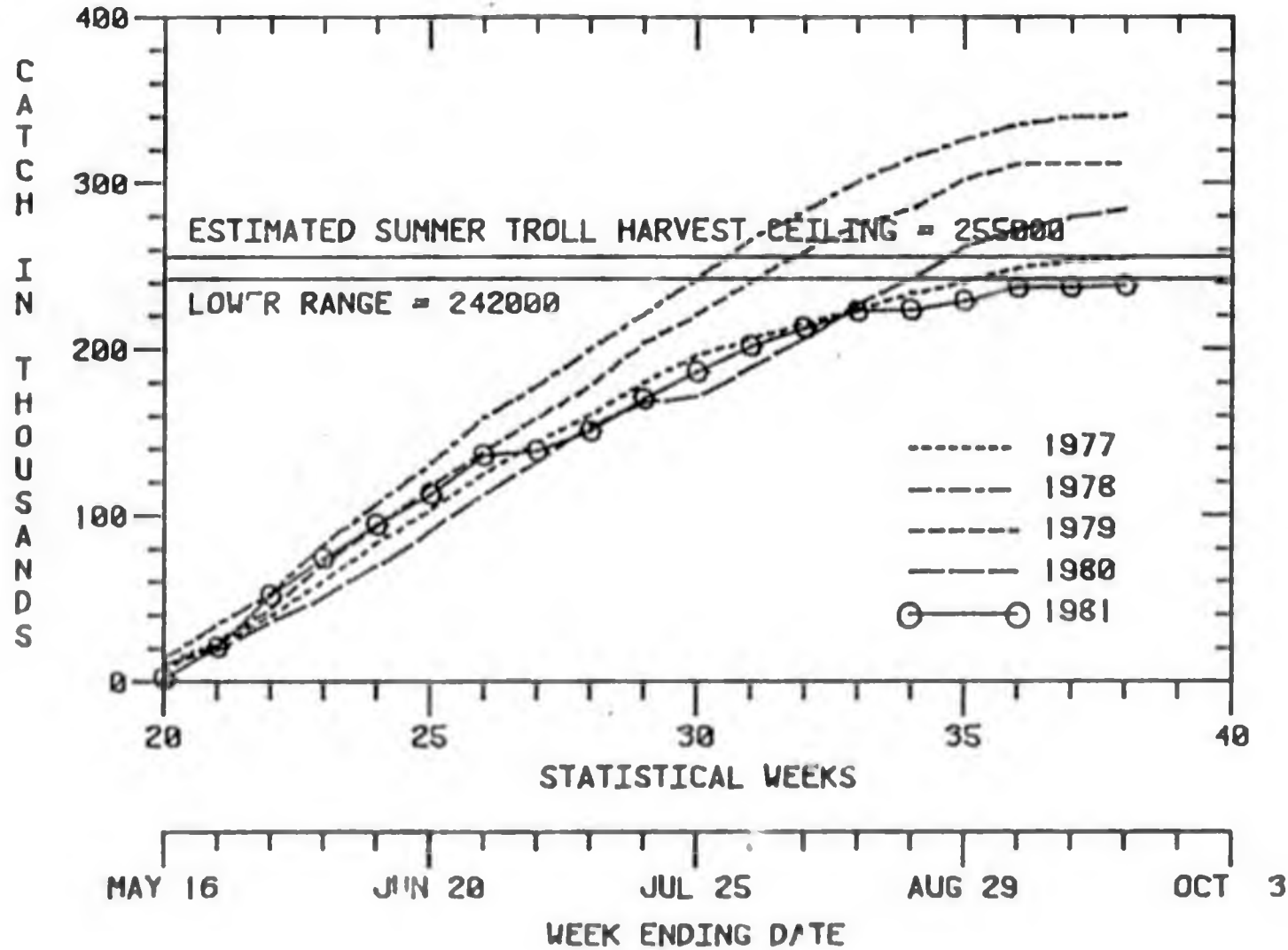


FIGURE 3. SOUTHEAST ALASKA TROLL FISHERY CUMULATIVE CHINOOK SALMON HARVEST BY WEEK BEGINNING MID-MAY, 1977-81 (ADF&G). (1981 DATA PRELIMINARY)

PREPARED 11/18/81

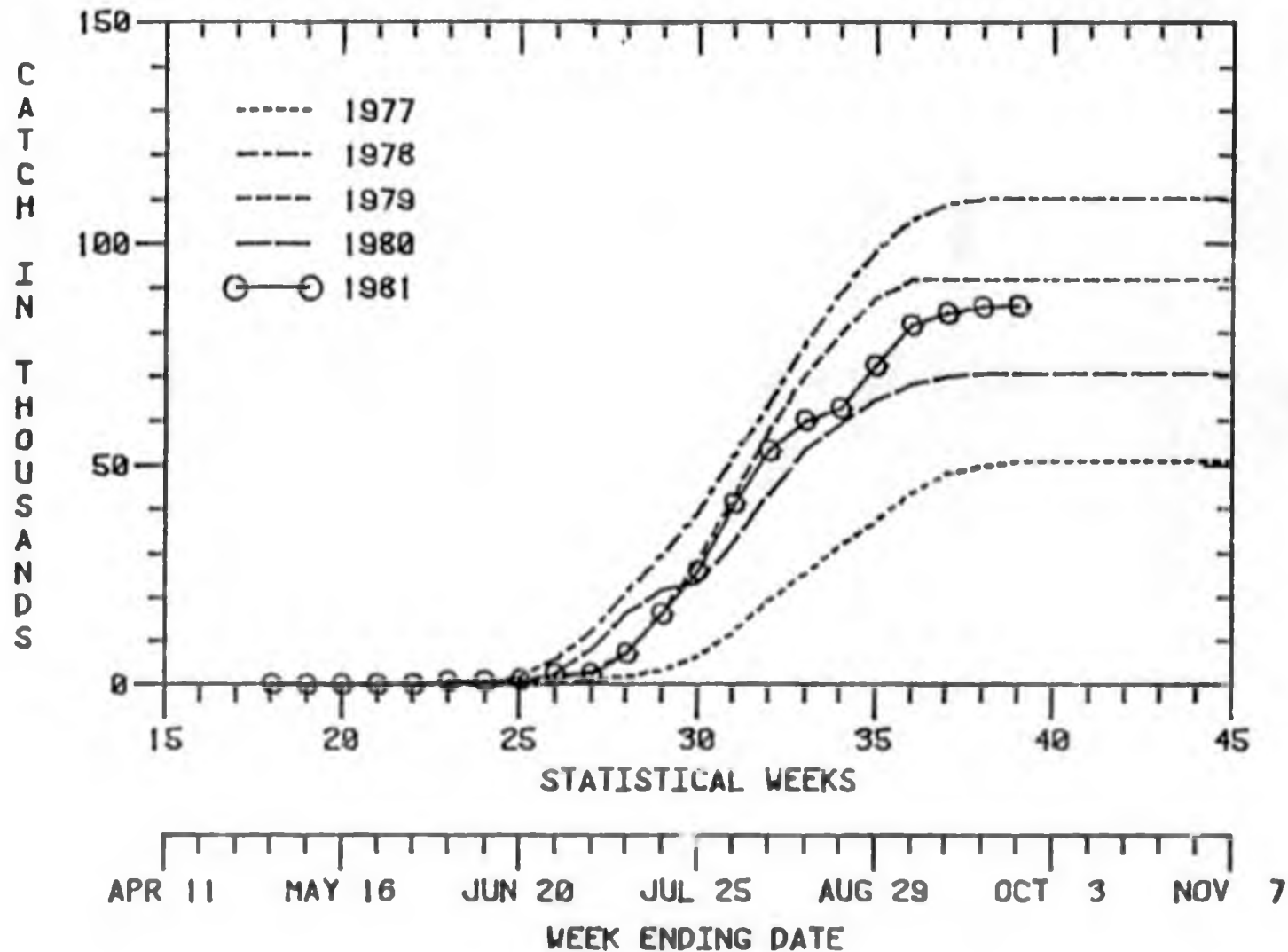


FIGURE 4 . SOUTHEAST ALASKA TROLL FISHERY CUMULATIVE COHO SALMON HARVEST BY WEEK BEGINNING MID-MAY, 1977-81 (ADF&G). (1981 DATA PRELIMINARY)

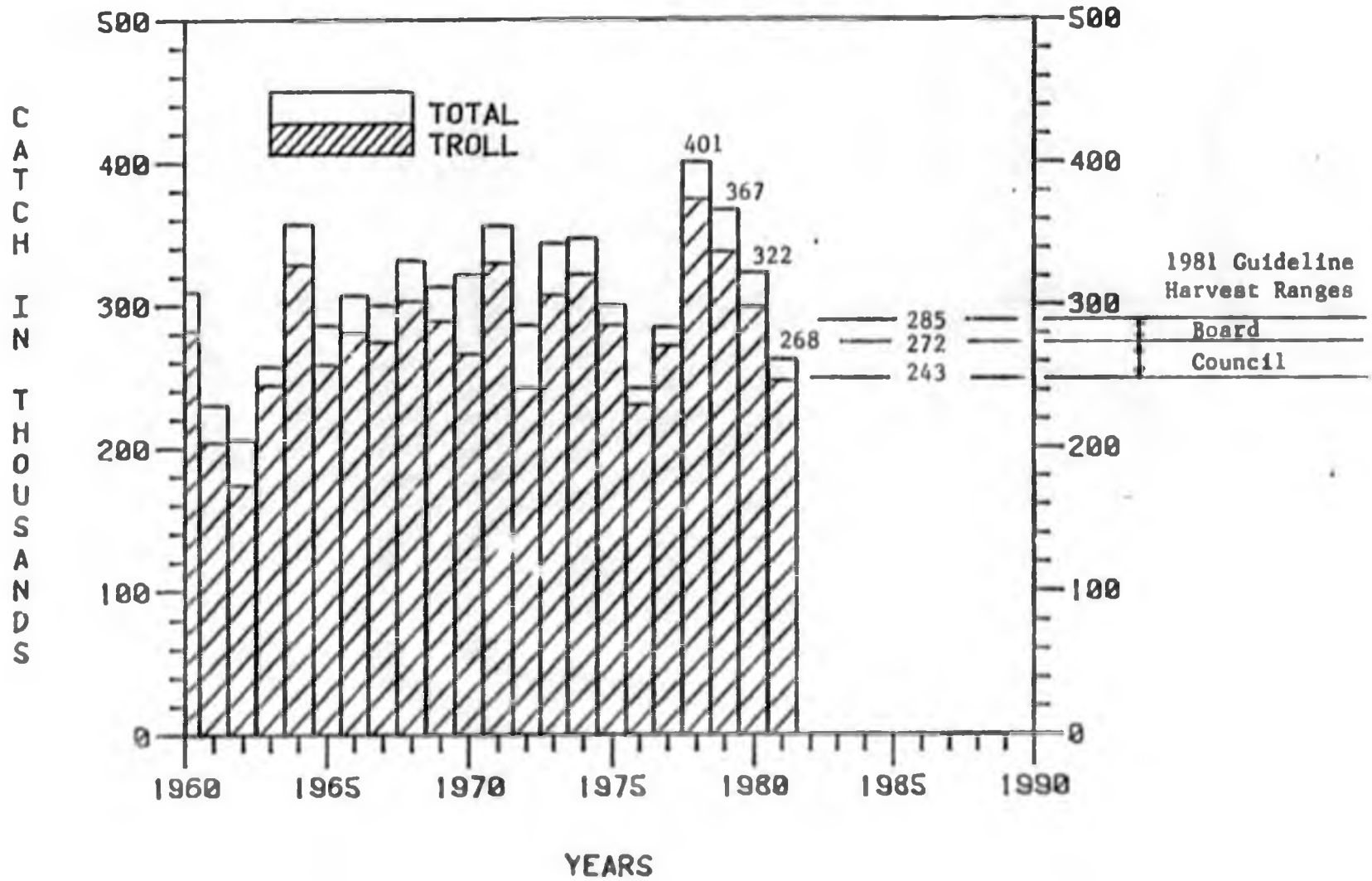


FIGURE 5. SOUTHEAST ALASKA COMMERCIAL CHINOOK SALMON CATCHES, 1960-81

Table 1 . Southeast Alaska region annual commercial salmon catches in numbers by species, 1970 to present (ADF&G 11/12/81).

Gear troll

| Year | Chinook | Coho | Sockeye | Pink | Chum | Total |
|----------------------------|---------|---------|---------|--------|-------|---------|
| 1970 | 305431 | 267763 | 477 | 70076 | 2804 | 646551 |
| 1971 | 333738 | 391569 | 936 | 104633 | 7672 | 838548 |
| 1972 | 242095 | 791668 | 1068 | 166853 | 11680 | 1213364 |
| 1973 | 307815 | 540104 | 1222 | 134585 | 10466 | 994192 |
| 1974 | 322208 | 846620 | 2606 | 263603 | 13819 | 1448856 |
| 1975 | 287348 | 214254 | 1103 | 77207 | 2825 | 582737 |
| 1976 | 231282 | 524992 | 1274 | 193777 | 4635 | 955960 |
| 1977 | 271777 | 506927 | 5701 | 281286 | 11617 | 1077308 |
| 1978 | 375624 | 1102066 | 2804 | 617817 | 26211 | 2124522 |
| 1979 | 338219 | 918596 | 6455 | 629192 | 24703 | 1917165 |
| 1980 | 299930 | 706521 | 2902 | 267465 | 12213 | 1289031 |
| ----- | | | | | | |
| Average 1970 to present | 301405 | 619189 | 2413 | 255136 | 11695 | 1189839 |
| 1981(Prelim.) | 247000 | 860900 | 7600 | 576000 | 9000 | 1700500 |

Footnote: (1) Most recent years data should be considered preliminary.

Table 2 . Preliminary 1981 Southeast Alaska Troll Fishery
 Chinook and Coho Salmon Catches by Fishing Period
 (ADF&G 11/81)

| <u>Closed Periods (Days)</u> | <u>Open Periods (Days)</u> | <u>Chinook</u> | <u>Coho</u> |
|--------------------------------|----------------------------|----------------|----------------|
| <u>Winter Season</u> | | | |
| | Oct. 1 - Dec. 31, 1980 | 1,600 | |
| | Jan. 1 - April 14, 1981 | 8,000 | |
| Winter Season Subtotals | | <u>9,600</u> | |
| <u>Summer Season</u> | | | |
| April 15 - May 14 (30) | | | |
| | May 15 - June 25 (41) | 138,900 | 23,400 |
| June 26 - July 4 (9) | | | |
| | July 5 - Aug. 9 (36) | 83,400 | 577,500 |
| Aug. 10 - 19 (10) ¹ | | | |
| | Aug. 20 - Sept. 3 (15) | 15,000 | 240,800 |
| Sept. 4 - 12 (9) ² | | | |
| | Sept. 13 - 20 (8) | 1,700 | 19,200 |
| Sept. 21 - 30 (10) | | | |
| Summer Season Subtotals (68) | | <u>239,000</u> | <u>860,900</u> |
| Season Totals ³ | | <u>248,600</u> | <u>860,900</u> |

Notes: ¹ Federal FCZ waters remained closed to fishing after Aug. 10.

² The Sept. 4-12 closure included all districts for chinook salmon and districts 5-10, and portions of 12 and 15 for coho salmon. These coho closures remained in effect to the end of the coho season on Sept. 20.

³ Troll fishery harvest of other species included 576,000 pinks, 9,000 chums, and 8,000 sockeye.

Table 3 . Southeast Alaska region annual commercial salmon catches by gear in numbers and (percent), 1970 to present (ADF&G 11/04/81).

Species Coho

| Year | Seine | Drift Gillnet | Set Gillnet | Troll | Trap & Misc. | Total |
|------|-------------|---------------|-------------|--------------|--------------|---------------|
| 1970 | 294624 (39) | 166413 (22) | 30279 (4) | 267763 (35) | 2510 (0) | 761589 (100) |
| 1971 | 326423 (36) | 159240 (17) | 37683 (4) | 391569 (43) | 12 (0) | 914927 (100) |
| 1972 | 390643 (26) | 275527 (18) | 46298 (3) | 791668 (52) | 4688 (0) | 1508824 (100) |
| 1973 | 129593 (15) | 124369 (15) | 41776 (5) | 540104 (65) | 557 (0) | 836399 (100) |
| 1974 | 166687 (13) | 186583 (15) | 77556 (6) | 846620 (66) | 1011 (0) | 1278457 (100) |
| 1975 | 70201 (16) | 102237 (24) | 37403 (9) | 214254 (50) | 5262 (1) | 427357 (100) |
| 1976 | 87613 (11) | 156223 (19) | 51744 (6) | 524992 (64) | 3089 (0) | 823661 (100) |
| 1977 | 160519 (17) | 183702 (19) | 92228 (10) | 506927 (54) | 1374 (0) | 944750 (100) |
| 1978 | 245074 (14) | 223341 (13) | 139500 (8) | 1102066 (64) | 4527 (0) | 1714508 (100) |
| 1979 | 177010 (14) | 83214 (6) | 95885 (7) | 918596 (72) | 9608 (1) | 1284313 (100) |
| 1980 | 194268 (17) | 112608 (10) | 119571 (11) | 706521 (62) | 2800 (0) | 1135768 (100) |

Average 1970
to present

203878 (19) 161223 (15) 69993 (7) 619189 (59) 3040 (0) 1057323

1981(Prelim.)

266000(20) 99700(8) 91000(7) 860900(65) 4200(0) 1321800

Footnotes: (1) Average percent harvest by gear type calculated from average harvest in numbers by gear type.
(2) Percents may not sum exactly to 100 due to rounding.
(3) Seine and drift gillnet catches include salmon harvested by Annette Island Reserve fisheries.

Table 4 . Preliminary 1981 Southeast Alaska Commercial Chinook
 Salmon Catches by Gear (ADF&G 11/81)

| Fishery | Preliminary Catch |
|--------------------------------------|-----------------------|
| Troll Fishery | 248,600 ^{1/} |
| Seine Fishery (incidental harvest) | 9,700 |
| Gillnet Fishery (incidental harvest) | 8,800 |
| Trap and miscellaneous | 1,000 |
| Est. Total Commercial Harvest | 268,100 |

^{1/} Includes approximately 1,600 fish harvested during that portion of the winter season from Oct. 1 through Dec. 31, 1980.

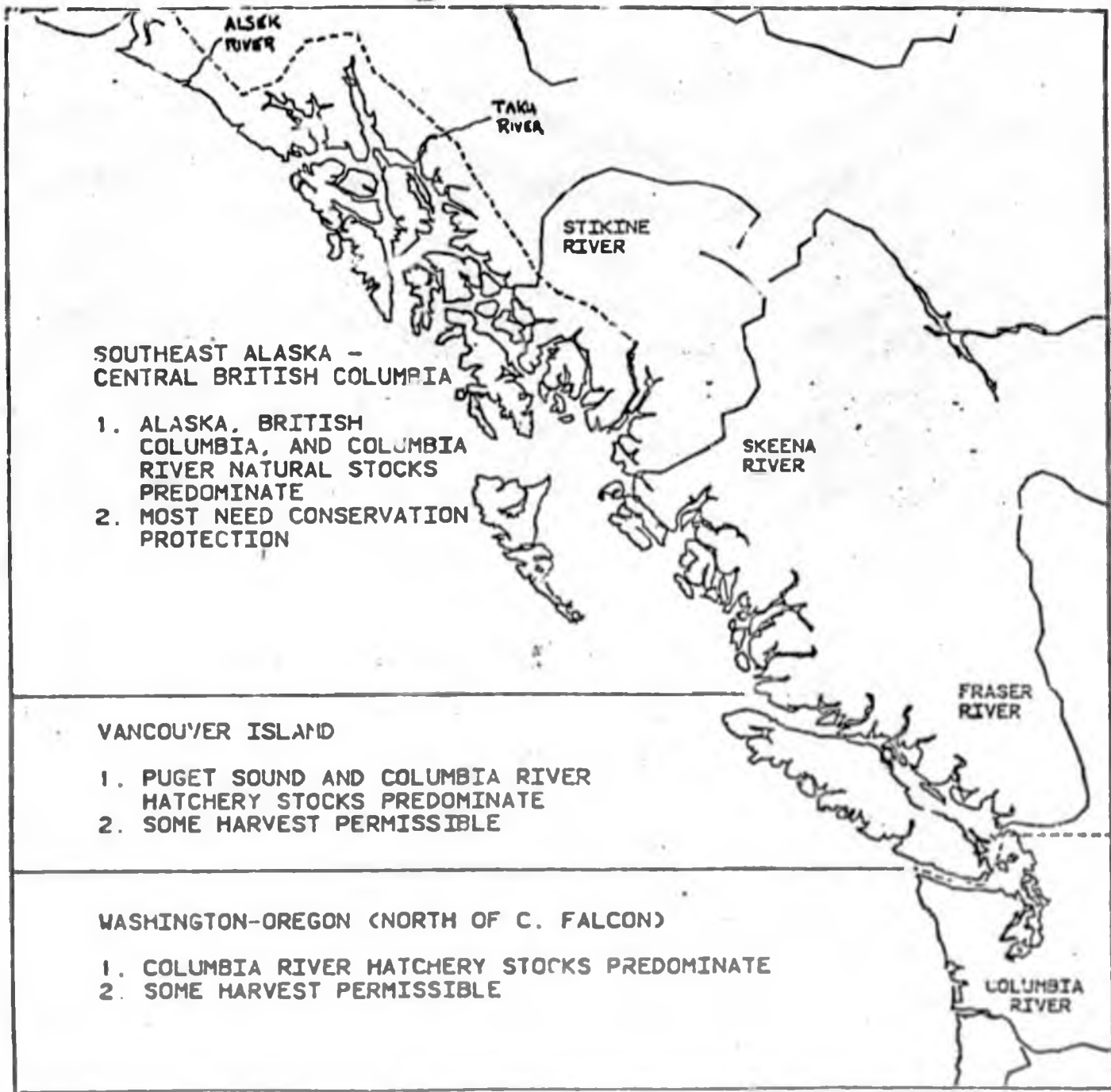
Table 5. Preliminary estimates of 1981 chinook salmon escapements to selected Southeast Alaska systems (ADF&G 11/81).

Note: Over 30 chinook salmon producing systems exist in Southeast Alaska. However, due to poor surveying conditions in many systems only those included below are currently surveyed in a consistent manner each year to provide a relative measure or index of total chinook salmon escapements to Southeast Alaska systems.

| <u>System - Tributary</u> | <u>Type of Survey¹</u> | <u>Escapements</u> | | | <u>Minimum Escapement Goal²</u> |
|---------------------------------|-----------------------------------|---------------------|-------------|-------------|--|
| | | <u>Ave. 1975-80</u> | <u>1980</u> | <u>1981</u> | |
| <u>Major Systems (3 Total)</u> | | | | | |
| Taku - Nakina | (1) | 2,810 | 4,500 | 5,100 | 9,000 |
| - Nahini | (1) | 780 | 1,530 | 2,940 | 2,500 |
| Taku Subtotal | | 3,590 | 6,030 | 8,040 | 11,500 |
| Stikine - Little Tahltan | (1) | 620 | 2,140 | 3,330 | (2,100) |
| Alsek - Kluckshu | (2) | 2,130 | 1,400 | 2,110 | 3,200 |
| <u>Medium Systems (8 Total)</u> | | | | | |
| Situk | (2) | 1,490 | 1,120 | 810 | (5,100) |
| <u>Behm Canal Systems</u> | | | | | |
| Keta | (1) | 250 | 190 | 330 | 500 |
| Blossum | (1) | 100 | 90 | 160 | 800 |
| Chickamin | (1) | 220 | 260 | 280 | 900 |
| Unuk | (1) | 800 | 1,050 | 730 | 1,800 |
| Behm Canal Subtotals | | 1,370 | 1,590 | 1,500 | 4,000 |
| <u>Minor Systems (22 Total)</u> | | | | | |
| King Salmon | (1) | 76 | 70 | 100 | 200 |

¹ Type of Survey Codes (1) - Helicopter peak spawning count (primary method).
(2) - Weir total count.

² These minimum escapement goals, established in 1980, represent maximum escapements observed since the 1950's (except for the Situk) when Southeast Alaska chinook stocks were seriously depressed. Revision of goals for some systems, in particular the Situk and Stikine, is expected pending further data analysis.



GENERALIZED CHINOOK STOCK MANAGEMENT CONCERNS

Results of a joint technical staff meeting on 1981 chinook salmon resource status from Oregon to Southeast Alaska

December 22, 1981
Seattle, Washington

INTRODUCTION

A variety of formal working groups on the Pacific coast were given assignments in late 1981 dealing with coastwide chinook salmon management concerns. These groups include:

1. U.S.-Canada chinook working group.
2. North Pacific Fishery Management Council Salmon Team.
3. Pacific Fishery Management Council Salmon Team.
4. Technical Committee; Confederated Tribes of the Columbia River v. Secretary of Commerce M. Baldrige.
5. Internal assignments within Canadian, U.S. and tribal fishery management agencies.

The timing for output from these groups was generally in accord with the common request for: first, general stock and management information by approximately mid-December for decision points occurring in January, 1982 and second; refinements to this information for decision points in March, 1982. Much of the work assigned to each group was also common to more than one of these groups. For this reason a joint technical staff meeting was undertaken on December 22, 1981 at the Northwest and Alaska Fisheries Center (NMFs), Seattle, Washington, to address these common technical issues on a coordinated, coastwide basis. The list of participants is presented in Appendix I.

A variety of detailed material dealing with chinook stock status in the broad geographic zone from Oregon to Southeast Alaska was presented (Appendix II). Additionally, information on the 1981 fishery status and 1981 regulatory impact was presented (Appendix II). Expectations for the 1982 season in

terms of both expected run sizes and management regimes will generally be presented at various regulatory meetings to be held in January through March.

OVERVIEW

It was generally felt that the overall condition of hatchery stocks was not a conservation problem. Cases of underescaped hatchery stocks were noted as were a number of depressed runs but generally speaking most are producing harvestable surpluses at this time. Thus, harvest opportunity in both ocean and inside fisheries exists while still meeting egg take escapement needs. The condition of natural stocks, particularly for several major producers, is by-in-large severely depressed coastwide and, consequently, harvest opportunity is also severely limited if optimum spawning escapements are to be achieved.

It should be noted that positive chinook management measures have been implemented in various Pacific coast jurisdictions in recent years. Each terminal area management entity has responded to these natural chinook problems with nearly complete elimination of directed terminal fisheries within their own jurisdictions. Puget Sound and some Columbia River runs, where hatchery stocks predominate, are the only major exceptions where significant terminal fisheries exists and some of these have been severely restricted to minimize incidental harvest of depressed natural stocks. In addition, varying levels of restrictive ocean management have also been implemented.

A general consensus was reached that major natural chinook stocks, on a coastwide basis (Columbia River to Cape Suckling, Alaska) are still viable but are currently achieving escapements which are far below optimum or even minimum goals. In some cases escapements are continuing to decline while in

others escapements have stabilized at very depressed levels. Improving escapements are the rare exception rather than the rule. Overall exploitation rates on these depressed and declining stocks are currently much too high and to date severe restrictions on terminal area harvest (most frequently, complete closures of directed harvest) have been inadequate by themselves to provide sufficient protection. Coastwide 1981 ocean fishery management measures in addition to these terminal area measures have proved insufficient to reverse the trend of declining natural run sizes in most areas (a small number of Southeast Alaska, Washington coastal stocks, and Puget Sound stocks appear to be the only exceptions). Fishery managers have few options to rebuild these important stocks. Major infusions of money or new hatchery production are unlikely and may not be desirable. The only effective action available is to further reduce total harvest rate.

SPECIFIC AREA STOCK STATUS REPORTS

Oregon coastal stocks: Escapement estimates are unavailable, indexes are available, however. Fall chinook stocks are generally in a favorable status as indicated by spawning ground index counts. Hatchery returns in 1981, however, appear to be less than adequate for many coastal stations.

Columbia River stocks: Upriver spring and summer stocks remain in a severely depressed state. Runs of both were at record low levels in 1979, 1980, and 1981. Upriver fall stocks: The hatchery stock is depressed but still producing harvestable surpluses; the natural stock is severely depressed realizing a record low return in 1981. Lower river fall stocks: are predominantly hatchery fish and returned at below average levels in 1981 but a harvest opportunity was available. Lower river spring stocks: are predominantly

hatchery stocks and returned in 1981 in sufficient numbers to allow a harvest opportunity and still achieve desired hatchery egg take requirements.

Washington coastal stocks: Hatchery fall chinook stocks are providing limited harvest opportunity and this condition is expected to continue.

Natural spring, summer, and fall stocks on the north Washington coast are generally returning at levels which have and should continue to produce small harvest surpluses and still meet spawning escapement requirements. Grays Harbor natural spring and fall chinook are returning well below escapement goals and target harvest opportunity will probably not exist in the near future.

Puget Sound stocks: Summer/fall stocks, which comprise approximately 98% of Puget Sound chinook, remained at a stable, healthy abundance level in 1981. Run size is currently estimated to be the same as the 1975-1980 mean. Egg take at Puget Sound hatcheries was 80 million. Run size estimates for spring chinook in 1981 are not available, but escapement was presumed to be less than desired, as has been the pattern in recent years.

Canadian stocks: Natural stocks remain the predominant production unit and almost all are experiencing a greatly depressed stock condition. River returns of virtually all the 350 British Columbia chinook stocks (approximate number) are remaining very depressed or continuing to decline despite elimination of all directed terminal area fisheries. Overall, natural escapements are now at about 35% of the optimum escapement goals.

Southeast Alaska stocks: Natural stocks remain the predominant production unit and almost all are depressed below minimum escapement levels. It appears the decline in some of these stocks, in particular those originating in the Taku and Stikine Rivers has been reversed due to elimination of all directed terminal area fisheries and 1981 ocean harvest restrictions designed to begin

rebuilding consistent with a management plan currently in progress.

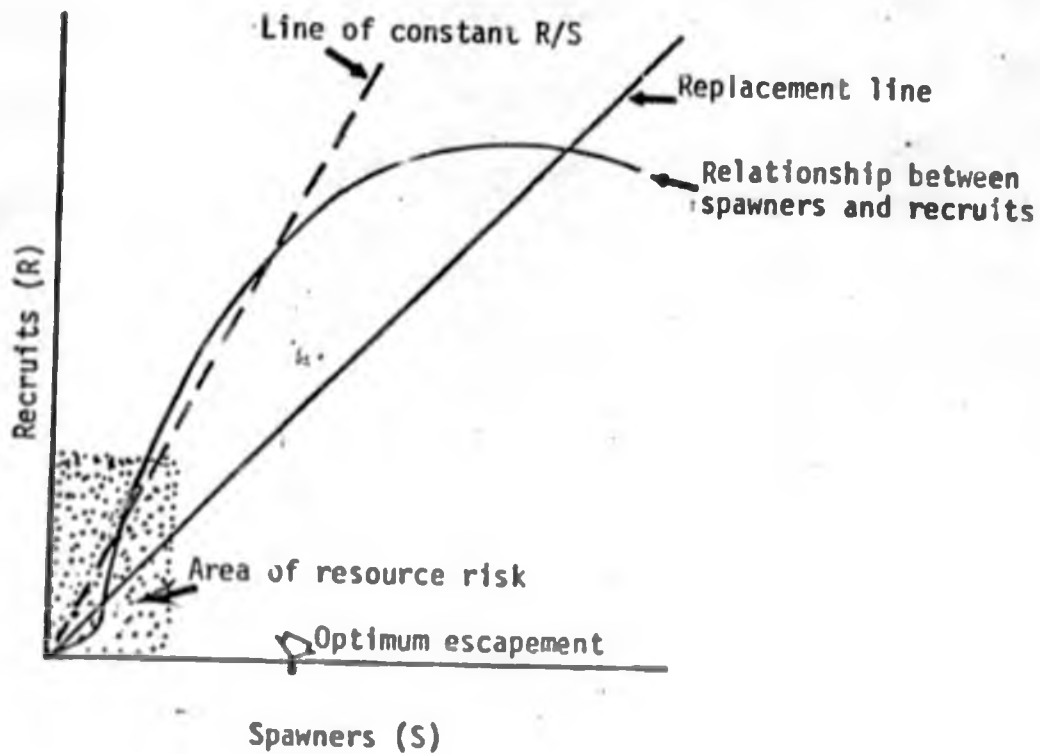
BENEFITS TO BE DERIVED FROM ACHIEVING ESCAPEMENT GOALS

The obvious purpose or objective for rebuilding depressed chinook salmon runs is to remove the risk that stocks or sub-stocks will be depressed below a viability or the biological extinction point and to obtain future benefits in the form of increased catches from present levels. Return to "healthy" population sizes will automatically ensure stock viability thus providing a base for fishery stability and the opportunity for increasing commercial fishery revenues, recreational harvest opportunity, and economic returns to support industries.

Long-term benefits can be realized only at the cost of reduced catches in the short or near term, however, long-term benefits will exceed short-term costs in total. It is recognized that short-term costs and long-term benefits may accrue unevenly to present and future participants in the fisheries.

Order of magnitude estimates of additional benefits expected from rebuilding chinook runs from current depressed levels can be made to provide some perspective on these long-term benefits. These can be derived by applying average recruits per spawner (R/S) production rates to present escapement levels and to current escapement goals. Then, by examining the differences in allowable catches at each escapement level, some idea of annual harvest loss resulting from underescapement can be generated.

While average R/S production rates will vary over different escapement levels, a relatively constant rate would be expected over the range of escapements corresponding to the ascending portion of a R/S curve between low and current escapement goals.



Selection of an appropriate average R/S ratio must be inferred at this time. Existence of substantial and fluctuating ocean fisheries makes a definitive determination impossible. Experience with other species, not substantially harvested in ocean areas, indicates an adult R/S ratio of 4 or 5 adults per spawner is reasonable. Additionally, some natural chinook river return information is available from Washington river systems (Table 1).

Table 1. River return per spawner ratios for some Washington and Columbia River natural chinook salmon runs.

| Brood Year | River Return Per Spawner | | | | | | |
|------------|--------------------------|---------------|-------------------|---------------|----------------------|-------------------|------------------------------|
| | Quillayute ^{1/} | | Hoh ^{1/} | | Queets ^{1/} | | Columbia River ^{2/} |
| | Fall | Spring-Summer | Fall | Spring-Summer | Fall | Brights | |
| 1961 | | | | | | 4.7 | |
| 1962 | | | | | | 1.4 | |
| 1963 | | | | | | 6.4 | |
| 1964 | | | | | | 1.9 | |
| 1955 | | | | | | 4.0 | |
| 1966 | | | | | | 2.3 | |
| 1967 | | | | | 2.3 | 3.5 | |
| 1968 | 1.7 | 2.2 | 6.0 | 2.0 | 1.9 | 2.2 | |
| 1969 | 2.4 | 0.7 | 1.7 | 1.5 | 1.7 | 1.8 | |
| 1970 | 3.5 | 1.0 | 1.5 | 0.9 | 1.0 | 4.1 | |
| 1971 | 1.8 | 1.0 | 1.7 | 0.7 | 1.7 | 1.8 | |
| 1972 | 1.7 | 1.0 | 3.7 | 1.0 | 1.6 | 2.3 | |
| 1973 | 1.3 | 3.3 | 0.9 | 2.0 | 1.0 | 2.5 | |
| 1974 | 1.9 | 2.8 | 3.3 | 3.4 | 3.0 | 3.1 | |
| 1975 | 3.8 | 2.6 | 3.5 | 2.1 | 2.6 | 3.8 | |
| 1976 | | | | | | 1.4 ^{3/} | |
| Mean | 2.3 | 1.8 | 2.8 | 1.7 | 1.9 | 3.0 | |

^{1/} Quinault tribe analysis.
^{2/} Washington Department of Fisheries data base.
^{3/} Preliminary.

Experience with chinook coded-wire tag experiments indicates that ocean harvest rates of approximately 66% (WDF March, 1981 report to the NPFMC) are not unreasonable. Thus, 2-3 R/S to the river represents approximately 1/3 of the total production. River R/S ratios can be expanded by another 66% to infer that overall R/S ratios might currently lie within the range of 6-9 fish per spawner in cases where there is substantial immature harvest in the ocean. A high R/S ratio such as this may represent overfishing and therefore, sustainable ratios would be lower.

For our purposes we have chosen to evaluate benefits to be derived from achieving escapement goals at R/S ratios of 4:1 and 5:1 (Table 2). These are in accord with experiences with other species, observed Washington river returns (even with high ocean harvests) and considering coded-wire tag results. The lower ratio would be conservative and the higher one would reflect, in a very approximate fashion, affects of immature harvests in the ocean.

It appears that an approximate 1.3 to 1.7 million fish harvest opportunity is being lost each year due to current underescapements of chinook salmon from the Columbia River to Cape Suckling, Alaska.

MANAGEMENT NEEDS

A general consensus was reached that, due to the severe conservation challenge confronting us with natural stocks significant catch reductions in ocean fisheries will be required to even halt the decline in chinook spawning escapements, much less begin the rebuilding process. These management measures will be needed throughout the oceanic range of these depressed stocks. The management principles of:

- a) prioritizing first for spawning escapement needs,