

ALASKA

7138

LEGISLATURE

HOUSE

COMMITTEE

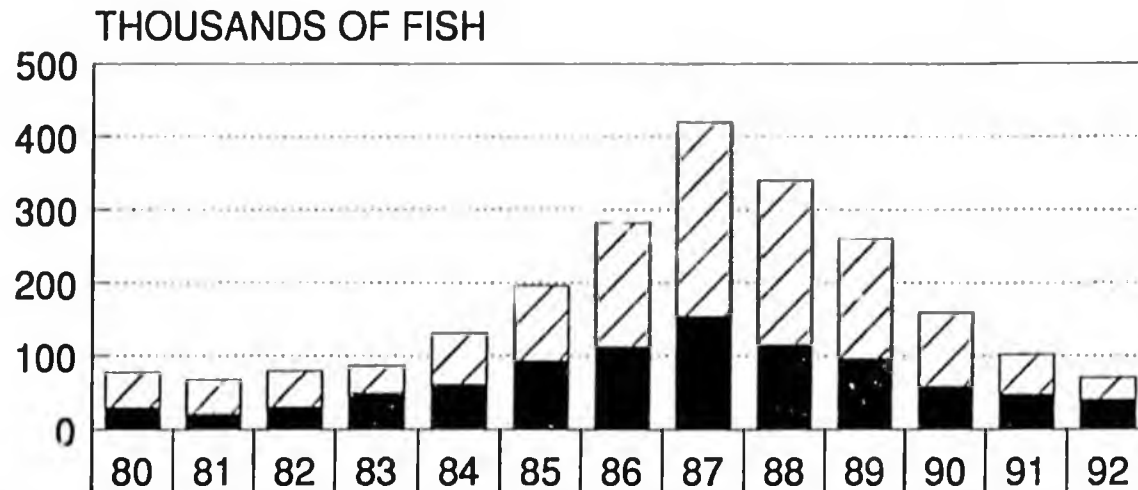
RESOURCES

FILES

1991-1992

8672

FIG. 10. COLUMBIA UPRIVER BRIGHT CHINOOK SALMON INRIVER RETURNS FOR 1980 TO PRESENT



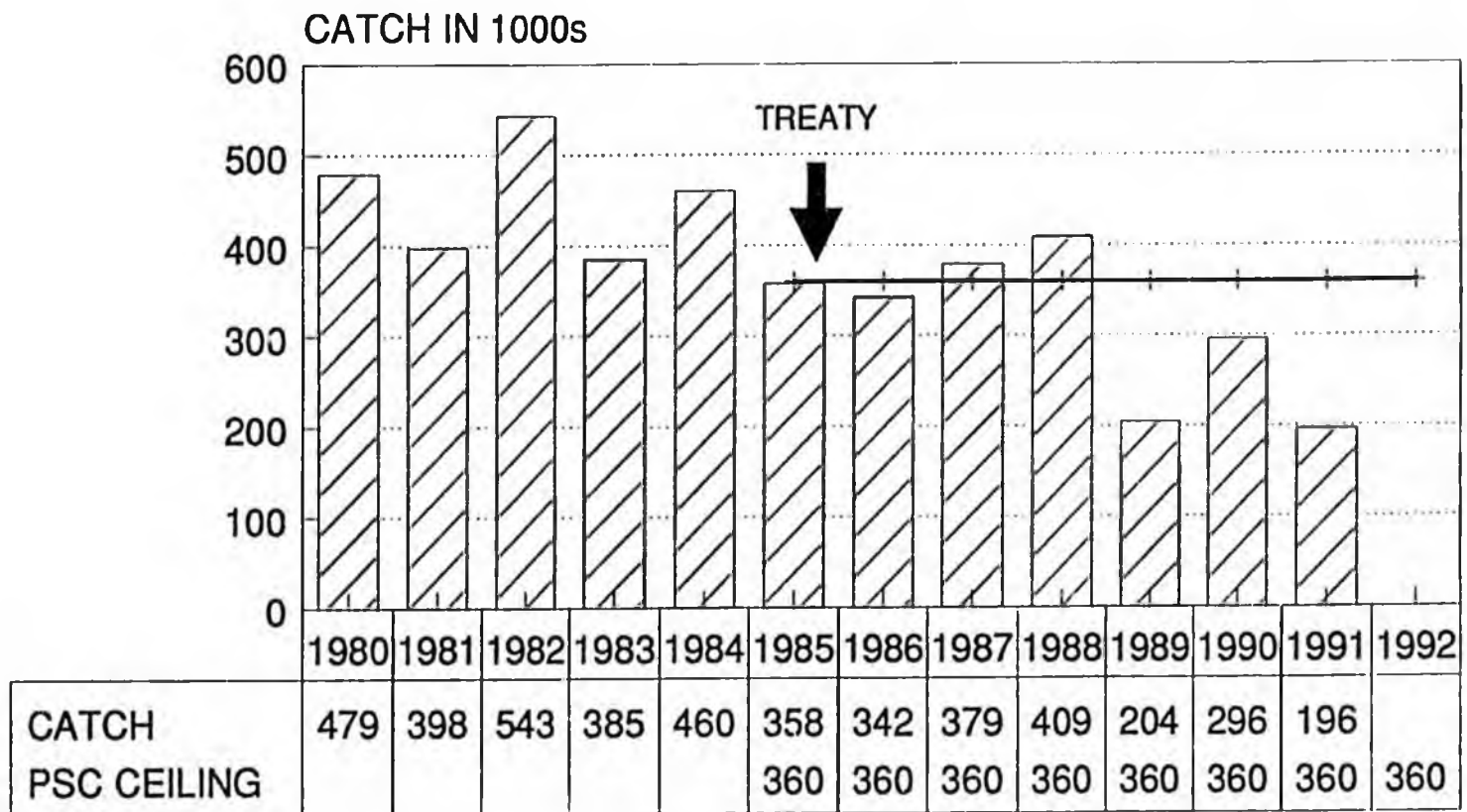
INRIVER RETURN	77	67	79	86	131	196	282	419	340	260	159	102	70
INRIVER CATCH 2/	47	46	48	37	70	103	169	265	225	164	101	55	30
ESCAPEMENT 1/	30	21	31	49	61	93	113	154	115	96	58	47	40

[1992 = PROJECTION]

ESCAPEMENT 1/
 INRIVER CATCH 2/

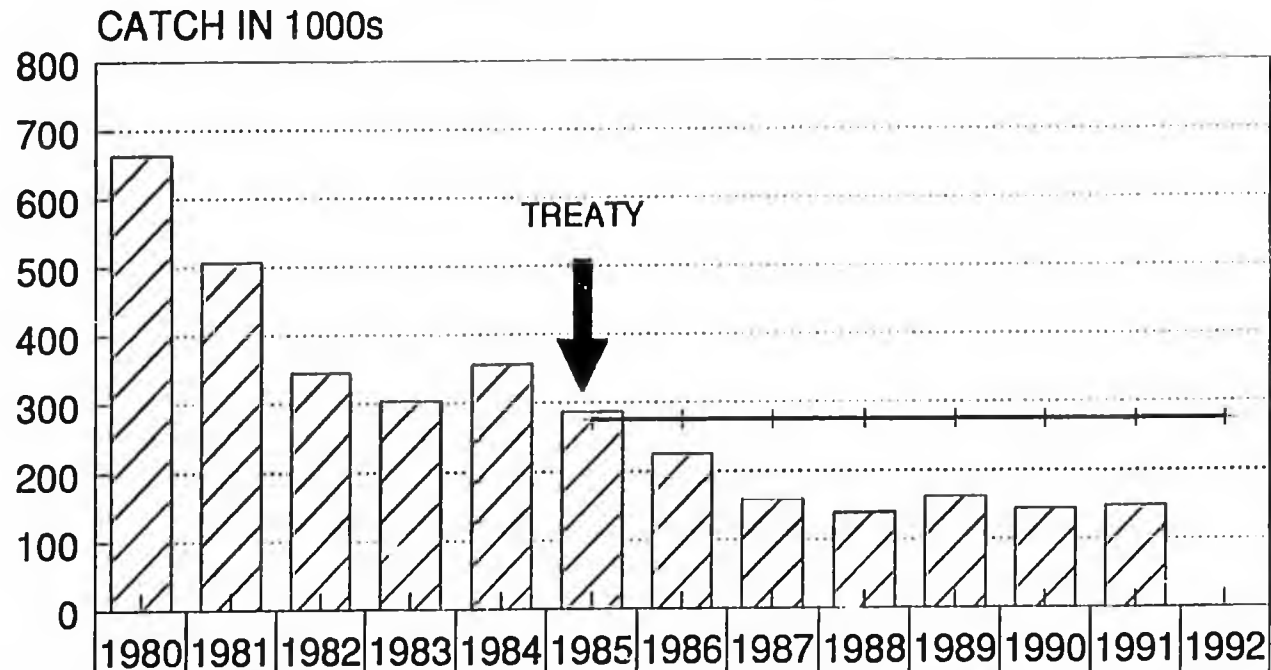
1/ ESCAPEMENT OVER MCNARY DAM
 2/ INRIVER CATCH INCLUDES SOME DAM LOSS
[FILE: BRITE1; DISK: MCS91-1; 2/26/92]

FIG. 11. W. COAST VANCOVER IS. TROLL CHINOOK CATCHES, 1980-91



 CATCH
  PSC CEILING

FIG. 12. GEORGIA STRAIT SPORT & TROLL CHINOOK CATCHES, 1980-91



CATCH	663	507	345	303	357	287	226	159	139	162	144	148	
PSC CEILING						275	275	275	275	275	275	275	275



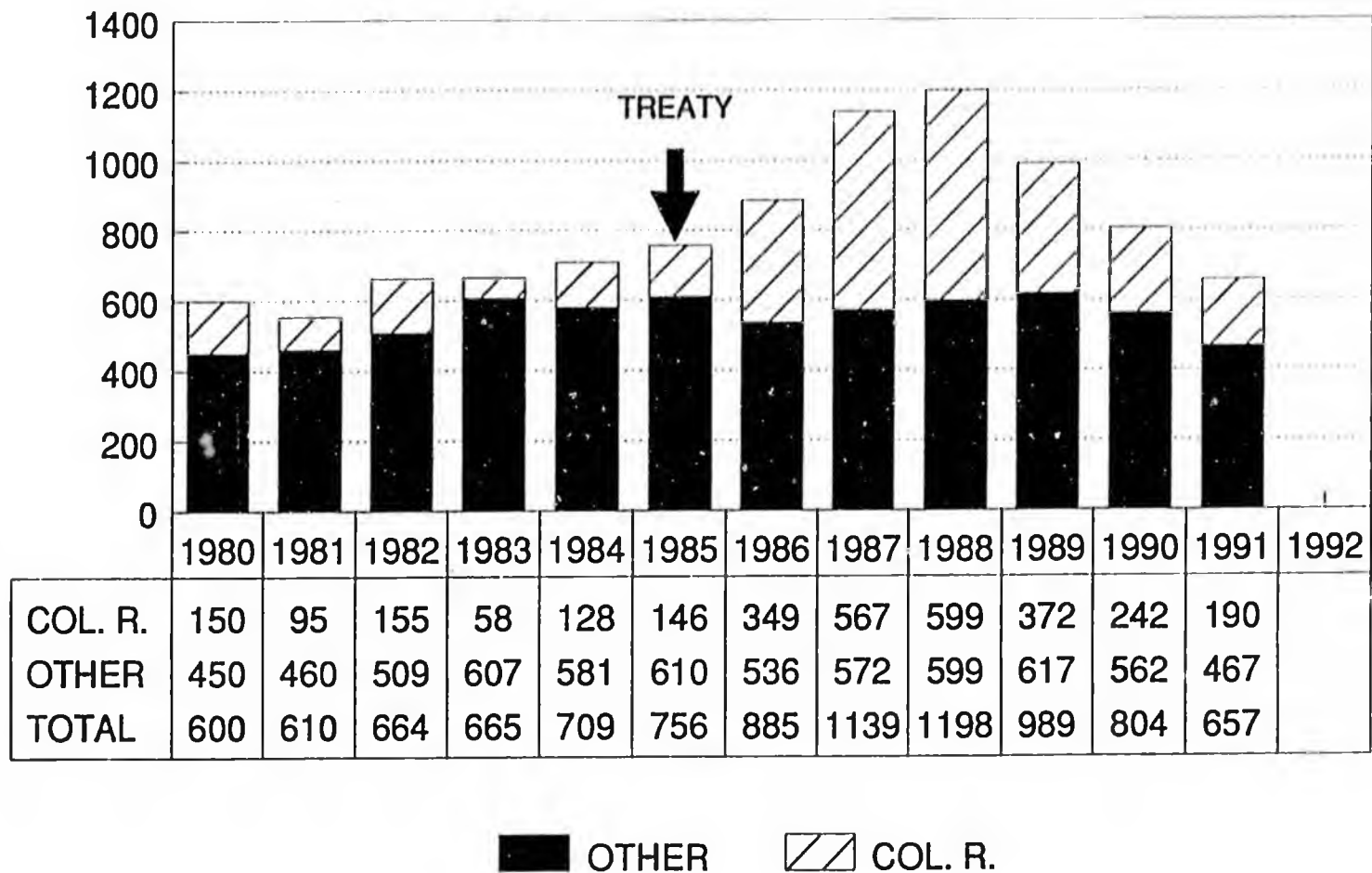
 CATCH
  PSC CEILING

FIG. 13. WASH/ORE N. CAPE FALCON ALL-GEAR CHINOOK CATCHES, 1980-91



APPENDIX A

LIST OF ALASKA COMMISSIONERS AND
PANEL MEMBERS FOR THE PACIFIC SALMON COMMISSION

PACIFIC SALMON COMMISSION
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(Updated 09/17/91)

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APPENDIX B

UNITED STATES-CANADA SALMON TREATY NEGOTIATIONS:
AN ALASKAN PERSPECTIVE, BY SEN. TED STEVENS

UNITED STATES-CANADA SALMON TREATY NEGOTIATIONS: THE ALASKAN PERSPECTIVE

BY
TED STEVENS*

The final ratification of the 1985 United States-Canada Pacific Salmon Treaty came as a result of Alaska's support for the Treaty. The initial Treaty, while tentatively approved, was opposed by Alaskan fishermen in general and Senator Stevens in particular. The Treaty as ultimately accepted by Canada and the United States provides for Alaska's fishery conservation practices and addresses the concerns of Alaskan fishermen regarding intercepting fisheries near the Canadian-Alaskan transboundary rivers. Senator Stevens explains his opposition to the draft 1982 Treaty, his support for the 1985 Treaty, and concludes that the final Treaty is a fair, reasonable document that equitably spreads the burdens of Pacific salmon restoration amongst Canada, the Northwest, and Alaska.

In December 1982, both the United States and Canada initiated a draft of the United States-Canada Pacific Salmon Treaty signifying their tentative approval of the Treaty.¹ While the Treaty negotiations were designed in large measure to revamp the 1930 Fraser River Convention,² the scope of the 1982 Treaty was extended to include all intercepting salmon fisheries. Many Alaskans criticized the detailed chinook provisions in the Treaty because if enacted, they would have had a devastating impact on southeast Alaska fishermen. Moreover, at the time of the 1982 draft, there was no implementing legislation available to consider in conjunction with the Treaty and Alaska fishermen faced the threat of treaty fishing rights litigation from Pacific Northwest

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1. Treaty Between the Government of Canada and the Government of the United States of America Concerning Pacific Salmon (Negotiators Draft) (Dec. 22, 1982) [hereinafter cited as 1982 Agreement].

2. United States-Canada Convention for the Protection, Preservation and Extension of the Sockeye Salmon Fishery in the Fraser River System, signed May 26, 1930, 50 Stat. 1355 (1930), 8 U.S.T. 1058, T.I.A.S. No. 3867 [hereinafter cited as Fraser River Convention].

Indian tribes.³

When it became apparent that the concerns of Alaskan fishermen were not addressed in the Treaty, Alaska's congressional delegation opposed final approval and ratification.⁴ This delegation wanted both the Canadian and United States Governments to reconsider the Treaty's impact upon Alaska. The ultimate result was a modified and improved Treaty, ratified in March 1985,⁵ in conjunction with the enactment of implementing legislation,⁶ and settlement of the pending treaty fishing rights litigation.⁷

The proposed 1982 Treaty provided some protection for Washington and Oregon fishermen operating in the Fraser River System by including the waters outside of the Fraser River Convention area in the management structure of the Treaty.⁸ But there was no guarantee that United States fishermen could continue fishing at reasonable levels for an appreciable period of time. The 1982 version of the Treaty also contained an accelerated rebuilding cycle for Columbia River chinook salmon which favored the fishermen of Canada and the Pacific Northwest United States.⁹ However, many of the concessions which formed the basis of the initialed 1982 agreement were burdens on Alaskan fishermen. The 1985 Treaty, while not perfect, has corrected this imbalance.¹⁰

During the many long years of negotiations with Canada, Alaskan fishermen made many unilateral sacrifices in conjunction

3. The tribes would have sued the State of Alaska to restrict Alaska harvest of Pacific Northwest salmon, particularly chinook. See *Confederated Tribes and Bands of the Yakima Indian Nation v. Baldrige*, 605 F. Supp. 833 (W.D. Wash. 1985).

4. My colleagues in the Alaska congressional delegation are Senator Frank Murkowski and Representative Don Young.

5. *Treaty Between the Government of the United States of America and the Government of Canada Concerning Pacific Salmon*, Treaty Doc. No. 99-2 (ratified Mar. 7, 1985) (entered into force Mar. 18, 1985) [hereinafter cited as 1985 Treaty].

6. *Pacific Salmon Treaty Act of 1985*, Pub. L. No. 99-5, 99 Stat. 7 (1985) (codified at 16 U.S.C.A. §§ 3631-3644 (West 1985)).

7. *Confederated Tribes and Bands of the Yakima Indian Nation v. Baldrige*, 605 F. Supp. 833 (1985).

8. See 1982 Agreement, *supra* note 1, at Annex IV, ch. 4, para. 1.

9. See 1982 Agreement, *supra* note 1, at Annex IV, ch. 3 (entitled *Conservation Measures for Chinook Salmon*).

10. See 1985 Treaty, *supra* note 5, at Annex IV, ch. 3.

with the State of Alaska's effort to reverse the decline of the chinook salmon.¹¹ This was exemplified by the Alaska Department of Fish and Game's actions in 1980-1984 to reduce catch ceilings for southeast Alaska trollers and the incidental catch rates for other fisheries.¹² During that period, however, Canadian fishermen actually increased their harvest of southbound chinooks, thereby negating Alaska's attempts to enhance escapement for the benefit of all Pacific coast salmon fishermen.

The 1982 agreement did not reflect the conservation effort already being carried out by Alaska. A two cycle rebuilding period of ten years for chinooks to enhance the Columbia River stocks was contemplated by the 1982 agreement,¹³ but there was no reasonable transition for southeast Alaska fishermen. Reductions in catch levels for the southeast troll fishery necessary to sustain such a short rebuilding period, in addition to the limits already imposed by the Alaska Department of Fish and Game,¹⁴ would

11. For example, the Alaska Department of Fish and Game implemented many conservation measures to protect chinook salmon in southeast Alaska. These measures included: closure of waters west of Cape Suckling to trolling (1974); limited entry for power trollers (1975); restrictions on sport fishing bag and possession limits (1975); elimination of directed net fisheries for chinook (1975-1977); closure of terminal areas to trolling (1975-1977); closures of inside areas to protect immature chinook (1975-1977); a 28-inch minimum size limit for chinooks (1977); closure of outside waters to hand trolling (1978-1980); establishment of eight-day opening/six-day closure fishing periods (1979); prohibition of sport fishing from commercial vessels (1979); reduced line limits for power and hand troll fisheries (1980); moratorium on entry into the hand troll fishery (1980) and limited entry for hand trollers (1981); establishment of a guideline harvest level of 320,000 chinook (1980) and then reduction of the guideline harvest level to 285,000 chinook (1981); prohibited use of any hooks other than single hooks (1981); reduced chinook fishing seasons in coastal and offshore waters from April 15 - October 30 to May 15 - September 20 (1981); closed entire troll fishery from April 15 to May 15 (1981); closed the troll fishery in-season to protect chinook and coho twice during 1980 and three times during 1981; and required fishermen to report catches before transporting fish out of state (1981). Alaska Dep't of Fish and Game, Commercial Fisheries Div., Conservation Measures Taken by Alaska to Protect Chinook Salmon in Southeast Alaska (unpublished data) (Mar. 12, 1982).

12. See Alaska Dep't of Fish and Game, Southeast Region Fisheries Div. Staff, Draft Preliminary Report on 1985 Southeast Alaska Chinook Salmon Catch and Escapement (unpublished report prepared for U.S.-Canada Pacific Salmon Comm'n) (Jan. 1986) [hereinafter cited as Alaska Salmon Catch Report].

13. See 1982 Agreement, *supra* note 1, at Annex IV, ch. 3 (entitled *Conservation Measures for Chinook Salmon*).

14. See *supra* note 9.

have forced almost all southeast Alaska fishermen out of the fishery, resulting in severe economic dislocations for Alaskan coastal communities.¹⁵

The 1985 Treaty, in contrast, takes into account the deep Alaskan commitment to conservation. It allows for an extended rebuilding period with protection against a sudden reduction of Alaskan harvests in order to achieve a gradual recovery of the Columbia River chinook stock without destroying the troll fishery.¹⁶

Although the 1982 agreement would have imposed restrictive quotas on all facets of the United States intercepting chinook fisheries, it did not include comprehensive restrictions on the Canadian fishery off of the west coast of Vancouver Island. As a practical matter, this "loophole" would have allowed Canadian fishermen to shift their efforts from restricted fisheries to the Vancouver Island fishery. The 1985 Treaty closed this loophole by imposing specific quotas on all significant Canadian intercepting chinook fisheries.¹⁷

Alaska's continuing effort to bolster the declining chinook stocks was incorporated into the 1985 Treaty. While the 1982 agreement would not have credited Alaskan fishermen for any future gains derived from the State of Alaska's restoration programs, the Treaty as adopted takes into account any demonstrated contributions of enhancement activities.¹⁸ This is particularly relevant to Alaska, because the State has already embarked on a comprehensive enhancement program which will provide over 200,000 additional chinooks by 1990.¹⁹

The establishment of a fishery regime in the northern boundary region between British Columbia and southeast Alaska was

15. Almost all communities in southeast Alaska rely on salmon for economic sustenance. See, e.g., G. ROGERS & R. COOLEY, ALASKA'S POPULATION AND ECONOMY: REGIONAL GROWTH, DEVELOPMENT AND FUTURE OUTLOOK 168-72 (Mar. 1962) (salmon account for 80% of total value of commercial fisheries; "southeast Alaska generally produced the largest portion of the total commercial fishery values during the decade . . .").

16. See 1985 Treaty, *supra* note 5, at Annex IV, ch. 3 (entitled *Chinook Salmon*).

17. See 1985 Treaty, *supra* note 5, at Annex IV, ch. 3, para. (d)(i)-(vi).

18. *Id.* at Annex IV, para. 2.

19. See ALASKA DEP'T OF FISH AND GAME, PRE-SEASON MANAGEMENT PLAN FOR 1985 SOUTHEAST ALASKA CHINOOK FISHERIES 7 (Apr. 1985). See also Alaska Salmon Catch Report, *supra* note 12, at 10-14.

also an integral element of the negotiations.²⁰ The critical issue involved the need to limit fishing effort in a way that would prevent high incidental catches of each Nation's salmon stocks by the other Nation. Early in the negotiations it was recognized that unreasonable limitations on United States harvests of Canadian sockeye would significantly impede the ability of southeast Alaska fishermen to harvest the Alaskan pink salmon resource. In spite of these concerns, the 1982 agreement imposed strict limitations on the sockeye catch at Noyes Island and Tree Point.²¹ These limitations would have forced United States fishermen to forego harvesting millions of pink salmon of United States origin.

The 1985 agreement moderated this adverse impact by permitting United States fishermen an incidental catch of 480,000 sockeye at Noyes Island for a four year period and 130,000 sockeye per year at Tree Point.²² The principle is clearly established that interception limits will not prevent the United States from harvesting its own fish.²³ The agreement does permit a larger Canadian incidental harvest of pink salmon, but the Canadian troll fishery will close down in the northern part of the boundary area upon reaching an incidental catch of 300,000 pinks.²⁴

The key feature of the Treaty which resulted from the prolonged negotiations on the northern boundary area,²⁵ is the recognition by all parties that the fish stocks should be managed to permit fishermen of each nation to continue "targeting" on stocks originating in their own waters.²⁶ The specific restrictions embodied in the 1985 agreement reflect that understanding.

The transboundary river controversy was another issue of

20. See 131 Cong. Rec. S2687 (daily ed. Mar. 7, 1985) (statement of Sen. Lugar referring to the 1985 Treaty, *supra* note 5, at Annex IV, ch. 2).

21. See 1982 Agreement, *supra* note 1, at Annex IV, ch. 2 (entitled *Northern British Columbia-Southeastern Alaska Boundary Area*), para. 2(i) & (ii).

22. See 1985 Treaty, *supra* note 5, at Annex IV, ch. 2 (entitled *Northern British Columbia Southeastern Alaska*), paras. 2 & 3.

23. *Id.* at para. 4 ("the Parties shall implement appropriate management measures which will take into account the expected run-sizes and permit each country to harvest its own stocks").

24. *Id.* at para. 3(c).

25. This is the boundary between the United States and Canada in southeast Alaska. See *supra* note 18 and accompanying text.

26. See 131 Cong. Rec. S2687 (daily ed. Mar. 7, 1985) (statement of Sen. Lugar).

concern for Alaska during the negotiations. Canada's increased harvests on the transboundary rivers located in southeast Alaska, especially the Stikine and the Taku Rivers, appear to have been promoted for the purpose of Canada's obtaining additional leverage in the overall negotiations. There were no traditional or viable commercial Canadian fisheries on these rivers before the negotiations. In fact, the Canadian Government had to subsidize the Taku River fishery to maintain a claim for future Canadian fishery development there.

The 1982 agreement called for an allocation regime that might have established an economically viable Canadian fishery for sockeye and coho on the Stikine and Taku Rivers.²⁷ For the years 1983 and 1984, the Canadians would have been allowed a sockeye harvest approximating fifty percent of the total allowable catch.²⁸ There was a dispute over whether Canada would be allowed thirty-five percent of the catch or fifty percent of the catch after 1984. That coho harvest was included at the last minute in the allocation scheme.²⁹

Many southeast Alaskan fishermen have traditionally depended on Stikine and the Taku River harvests. In the 1982 agreement, the benefits of the State of Alaska's strict conservation regime designed to restore these runs would have passed on to a previously non-existent Canadian fishery. The final Treaty moderates the impact of a transboundary allocation scheme on Alaskan fishermen. It expressly provides that the Canadians will be entitled to only thirty-five percent of the sockeye on the Stikine River,³⁰ and fifteen percent of the sockeye on the Taku River.³¹ The Canadians are also limited to 2000 coho on the Stikine and an incidental catch on the Taku.³²

The 1985 Treaty and agreed understandings largely resolved the questions presented by the "equity" principle.³³ The Canadi-

27. See 1982 Agreement, *supra* note 1, at Annex IV, ch. 1 (entitled *Transboundary Rivers*).

28. *Id.* at Annex IV, ch. 1, para. 3.

29. *Id.* at para. 3(b).

30. See 1985 Treaty, *supra* note 5, at Annex IV, ch. 1, para. 3(a).

31. *Id.* at para. 3(b).

32. *Id.* at para. 3.

33. See Jensen, *The United States-Canada Pacific Salmon Interception Treaty: An Historical and Legal Overview*, 16 ENVTL. L. 363, 400 n.106; see also Memorandum of Understanding, para. A, accompanying the 1985 Treaty, *supra*

ans were, and still are demanding that they receive disproportionate compensation for Canadian fish caught by United States fishermen. It was contemplated that this compensation would come in the form of increased fishery allocations to be decided by the Commission. The 1985 Treaty allows the United States to assert its position forcefully, although Canada will doubtless keep up the pressure to obtain its claimed share.

The process of implementing the Treaty into domestic law has also served to protect United States interests. The Reagan Administration recognized the need to restore the salmon stocks by enhancement as soon as resources permitted in order to mitigate any economic dislocation resulting from the Treaty fishing limits.³⁴ The United States Department of State specifically stated that it would support funding for an enhancement program in Alaska.³⁵ The implementing legislation also mandates Commission positions³⁶ and provides veto authority for northern and southern delegations as a safeguard against unjustifiable tradeoffs between the north and the south.³⁷

The implementing process also put to rest the issue of whether the fishery allocation regime, established by Judge Boldt in *United States v. Washington*³⁸ applies to chinook harvests off Alaska. The "Boldt decision" held that the Pacific Northwest Indian Tribes, which are protected by the Stevens and Palmer Treaties, are entitled to fifty percent of all harvestable anadromous fish passing through their traditional fishing grounds.³⁹ Due

note 5.

34. See *Hearings Before the Subcomm. on Fisheries and Wildlife Conservation and the Environment of the House Comm. on Merchant Marine and Fisheries*, 99th Cong., 1st Sess. 102-03 (1985) (colloquy between U.S. Negotiator Kronmiller, Rep. Lowry, and State Dep't Counselor Derwinski).

35. See Letter from Secretary of State George Shultz to Senator Ted Stevens (Mar. 7, 1985) (discussing the United States-Canada Salmon Treaty), reprinted in 131 CONG. REC. S2875 (daily ed. Mar. 7, 1985).

36. See 16 U.S.C.A. § 3632(a)-(h).

37. *Id.* § 3632(g). It should be noted that "north" means Alaska and "south" means everyone else except Canada.

38. 384 F. Supp. 312 (W.D. Wash. 1974), *aff'd*, 500 F.2d 676 (9th Cir. 1975), *cert. denied*, 423 U.S. 1066 (1976). See *Washington v. Washington State Commercial Passenger Fishing Vessel Ass'n*, 443 U.S. 658 (1979).

39. See, e.g., Comment, *Empty Victories: Indian Treaty Fishing Rights in the Pacific Northwest*, 10 ENVTL. L. 413 (1980); Harrison, *The Evolution of a New Comprehensive Plan for Managing Columbia River Anadromous Fish*, 16 ENVTL.

to the ongoing, managerial nature of *United States v. Washington*, the issue of the tribal right to protection of the fishery resource throughout its range remained unresolved in 1982. In an effort to promote their positions in the Salmon Treaty negotiations, the Treaty tribes threatened to seek a court ruling which would have included Alaskan harvests under the Boldt decision.

In the final analysis, that tactic proved beneficial for both Alaska and the tribes. The tribes extracted a provision for equal representation on the United States Section of the Pacific Salmon Commission.⁴⁰ In exchange for supporting ratification of the Treaty and participation by the tribes, the State of Alaska obtained a legal commitment on the part of the Tribes not to seek inclusion of Alaskan harvests of Pacific Northwest salmon in the *United States v. Washington* allocation scheme as long as the 1985 Treaty remains intact.⁴¹

The 1985 Pacific Salmon Treaty imposes harsh burdens on many of southeast Alaska's fishermen, but there is a widespread perception in Alaska that sacrifices must be made in order to rebuild the salmon resources. Alaskans are willing to share part of this burden; however, it was necessary to ensure that the burden was spread fairly among all parties. The 1985 Treaty succeeded in achieving this goal.

L. 706 (1986) (discussion of equal share). See generally F. COHEN, *HANDBOOK OF AMERICAN INDIAN LAW* 220-28 (1982). The various Stevens Treaties are given in Holt, *Can Indians Hunt in National Parks? Determinable Indian Treaty Rights and United States v. Hicks*, 16 *ENVTL. L.* 207, 217 n.66 (1986).

40. See 16 U.S.C.A. § 3632(e)(3).

41. See *Confederated Tribes and Bands of the Yakima Indian Nation v. Baldrige*, 605 F. Supp. 833, 836-37 (1985).

APPENDIX C

PACIFIC SALMON COMMISSION MAY 1991 LETTER OF
TRANSMITTAL AND CHINOOK ANNEX



PACIFIC SALMON COMMISSION

ESTABLISHED BY TREATY BETWEEN CANADA
AND THE UNITED STATES OF AMERICA
MARCH 17 1985

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TELEPHONE (604) 684-8081
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May 17, 1991

The Honorable James A. Baker, III
Secretary of State
U.S. Department of State
2201 C Street N.W.
Washington, D.C. 20520

Dear Sir:

I have the honor to report to you on understandings that have been reached by the Pacific Salmon Commission and to recommend changes in Annex IV of the Pacific Salmon Treaty.

In accordance with Article XIII, Paragraph 2 of the Treaty, the Commission recommends that Chapters 3, 5, and 6 of Annex IV be amended. The entire text of Annex IV as proposed by the Commission is attached (Attachment 1). Pursuant to Article XIII, Paragraph 3 of the Treaty, amendments to the Annex may be implemented through an exchange of notes between the Governments. The Commission recommends that an exchange of notes occur implementing these proposals as soon as possible. The Commission expects that the relevant management agencies will manage fisheries under their responsibility consistent with these agreements.

The amended chapters are of two years duration, consistent with the intent of the Commission to provide the time necessary to develop longer-term approaches to addressing the needs of the Parties.

The Commission has also reached the following understandings as to the implementation of the Pacific Salmon Treaty:

- 1) With respect to Annex IV, Chapter 3, the Commission agrees that:
 - a) in 1991 and 1992, the Southeast Alaska all gear catch shall consist of the base ceiling, with a ceiling adjustment for 1991 only, as specified in Annex IV, Chapter 3, plus a catch of new Alaska hatchery add-on chinook to be calculated in-season using the procedures approved by the Commission for the 1990 add-on and as described in Alaska's February 4, 1991 report to the Commission; the preseason expectation of the 1991 hatchery add-on is 57,800 chinook salmon;



the U.S. agrees to continue tagging and catch sampling rates which provide precision of hatchery contribution estimates similar to that of recent years and provide a report to the Commission in November 1992 describing the results of the 1991 and 1992 hatchery add-on programs;

the Commission agrees to consider a reduced risk adjustment level for 1992 based upon evaluation and review by the Chinook Technical Committee of the following information to be provided by the United States by November 1991:

- i) the computational procedures for estimating the coefficient of variation associated with the add-on;
 - ii) the effects of hatchery add-on fisheries, if any, on the rebuilding of wild stocks including information on the stock composition of chinook catches in the June fisheries and on the duration of subsequent chinook non-retention periods;
- b) with respect to terminal exclusions, the Commission agrees that the Chinook Working Group with the assistance of the Chinook Technical Committee and the findings reported in TCCHINOOK (91)-2, shall recommend standards and criteria to the Commission by January 1993, to govern consideration for future proposals for terminal exclusions. With regard to the exclusion of selected terminal area chinook catches from the Northern and Central B.C. catch ceiling, the Commission agrees to the provisions detailed in Attachment 2;
- c) with respect to the west coast Vancouver Island troll fishery, and in light of the below average forecast of chinook abundance in 1991, Canada will manage this fishery in a manner consistent with the spirit and intent of the Treaty and the rebuilding program. Prior to the start of each season, Canada will provide the U.S. with details regarding its plans and intentions for this fishery;



- d) with respect to the adjustments in catch ceilings for the 1991 Southeast Alaska and Northern and Central B.C. fisheries, the Parties agree that the overage/underage policy set forth in Chapter 3, paragraph 1(e)(vii) is to be applied to the base ceiling levels of 263,000 chinook;
- e) with respect to the Strait of Georgia fisheries, Canada agrees to provide a report to the Commission on the evaluation of the effectiveness of the management measures taken in 1988, 1989 and 1990 to reduce the harvest rates on depressed chinook stocks following completion of Canada's Pacific Stock Assessment and Review Committee and domestic review processes; and,
- f) the Parties remain committed to evaluating management regimes for chinook that might better address the Parties' long term objectives and are consistent with the fundamental principles established in Article III of the Pacific Salmon Treaty.

To this end, in January 1991, the Parties held a workshop to explore alternative chinook management approaches. There was an overall view among the participants that the Workshop was a good forum for exploring new management ideas and for understanding problems that jurisdictions face implementing management approaches. The participants identified information needs and policy issues that must be resolved before completing development of alternative management approaches. Accordingly, the Commission agreed that the Chinook Work Group, in cooperation with the Chinook Technical Committee, shall:

- i) develop operational definitions for policy issues such as rebuilding, rebuilt, pass through, and stocks of concern which are necessary components of a longer term chinook management approach;
- ii) advise the Commission on processes to ensure active participation by the Panels in the development of options for a long term chinook management approach;



- iii) identify technical tasks that need to be addressed before the management approaches can be fully evaluated, and a timetable for completion of these tasks; and,
- iv) consistent with paragraph 1(b) of Annex IV, Chapter 3, present the Commission with management options to respond to short-term variations in abundance in a manner consistent with the conservation and equity principles of the Treaty.

The Chinook Work Group will provide a progress report to the Commission in November 1991 containing a proposed workplan and a prioritized schedule for completion of these assignments with a view toward completion of the work for consideration by the Commission at the 1993 annual meeting.

2) With respect to Annex IV, Chapter 4, the Commission agrees to the provisions of Attachment 3: "Establishment of Fraser Sockeye and Pink Salmon Escapement Goals for 1991 and 1992 for the Purposes of Computing the Total Allowable Catch; and Attachment 4: "Fraser Panel Agreement on Sockeye Escapement Add-On Computation";

3) With respect to Annex IV, Chapter 5, the Commission agrees:

- a) For 1991 and 1992, Canada will not conduct a directed coho net fishery in Area 20 and the U.S. may conduct a directed coho fishery in Areas 7 and 7A subject to U.S. domestic management processes;
- b) Although the Parties hold differing views on the appropriateness of the directed coho fishery in Areas 7 and 7A, they agree that the enhancement based approach proposed by the U.S. appears to be a positive step forward and agree to explore the merits of this approach to address the Areas 7 and 7A directed coho issue. In doing so, both Parties have agreed to clarify the technical and procedural questions which will form the basis for making an informed decision on the proposed approach;



The parties have also identified the need to jointly develop a time frame and methodology for the purpose of assessing how well the average annual contributions of new specified U.S. production to Canadian fisheries compare to the average interceptions that may occur in directed Areas 7 and 7A coho fisheries;

- c) that, with respect to the 1990 directed coho fishery in Areas 7 and 7A:
- i) to jointly estimate the level of interceptions that occurred in the 1990 Areas 7 and 7A directed coho fishery (recognizing that the estimates generated for this purpose may not necessarily reflect improved stock composition estimates that will eventually be available to the Parties when currently on-going joint technical studies are completed);
 - ii) to establish a base period and level of production from which the new increased production could be measured and clarify which Canadian fisheries would receive benefits from the new specified U.S. production. (It is recognized the Parties have differing opinions on whether it is appropriate to apply actions taken prior to 1991);
 - iii) that the U.S. will not harvest the cumulative Areas 7 and 7A chum salmon shortfall through 1990 (as provided in Annex IV, Chapter 6, Paragraph 5); and,
 - iv) that if the above steps are determined not to adequately address compensating measures for the 1990 Areas 7 and 7A directed coho fishery, the Parties will consider and agree to appropriate additional compensating measures by no later than the February 1992 annual meeting of the Pacific Salmon Commission;



- d) to complete discussions on compensating measures for the 1990 Area 7/7A fishery and assess the merits of the long term enhancement based approach. Results of these discussions will be provided to the Commission in February 1992;
- e) to initiate discussions on coho within the Southern Panel area with a view toward clarifying and improving understanding of the conservation concerns and the management approaches of the Parties; and,
- f) to adjust the date of the workshop on southern coho issues to January 1992 and to report the findings to the Commission during the January 1992 meetings of the Commission.

4) With respect to Annex IV, Chapter 6, the Commission agrees to initiate discussions on chum within the Southern Panel area with a view toward clarifying and improving understanding of the conservation concerns and the management approaches of the Parties.

5) With respect to implementation of Article III, Paragraph 1 of the Pacific Salmon Treaty, the Commission agrees that:

The Parties are committed to developing a mutually acceptable approach to identify and resolve equity issues in a timely manner. In the revised (February 1991) "Understanding Between the Canadian and United States Sections of the Pacific Salmon Commission Concerning Equity Related Issues" (Attachment 5), Item 7 identifies that the Parties will "hold a bilateral workshop in September 1991 for the purpose of exchanging alternative technical approaches for determining each Party's benefits in relation to salmon production and interceptions." To coordinate this workshop, the Commission has established a Steering Group which will meet in June 1991 to develop a schedule, agenda, attendance requirements, and format for the workshop. Workshop discussions will be structured around selected topics and papers identified in advance by the Parties.



At the conclusion of the workshop, the Steering Group, supported by Commission staff, will compile the papers, work products, discussion comments, and a summary of the workshop and provide these to the Commission by October 1991.

The Commission respectfully requests your approval of these recommendations.

Yours truly,

Pacific Salmon Commission

A handwritten signature in dark ink, appearing to read "P.S. Chamut". The signature is written in a cursive, somewhat stylized font.

P.S. Chamut, Chair

Note: Treaty articles and
other Annex IV chapters
have been provided under
separate cover.

Chapter 3

CHINOOK SALMON

1. Considering the escapements of many naturally spawning chinook stocks originating from the Columbia River northward to southeastern Alaska have declined in recent years and are now substantially below goals set to achieve maximum sustainable yields, and recognizing the desirability of stabilizing trends in escapements and rebuilding stocks of naturally spawning chinook salmon, the Parties shall

- (a) instruct their respective management agencies to establish a chinook salmon management program designed to meet the following objectives:
 - (i) halt the decline in spawning escapements in depressed chinook salmon stocks; and,
 - (ii) attain by 1998, escapement goals established in order to restore production of naturally spawning chinook stocks, as represented by indicator stocks identified by the Parties, based on a rebuilding program begun in 1984;
- (b) continue the chinook working group to clarify policy issues relating to the execution of this Chapter; for example, the definition of pass-through, and the development of common procedures for adjusting catch ceilings in response to changes in abundance, positive incentives and enhancement add-ons; the chinook working group will develop options for consideration by the Commission and Panels as appropriate;
- (c) jointly initiate and develop a coordinated chinook management program;
- (d) maintain a Joint Chinook Technical Committee (Committee) reporting, unless otherwise agreed, to the Northern and Southern Panels and to the Commission, which inter alia, shall

- (i) evaluate management actions for their consistency with measures set out in this Chapter and for their potential effectiveness in attaining these specified objectives;
 - (ii) evaluate annually the status of chinook stocks in relation to objectives set out in this Chapter and, consistent with paragraph (d) (v) beginning in 1986, make recommendations for adjustments to the management measures set out in this Chapter;
 - (iii) develop procedures to evaluate progress in the rebuilding of naturally spawning chinook stocks;
 - (iv) recommend strategies for the effective utilization of enhanced stocks;
 - (v) recommend research required to implement this rebuilding program effectively; and,
 - (vi) exchange information necessary to analyze the effectiveness of alternative fishery regulatory measures to satisfy conservation objectives;
- (e) ensure that
- (i) in 1991, the all-gear catch in Southeast Alaska shall not exceed the base ceiling of 263,000 chinook salmon plus 10,000; in 1992, the all-gear catch in Southeast Alaska shall not exceed 263,000 chinook salmon; these catches exclude the Alaska hatchery add-on as described in the letter of transmittal, in 1991 and 1992 Alaska shall open its general summer troll fishery on July 1; the June fishery shall not exceed 40,000 chinook salmon (excluding the Alaska hatchery add-on) taken in a manner similar to 1989 and 1990; and areas of high chinook abundance shall be closed during chinook non-retention periods to reduce incidental mortalities;
 - (ii) in 1991, the all-gear catch in Northern and Central B.C. shall not exceed the base ceiling of 263,000 chinook salmon plus 10,000; in 1992, the all-gear catch in Northern and Central B.C. shall not exceed 263,000 chinook salmon; these catches

exclude a portion of the catch in extreme terminal areas as described in the letter of transmittal.

- (iii) in 1991 and 1992, the annual troll catch off the west coast of Vancouver Island shall not exceed 360,000 chinook salmon;
- (iv) in 1991 and 1992, the total annual catch by the sport and troll fisheries in the Strait of Georgia shall not exceed 275,000 chinook salmon; Canada will undertake management measures to achieve the target of rebuilding Lower Georgia Strait and Fraser River chinook stocks by 1998;
- (v) adjustments to the ceilings may be made in response to reductions in chinook abundance so that the indicator stocks are rebuilt by 1998;
- (vi) fishing regimes are reviewed by the Committee and structured so as not to affect unduly or to concentrate disproportionately on stocks in need of conservation;
- (vii) starting with the 1987 season, a 7.5 percent management range is established above and below a catch ceiling. On a continuing basis, the cumulative deviation (in numbers of fish) shall not exceed the management range. In the event that the cumulative deviation exceeds the range, the responsible Party shall be required in the succeeding year, to take appropriate management actions to return the cumulative deviation, plus any penalty assessed, to a level within the established management range. Negative cumulative deviations shall not accumulate below the management range. It is the intent of this section to insure that, on average, the annual catch in ceilinged fisheries is equal to the agreed target ceiling; and,
- (viii) in 1987 and thereafter, the United States will continue to monitor fisheries in Juan de Fuca Strait (Areas 4B, 5, 6A, 6C) and the outer portions of Puget Sound (6B, 7, 7A, 9) so as to assess the levels and trends in the interceptions of Canadian chinook salmon;

- (f) maintain the following program, recognizing that associated fishing mortalities can affect the rebuilding schedule. The Parties shall
 - (i) minimize the effects of such mortalities;
 - (ii) monitor, assess, and report associated fishing mortalities.
 - (iii) provide the information required by the Chinook Technical Committee to estimate the magnitude and assess the impacts of associated mortalities on an on-going basis;
 - (iv) beginning in 1989, the Chinook Technical Committee shall
 - a. review reports provided by the Parties on an annual basis, unless directed by the Commission, and estimate the magnitude of all quantifiable sources of associated fishing mortalities;
 - b. evaluate their impact on the rebuilding schedule and recommend management actions that will achieve the objectives of the chinook rebuilding program, taking into account the effects of all fishing mortalities; and
 - c. develop technical procedures and standardize methodologies to quantify the magnitude of associated fishing mortalities, including savings of fish, and assess their impacts upon the rebuilding program, including pass-through commitments;
 - (v) the Commission shall annually take into account, starting in 1988, the impacts of fishing mortalities, as determined by the Chinook Technical Committee, in establishing regional fishing regimes and may adjust allowable catches accordingly, to assure rebuilding by 1998;
- (g) manage all salmon fisheries in Alaska, British Columbia, Washington and Oregon, so that the bulk of depressed stocks preserved by the conservation program set out herein principally accrue to the spawning escapement;

(h) establish, at the conclusion of the chinook rebuilding program, fishery regimes to maintain the stocks at optimum productivity and provide fair internal allocation determinations. It is recognized that the Parties are to share the benefits of coastwide rebuilding and enhancement, consistent with such internal allocation determinations and this Treaty; and,

(i) exchange annual management plans prior to each season.

2. The Parties agree that enhancement efforts designed to increase production of chinook salmon would benefit the rebuilding program. They agree to consider utilizing and redirecting enhancement programs to assist, if needed, in the chinook rebuilding program. They agree that each region's catches will be allowed to increase above established ceilings based on demonstrations to the Commission and assessment by it of the specific contributions of each region's new enhancement activities, provided that the rebuilding schedule is not extended beyond 1998, and provisions of Subsection 1(e)(vi) of this Chapter are adhered to.

3. The Parties shall submit a report to the Commission by December 1991 which presents

(a) joint recommendations for chinook salmon escapement goals in the transboundary rivers;

(b) given the goals recommended in 3(a), a jointly accepted assessment of progress toward rebuilding chinook stocks in these transboundary rivers based on escapement data available through 1991, and the likelihood of achievement of these goals by 1998 and,

(c) cooperatively developed management actions to be identified by December 1991 and initiated in 1992 and following seasons to ensure rebuilding of chinook stocks in the transboundary rivers which are identified in 3(b) as requiring further management actions.

**PACIFIC SALMON COMMISSION
CHINOOK TECHNICAL COMMITTEE**

REPORT TCCHINOOK (92)-2

**CHINOOK TECHNICAL REPORT ON
PRELIMINARY 1991 CATCH AND
ESCAPEMENT**

FEBRUARY 13, 1992

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1.0 1991 CHINOOK SALMON CATCHES IN FISHERIES WITH CEILINGS

Estimates of 1991 catch for each fishery managed under a harvest ceiling established by the Pacific Salmon Commission (PSC) are presented below. These data are preliminary, but major changes are not expected. Catches in all chinook fisheries of interest to the PSC are documented in Table 1.

(numbers x 1,000) Compiled with information available as of February 3, 1992.

Area/Fisheries a/	Ceiling	Catch	Difference	
			Numbers	Percent
S.E. Alaska (T,N,S) b/	273	299.3	+26.3	+9.6%
North/Central B.C. (T,N,S) c/	273	301.4	+28.4	+10.4%
West Coast Vancouver Island (T)	360	195.7	-164.3	-45.6%
Strait of Georgia (T,S)	275	144.3	-130.7	-47.5%

a/ T=Troll; N=Net; S=Sport

b/ The actual total catch was 364,900 chinook, including a hatchery add-on of 65,500.

c/ Excludes 6,057 chinook caught in terminal areas in 1991, which Canada proposes to exclude from the ceiling.

2.0 CUMULATIVE DEVIATIONS FROM CATCH CEILINGS

A 7.5% cumulative management range was established by the PSC in 1987. Annual catches (without add-on) and deviations from catch ceilings since 1987 are as follows:

(numbers x 1,000) Compiled with information available as of February 3, 1992.

Area/Fisheries	Ceiling	Catch					Total Deviation	Cumulative Deviation	
		1987	1988	1989	1990	1991		Numbers	Percent
S.E. Alaska (T,N,S) a/	263 b/	265.2	255.2	264.4	318.5	299.3	+38.6	+38.6	+14.7% c/
North/Central B.C. (T,N,S) d/	263 b/	283.0	245.6	303.0	254.0	301.4	+23.0	+23.0	+8.7% c/
West Coast Vancouver Island (T)	360	378.9	408.7	203.7	295.5	195.7	-318.0	-27.0	-7.5% c/
St. of Georgia (T,S)	275	159.0	138.7	162.0	144.3	147.5	-623.5	-20.6	-7.5% c/

a/ S.E. Alaska catches exclude hatchery add-ons of 16,700, 23,700, 26,700, 48,300, and 65,500 for 1987, 1988, 1989, 1990, and 1991 respectively.

b/ The 1990 ceiling was 302,000, and the 1991 ceiling was 273,000.

c/ These overages exceed the 7.5% management range.

d/ Catches exclude 4,819, 5,549, and 6,057 chinook caught in terminal areas in 1989, 1990, and 1991, respectively, for a total of 16,425.

e/ Negative deviations below the 7.5% management range can not be accumulated.

3.0 REVIEW OF FISHERIES WITH CATCH CEILINGS

3.1 S.E. Alaska Fisheries

In 1991, S.E. Alaska fisheries were managed under the following provisions established by the Pacific Salmon Commission:

- (1) an all gear base catch ceiling of 263,000 plus 10,000 chinook salmon;
- (2) an Alaska hatchery add-on calculated on the basis of coded wire tag sampling;
- (3) a 7.5% management range, calculated in numbers of fish, for cumulative deviations from the base catch ceiling since 1987; this is equivalent to +/- 19,700 chinook salmon for a 263,000 base catch ceiling; and
- (4) a limit of 40,000 chinook, excluding Alaska hatchery add-on, to be taken in June fisheries.

Preliminary data for 1991 indicate the following:

- (1) The total all gear catch (commercial and recreational) was 364,900 chinook salmon, including a hatchery add-on of 65,500.
- (2) The preliminary estimate of the 1991 Alaska hatchery add-on, calculated on the basis of coded-wire-tag recoveries, was 65,500. The add-on was calculated as the estimated total Alaska hatchery harvest of 79,500 reduced by 5,000 for pre-Treaty hatchery harvest and by 9,000 (preliminary) for the risk adjustment.
- (3) The deviation of the 1991 S.E. Alaska chinook salmon catch from the catch ceiling was +26,300. The total cumulative deviation is +38,600 (+14.7% of the catch ceiling). This overage exceeds the 7.5% management range.

Troll Fisheries: The 1991 total troll harvest of chinook salmon was 263,700 of which 38,200 were of Alaskan hatchery origin.

The winter troll fishery was open from October 1, 1990 to April 14, 1991; 42,400 chinook salmon were harvested. A total of 10,100 (23.8%) of these chinook were produced by Alaskan hatcheries. The winter troll fishery takes place entirely within the surfline. Both effort and catch have been low, often due to poor weather and the short number of hours available each day for trolling. The catch has averaged less than 15% of the total annual troll harvest.

During June, experimental, hatchery access, and terminal troll fisheries were conducted. The experimental fisheries are designed to increase the harvest of chinook salmon

produced in Alaskan hatcheries by allowing trolling for 2 to 3 days per week in small areas in the migratory path close to the hatchery. The hatchery access fishery was designed to increase the harvest of Alaskan hatchery chinook salmon while providing general access to wild S.E. Alaska stocks. Terminal fisheries occurred directly in front of hatcheries or remote release sites

The June fisheries were managed in-season to maximize the catch of Alaskan hatchery chinook and to comply with a limit of 40,000 non-Alaskan hatchery chinook.

Eight different areas were open 9 days each for the experimental fishery. A total of 13,900 chinook salmon were harvested of which 6,600 (47.5%) were produced in Alaskan hatcheries. This was the largest catch since the inception of the fishery in 1986.

The first hatchery access opening in 1991 occurred from June 5 through 7. However, those waters just east of the surfline (in Districts 103 and 113) were open only 2 days. A total of 22,500 chinook salmon were caught during this period, of which 6,000 (26.7%) were from Alaskan hatcheries. The second opening was scheduled for just 1.5 days in all waters. During this period, a total of 23,900 fish were harvested, of which only 3,100 (13.0%) were from Alaskan hatcheries.

A total of 6,000 chinook salmon were harvested in terminal areas. All of these fish are assumed to be of Alaskan hatchery origin.

The total June catch was 66,300 of which 21,700 (32.7%) were from Alaskan hatcheries. A total of 44,600 chinook salmon harvested in June were not of Alaskan hatchery origin. This was 4,600 chinook over the 40,000 limit stipulated in the Treaty.

The general summer troll season began on July 1 and continued through noon on July 8 (7.5 days). A total of 154,000 chinook salmon were harvested, of which 6,400 (4.2%) were from Alaskan hatcheries. Following the closure of the chinook salmon harvest, areas of high chinook salmon abundance were closed. There was also a 10 day closure of all trolling in mid-August. Trolling for all species closed on September 20. There were a total of 64.5 days of chinook non-retention.

An additional 1,000 chinook were taken in the Annette Island troll fishery, throughout the October 1 through September 30 catch accounting period.

Net Fisheries: Net fisheries had a guideline harvest of 20,000 chinook salmon plus Alaska hatchery add-on. Catches of chinook salmon in the net fisheries are incidental to the harvest of other species and constitute only a fraction (< 1%) of the total net harvest. Purse seine and set net fisheries are managed by non-retention periods. Retention in the purse seine fishery occurs during periods of expected high pink salmon abundance. Night closures are used in the drift fill net fishery to slow down the harvest. In 1991, the net fisheries harvested a total of 32,700 chinook salmon of which 10,900

were Alaskan hatchery chinook harvested in terminal fisheries and 3,800 were Alaskan hatchery chinook harvested in non-terminal fisheries.

Recreational Fisheries: There is no guideline harvest level established for recreational fisheries. These fisheries are managed under a 2 fish-per-day bag limit and a 28" minimum size limit. An estimate of the final harvest will not be available until mid-1992; however, the preliminary projection is 68,400 chinook salmon, of which 26,700 are estimated to be from Alaskan hatcheries. The recreational harvest has increased tremendously during the last several years with harvests of 26,200, 31,100, and 51,200 in 1988, 1989 and 1990, respectively.

3.2 Canadian Fisheries

The minimum size limit for troll fisheries remained at 62 cm fork length in the Strait of Georgia and at 67 cm fork length in all other areas. Catch statistics for commercial fisheries are based on sales slips accumulated through December 31, 1991. These data are preliminary.

North/Central B.C.: The 1991 North/Central B.C. fisheries were managed under the following provisions:

- (1) an all gear base catch ceiling of 263,000 plus 10,000 chinook salmon; and
- (2) a 7.5% management range, with cumulative deviations calculated since 1987. Based on preliminary 1990 catch estimates and terminal exclusion calculation procedures, the cumulative deviation at the beginning of the 1991 season was estimated at -5,400.

The preliminary 1991 all-gear catch was 301,400, excluding terminal exclusions of 6,057. These preliminary catch statistics indicate a 1991 catch deviation of +28,400, and a cumulative deviation through 1991 of +23,000 chinook (+8.7% of the catch ceiling). This overage exceeds the 7.5% management range.

Terminal exclusions, as allowed in the Letter of Transmittal, are calculated as follows:

Area	Base	1991 Catch	1991 Exclusion
Skeena	2,900	7,283	4,383
Bella Coola	2,950	4,624	1,674
Kitimat	2,400	2,305	0
Total			6,057

Troll Fisheries: The 1991 troll fishery opened for all species on June 28. There was a four day closure from August 7 through August 10, prior to opening for retention of Fraser River bound sockeye. The management objective for the troll fishery in 1991 was a chinook catch ceiling of 203,300. A number of management actions were taken during the troll fishery to meet this objective, including:

- (1) The west coast of Queen Charlotte Islands south of Buck Point and Areas 107-2, 107-3, 108-111 and 11 were closed to all trolling August 20-24.
- (2) On August 27 all of Area 2W, Area 142, and the area known as the "Red Line" in Area 1 were closed to trolling to slow the chinook catch rate.
- (3) On September 3, the entire North Coast (Areas 1-11, 30) was closed to possession and retention of chinook.
- (4) Also, on September 3 a large portion of Hecate Strait was closed to prevent chinook shaking problems.

Trolling for all species closed on September 30, for a total of 27 days of chinook non-retention. The preliminary catch of chinook in North/Central B.C. troll fisheries was 219,967 (data to Dec. 1, 1991).

Net Fisheries: Catch of chinook in North/Central areas was 54,750. Catches by fishery were 6,430 in the Queen Charlotte Islands, 31,870 for the Skeena/Nass and 16,450 in the Central Coast. These catches are the preliminary total catches of chinook >5 lb. including the catch eligible for terminal exclusion.

Recreational Fisheries: The tidal water sport fishery catch of chinook was 32,700. Catch by fishery was 15,200 for the Queen Charlotte Islands, 4,300 for the Skeena/Nass and 13,200 for the Central Coast.

West Coast Vancouver Island (WCVI) Troll:

In light of the below average forecast of chinook abundance to the WCVI troll fishery in 1991, Canada's main objective for the WCVI troll fishery was to manage the fishery in a manner consistent with the intent of the treaty and the rebuilding program. In addition, due to Canada's concern for the Harrison River chinook stock, the intent was to manage the fishery to maintain the 1985-87 average harvest rate. It was estimated that a fishery of approximately 77 days open for chinook retention would maintain the 1985-87 average harvest rate. The fishery opened on June 28 with all areas open except Areas F1, G and S (same areas as Fig. 1, page 11, TCCHINOOK (91)-3). There were four major area/time closures on the west coast of Vancouver Island in 1991:

- (1) Areas F1 and G closed from June 28 to July 14. This area closure was implemented in order to moderate the coho catch rate early in the fishery. Area F1 opened July 14. Area G opened for the duration of the sockeye fishery only (August 11 through August 20).
- (2) Complete closure to all trolling from August 7 through August 10 (4 days) prior to the sockeye fishery.
- (3) Complete closure to all trolling from August 21 through August 23 (3 days) following the sockeye fishery.
- (4) Areas F1, G and the waters easterly of Loran-C line 5990-Z-14740 closed August 24. This action was taken initially to slow coho catch rate. Following closure for coho retention on September 6, the area closure was maintained in order to prevent coho shaking problems.

Trolling closed on September 18, for a total of 76 days open to chinook fishing. There was no chinook non-retention period in 1991. Chinook catch in 1991 for the WCVI troll fishery was 195,700.

Strait of Georgia:

Troll: The management objective was a domestic catch ceiling of 31,000 chinook. The ceiling was reduced to this level in 1988 to achieve a 20% harvest rate reduction, relative to 1987 levels, as part of a conservation plan for lower Strait of Georgia chinook.

The troll fishery opened for chinook retention on June 27 and continued until August 1 without interruption. When an early season troll ceiling of 29,000 was reached, chinook non-retention and non-possession with single barbless hooks was implemented (August 2 through August 9). While the sockeye fishery was open, August 10 through August 19, barbed hooks were allowed, but non-retention and non-possession of chinook was still in effect. On August 20, retention of chinook salmon was again permitted. The objective was to allow for incidental chinook catch during the remainder of the 1991 season. The chinook catch rate proceeded at a faster rate than anticipated and the ceiling of 31,000 was obtained September 12. Beginning September 13 and continuing until the season closed September 30, chinook non-possession and non-retention was in effect. There were a total of 36 chinook non-retention days. Chinook catch by trollers was 32,000.

Recreational: The 1991 management objective for the Strait of Georgia recreational fishery was to maintain a 20% harvest rate reduction, relative to 1987 levels, on lower Strait of Georgia chinook. Consequently, the management plan implemented in 1989 was continued in 1991. This plan consists of the following management actions:

- (1) An annual bag limit of 15 chinook and a size limit of 62 cm was implemented for the area north of Cadboro Point (north of Victoria in Statistical area 19B), including Johnstone Strait. These measures represent an increase in the bag limit (from 8 to 15) for the Strait of Georgia recreational fishery compared to 1988.
- (2) For Johnstone Strait, the daily bag limit was reduced from 4 to 2 chinook, the season limit was reduced from 30 to 15, and the size limit was increased from 45 cm to 62 cm, relative to 1988.

The estimated 1991 catch in the creel survey area (including the Victoria area but excluding Johnstone Strait) was 115,500. Effort in 1991 totalled 466,700 boat trips, which is about 20% less than the 1986-90 average effort level.

An evaluation of the lower Strait of Georgia chinook conservation program is currently in progress.

4.0 REVIEW OF OTHER FISHERIES

4.1 Canadian Fisheries

Transboundary Rivers: Chinook catch in the Canadian gillnet fishery was: Taku River, 1,177 chinook adults and 432 jacks, and Stikine River, 850 chinook adults and 400 jacks. The catch of chinook in these rivers is limited to incidental catch during catch of the allowed harvest of sockeye salmon.

Southern B.C. Commercial Net:

Area (Stat. Area)	Catch (chinook > 5 lb.)
Johnstone Strait (11-13)	13,000
Strait of Georgia (14-19)	1,200
Fraser River (28,29)	13,100
Juan de Fuca Strait (20)	7,000
Barkley Sound (23)	54,000
Other WCVI (21,22,24-27)	200

The catch of chinook in all of these net fisheries is limited to their incidental catch during fisheries on sockeye, pink, or chum, with the exception of the August/September

gillnet fishery in Alberni Inlet (Area 23). This fishery is a terminal gillnet fishery for returns to the Robertson Creek Hatchery. Small numbers of chinook may also be harvested incidentally during gillnet and seine fisheries on sockeye salmon in Barkley Sound in July. Management of southern B.C. net fisheries has an objective to reduce the base period harvest rate on chinook by 25% (an obligation in the PSC chinook rebuilding program). Further, the Johnstone Strait net fisheries have the added objective of reducing harvest rates since 1987 by an additional 20% as part of the conservation program for chinook stocks in the lower Strait of Georgia.

In all the fisheries, regulations and research programs are attempting to limit the incidental mortality of juvenile chinook and coho. Fishing time, location, and gear are limited in southern B.C. net fisheries to conserve juvenile and adult chinook salmon. In Johnstone and Juan de Fuca Straits, known areas of high chinook vulnerability are closed and minimum depth strata are set to reduce the catch of juvenile chinook and coho. In Juan de Fuca, a maximum number of juvenile chinook and coho salmon per set has been established, beyond which the fishing area is further restricted or even closed. Chinook catch in the Fraser River area is usually limited to gillnet fishing and chinook catch is incidental.

Exploitation rate analyses reported by the Chinook Technical Committee in 1991 (TCCHINOOK (91)-1, Feb. 8, 1991) indicated that southern B.C. net fisheries (i.e., non-ceiling B.C. fisheries) have successfully reduced their aggregate exploitation rate on indicator chinook stocks.

Area 12 Troll: Catch is reported as 1,200 chinook. This fishery is a small localized group of trollers at the southern limit of Queen Charlotte Sound. The fishery is limited to a catch ceiling of 2,000 chinook.

Tidal Recreational: The catch estimate for the 1991 Barkley Sound recreational fishery is 80,200, of which 43,400 were taken in the terminal fishery inside Alberni Canal and 36,800 in Barkley Sound. The survey period covered from July 15 through September 30. The early to mid-summer fishery primarily occurs in outer Barkley Sound and is limited by size limit, catch per day, and possession limits. The Alberni Canal portion occurs primarily in August and is directed on returns to the Robertson Creek hatchery. Catch estimates for sport fisheries in Johnstone Strait are not yet available, although a creel survey was conducted last year. Catch estimates for sport fisheries off WCVI are not available.

Non-tidal Recreational: Non-tidal recreational fisheries occur in most B.C. rivers, including the Alsek, Skeena, Nass, Kitimat, Bella Coola, Somass and Fraser Rivers and various streams on the east coast of Vancouver Island. Most of these fisheries are small, localized fisheries to provide the local public with some access to salmon fishing. Recent fisheries in the upper Fraser have been limited to the larger chinook populations which

have responded well to the chinook rebuilding program. Each localized fishery in the Fraser has an established catch ceiling.

Chinook catch was estimated at 388 in the Alsek, 8,000 in northern B.C. rivers (Areas 1-10), and 1,500 in the Upper Fraser only. Chinook fisheries occurred in 7 areas of the Upper Fraser River (Bowron, Quesnel, Bridge, Clearwater, Shuswap, South Thompson, Thompson). Sport catches also occur in the Vedder-Chilliwack River and Lower Fraser mainstem, but were not assessed in 1991 due to inadequate resources.

Indian Food Fisheries:

Fishing Area	Adult Catches	Jack Catch
North/Central B.C.	23,800	-
Somass River	23,800	-
Fraser River	16,854	-
Stikine	753	310
Alsek	336	-
Cowichan	200	-
Squamish	1,095	-

The 1991 Fraser River catch was equal to the 1980-89 average of 16,700. Catches in the Cowichan and Squamish Rivers were down 23% from the 1,676 reported for 1990 and about equal to the 1989 catch level.

Each of these fisheries involves directed chinook fishing periods and the incidental catch of chinook during fisheries on other species. Small portions of the catch may be taken in marine waters, with the exception of the Stikine and Alsek catches. Catch in these fisheries is mostly limited by fishing time, but allocation to meet Native food fishing requirements is the first priority use of allowable catches.

4.2 U.S. Fisheries

Strait of Juan de Fuca: As in previous years, management measures were taken in the Strait of Juan de Fuca and other mixed stock areas to protect depressed spring chinook stocks. No directed spring chinook fisheries were permitted and no commercial fisheries were permitted during the spring chinook management period (April 15-June 15). Recreational fisheries were also restricted by a maximum size limit of 30 inches. Further actions were taken in all mixed stock areas to protect depressed summer/fall stocks from Puget Sound. It was recognized that the combined actions for chinook salmon should

also serve to protect depressed Canadian-origin chinook stocks (primarily Fraser River runs).

Preliminary estimates of 1991 net catch in the Strait of Juan de Fuca total 3,100 chinook, compared to 5,200 in 1990. These fisheries take chinook incidental to harvest of other species. Preliminary estimates of 1991 tribal troll catch in the Straits (Areas 4B, 5, and 6C) total 34,800 chinook compared to 45,700 caught in 1990. This is a chinook directed fishery. Note that tribal troll catch estimates from this area do not include tribal catch in Area 4B during the May 1-September 30 PFMC management period; catches during this period are included in the North of Cape Falcon troll summary.

Recreational catch estimates for 1991 and 1990 in Areas 5 and 6 are not available at this time. In 1991, about 400 chinook were caught in the Area 4B state waters fishery, after the PFMC fishery, compared to 400 in 1990. Preliminary 1989 recreational chinook catch for Areas 5 and 6 is estimated at 52,300, compared to 39,300 in 1988.

San Juan Islands: Preliminary 1991 estimates of chinook net catch in the San Juan Islands total 13,700, compared to 9,300 in 1990. Recreational catch estimates for 1991 and 1990 in Area 7 are not available at this time. Preliminary 1989 recreational chinook catch for Area 7 is estimated at 9,500, compared to 9,400 in 1988.

Puget Sound: The status of Puget Sound spring chinook stocks continued to be poor in 1991. As in past years, recreational and commercial fisheries in Puget Sound were regulated by time and area closures to avoid all direct harvest and minimize incidental harvest of these depressed stocks. Some directed harvest was allowed on a few Puget Sound summer/fall stocks. However, several terminal areas, including Area 8 (located near the mouth of the Stillaguamish and Snohomish Rivers), did not have directed chinook net fisheries in order to protect depressed summer/fall stocks.

Preliminary estimates of 1991 net catch in Puget Sound marine areas total 69,100 chinook, compared to 150,300 in 1990. Preliminary estimates of 1991 catch in Puget Sound freshwater areas total 18,100 chinook, compared to 28,700 in 1990.

Puget Sound recreational catch estimates for 1991 and 1990 are not available at this time. Recreational fisheries were managed in the same general manner as in recent years. Preliminary recreational chinook catch for 1989 in Areas 8-13 is estimated at 66,500, compared to 59,600 in 1988.

Washington Coast: In 1991, terminal runs of northern Washington coastal stocks were above minimum spawning levels, allowing both commercial and recreational directed chinook fisheries in terminal areas. Preliminary 1991 estimates of Grays Harbor and Willapa Bay net catch total 42,300 chinook, compared to 41,600 in 1990. Preliminary 1991 estimates of commercial net fisheries in north coastal rivers total 11,800 chinook, compared to 16,300 in 1990.

A small recreational fishery has historically occurred in the Grays Harbor estuary. In 1991, effort and catch in this fishery increased significantly in response to the large coho run returning to Grays Harbor. This fishery was sampled through September 29, and the estimated catch is approximately 400 chinook. Catch from this fishery is not included in Table 1.

Ocean Fisheries North of Cape Falcon: In 1991, ocean commercial and recreational fisheries operating in the Pacific Fisheries Management Council (PFMC) region north of Cape Falcon were constrained by domestic quotas for both chinook and coho salmon. Chinook quotas were established taking into account the need to protect several severely depressed chinook stocks, particularly Upper Columbia River runs. Separate quotas were established for the tribal troll and non-tribal fisheries.

Under PFMC quota management, ocean fisheries are terminated either when coho or chinook quotas are achieved or when seasons expire. Overall, in 1991, chinook catch success was poor, consistent with 1991 pre-season expectations for low abundance of key stocks. Fisheries closed when coho quotas were reached and chinook quotas were not fully harvested. Preliminary estimates of 1991 tribal troll chinook catch total 21,400, 65% of the 33,000 chinook quota and down from 31,400 in 1990. Preliminary recreational catches are estimated at 13,500 (1,000 Oregon and 12,500 Washington), about 34% of the 40,000 chinook quota and down from 33,100 in 1990. Preliminary estimates of non-tribal troll chinook catch total 29,700 (900 Oregon and 28,800 Washington), about 74% of the 40,000 chinook quota and down from 33,100 in 1990. Approximately 27,300 of these non-tribal troll caught chinook were taken during the early season chinook fishery (May 1 through June 15, 1991).

In 1991, there was no experimental fishery conducted in the inside ocean waters north of Destruction Island to Cape Alava. In 1990, this fishery harvested a total of 11 chinook.

Columbia River: Since 1988, all in-river management of Columbia River fish runs and fisheries has been directly based on the Columbia River Fish Management Plan (CRFMP). "The purpose of this management plan is to provide a framework...to protect, rebuild, and enhance upper Columbia River fish runs while providing harvest for both treaty Indian and non-Indian fisheries" (CRFMP, 1988, p.2). The CRFMP specifies management goals, season timing, catch limits, and maximum incidental impacts for all depressed upriver runs of anadromous fish in the Columbia River.

The preliminary 1991 in-river commercial catch of spring and fall chinook is 109,834, compared to 147,000 in 1990 and 274,500 in 1989. Total freshwater recreational catch in 1991 (including a Buoy 10 catch of 11,600) is estimated to be 80,220 compared to 94,820 in 1990 and 96,878 in 1989.

The 1991 total catch of upriver spring chinook was 6,427 fish, consisting of 2,433 caught in the non-Indian sport and commercial fisheries and 3,994 caught in tribal Ceremonial

and Subsistence (C&S) fisheries. The CRFMP limits harvest impacts on upriver spring chinook run sizes between 50,000 and 128,800 to 4.1% of the run in the lower river non-Indian catch and 7.0% of the run in tribal C&S fisheries. The estimated 1991 impacts were 4.1% and 6.7% respectively.

There has not been a targeted in-river fishery on upriver summer chinook since 1964. In the past, incidental harvest of summer chinook has occurred during commercial sockeye fisheries. However, no commercial sockeye fisheries have occurred since 1988. There is a very small C&S catch of summer chinook. The total catch in 1991 is believed to be less than 50 fish.

Commercial catch of fall chinook in 1991 totaled 93,220 (41,550 in lower river non-Indian fisheries above Bonneville Dam). Management constraints imposed by the CRFMP included achieving the Spring Creek hatchery escapement goal of 8,200 adult chinook, an adult escapement of 40,000 Upriver Bright (including a Snake River component) chinook over McNary Dam, and providing a 50% share of the harvestable portion of the upriver fall chinook run to the treaty Indian fisheries. The Upriver Bright escapement goal for in-river management was increased by 5,000 chinook to 45,000 adults for 1990 and 1991 on an interim basis by agreement of the CRFMP parties to account for increased broodstock hatchery needs and because of concern for the Snake River wild component.

Ocean Fisheries Cape Falcon to Humbug Mountain: Ocean fisheries off Oregon's central coast primarily harvest a mixture of southern chinook stocks not involved in the PSC rebuilding program; these stocks do not migrate north into PSC jurisdiction to any great extent. Some stocks that spawn in Oregon coastal streams do migrate into PSC fisheries, including the Northern Oregon Coastal (NOC) stock aggregate. These north migrating stocks are harvested incidentally (probably < 10%) in Oregon ocean fisheries. The only troll fishery that predominately harvests the NOC stock aggregate is the late season near-shore fishery off the mouth of the Elk River. In both 1990 and 1991, this Elk River fishery was not conducted due to conservation concerns. Recreational catch estimates for 1991 are not available at this time.

5.0 PRELIMINARY REVIEW OF 1991 ESCAPEMENTS

Many chinook escapement estimates are still being calculated at this time. A brief overview is presented below and in Table 2, summarizing the information that is currently available. This information should be considered very preliminary.

5.1 S.E. Alaska and Non-Annex Transboundary Rivers

In 1991, the ADF&G estimated the total escapement for 30 of the 31 chinook salmon systems in S.E. Alaska (does not include the 3 annex transboundary rivers and excludes

the Chilkat River this year, as the survey methods are under review). The total escapement in these systems in 1991 was 12,600 chinook salmon. This is 77% of the total escapement goal of 16,470 chinook salmon. Of the 30 stocks for which escapement is estimated, 7 are used as CTC indicator stocks.

The 5 S.E Alaska indicator stocks (Table 2) had a total escapement of 2,466 chinook salmon in 1991. This is 67% of the total escapement goal for these rivers. Of the 5 stocks, only the Situk was above the escapement goal, the remaining escapements ranged from 30% to 85% of their respective escapement goals.

The 2 non-annex transboundary indicator stocks (Table 2) were both below escapement goals in 1991. Estimated escapement in the Unuk River increased over 1990 while the escapement decreased in the Chickamin relative to 1990.

5.2 Annex Transboundary Rivers

Following the review of chinook spawning escapements by the Transboundary Technical Committee (TCTR(91)-4, 11/27/91), ADF&G and CDFO have revised the escapement goals for the Alsek, Taku, and Stikine Rivers. In each river, an index stream or streams (6 in the Taku) have been selected and rebuilding escapement goals established for these indices. The selection of the index streams was based on the availability of the most accurate and most consistently collected data on spawning escapement.

In the Alsek River, a counting weir on the Klukshu River is used. The number of spawners is estimated by subtracting the Native catch above the weir from the weir count. The escapement goal now used (4,700) is the average between previous U.S. and Canadian goals for this tributary.

In the Taku River, aerial surveys of escapement have been conducted fairly regularly on six tributaries. The Taku escapement index is now the sum of the counts on these six streams. When data are missing for one stream, the index sum would be increased based on the historical proportion of the index represented by the stream with the missing data. The escapement goal (13,200) was determined as the sum of the largest escapements recorded in each stream between 1965 and 1981.

In the Stikine River, chinook escapement to the Little Tahltan River was selected as the escapement index. Escapements have been counted by aerial surveys since 1975 and using a weir since 1985. The escapement goal now used (5,300) was determined as the average between previous U.S. and Canadian goals (following revision of the U.S. goal by applying the agreed expansion factor of 2.0 to convert aerial counts to weir counts).

The 1991 escapements to the Annex Transboundary Rivers were similar to recent years. Compared to 1990, slight increases occurred in the Klukshu and Little Tahltan Rivers and a decrease for the combined Taku index.

5.3 Northern B.C. (Areas 1, 3, and 4)

In 1991, a substantial decrease in chinook escapements was observed to the Nass area, dropping below even the base period average. The basis for this drop is being investigated but likely resulted from increased Native catch in the Nass River and other fisheries in Statistical Area 3. Skeena chinook stock escapement was also slightly down from 1990, but still well above the escapement goal.

5.4 Central B.C. (Areas 6-10)

Since 1988, index escapements for Area 6 and Area 8 have been adjusted by eliminating rivers with substantial hatchery contributions. The escapement goals for these systems have been adjusted accordingly. Chinook escapements to Kitimat area (Area 6 Index) streams increased compared to 1990 but was still below escapements previous to 1990. Escapement to the Bella Coola area (Area 8 Index) natural streams in 1991 was up slightly from 1990 but still well below the escapement goal. Rivers Inlet was up from 1990 levels but the estimation procedure was changed in 1991 (a mark-recovery program has been implemented). The mark-recovery estimate is being used since Departmental staff were confident that chinook abundance had increased. Further, escapement estimates for the past few years at Rivers and Smith Inlets are under review because of a change in the Fishery Officer collecting the data; the present officer does not expand his visual counts of chinook whereas previous officers had. Chinook escapement to Smith Inlet was about the same as in 1990.

5.5 Southern B.C. (outside the Fraser River)

Chinook escapement to upper Strait of Georgia was up for the Nimpkish and Devereux River indicator stocks in 1991. The Nimpkish River increased to 1,800 from the 1990 escapement level of 1,200 and the Devereux increased from 250 in 1990 to 500 in 1991. The Wakemen and Kakweiken two other Upper Strait of Georgia indicator stock remained at the same level as 1990 with 300 and 150 spawners, respectively. The final indicator streams from upper Strait of Georgia, Kingcome, decreased to 250 in 1991 from the 1990 level of 300. Overall, chinook escapements were up slightly in 1991 from the 1990 level for upper Strait of Georgia but were still below average escapements for the mid to late 1980's, only slightly greater than the base level, and well below the goal.

The estimates of returns to the Lower Strait of Georgia stock increased substantially in the Cowichan and Squamish rivers but were down in the Nanaimo River. The return to the Cowichan River was the largest since 1979. Escapement increased in the Squamish but was associated with increased returns of enhanced chinook. The proportion enhanced and their distribution in the river will be reviewed.

The 1991 reported returns to west coast of Vancouver Island stocks increased slightly from 1990. The primary reason for this increase was due to returns to the Burman and Tahsis Rivers. The 1991 escapement estimate to the Burman River was 2,500 compared to 1,100 in 1990, and for the Tahsis was 1,400 versus 300 in 1990. However, the Marble River was down considerably to 1,000 spawners compared to 2,000 in 1990 and 4,500 in 1989.

5.6 Fraser River

The escapement of Fraser River indicator stocks showed small decreases in 1991 compared to 1990, with the exception of the Harrison River stock which had a substantial drop in escapement from 177,375 in 1990 to 86,500 in 1991. The Middle Fraser escapement estimate remained slightly above its escapement goal, but the Upper Fraser and Thompson stocks were below their goals. Although returns to the Harrison were about one half of the 1990 return, they were better than expected pre-season.

5.7 Puget Sound

Preliminary 1991 spawning escapement estimates are not yet available for most stocks. In 1990, escapements were up slightly for most Puget Sound stocks but below goal for all but the Skagit summer/fall and Green River fall stocks. It is expected that 1991 escapements will continue to be depressed. The preliminary 1991 escapement estimate for Skagit spring chinook is below that for 1990 and only 50% of the goal.

5.8 Washington Coast

The northern Washington coastal chinook stocks from the Quillayute (except summer run), Hoh, and Queets Rivers are managed on the basis of escapement floors and terminal area fishery harvest rates. Terminal area abundance for these stocks in 1991 was sufficient to allow directed harvest. Preliminary indications are that spawning escapement levels exceeded the established floors. Final escapement estimates for most stocks are not available at this time. The preliminary 1991 estimate for Grays Harbor spring chinook is slightly below the goal.

5.9 Columbia River

Escapement of Upriver Spring chinook over Bonneville Dam (adjusted for Zone 6 and C&S catch above the dam) was 53,000 adults, the lowest since 1984. Separation of the run into hatchery and wild components has not yet been accomplished. As an approximation, applying the 1986-90 average percent wild (35.8%) yields an estimate of 19,100 wild spring chinook, slightly down from the 1990 escapement of 20,100.

Escapement of Upriver Summer chinook continued to decline in 1991 from the peak count of 31,800 in 1987. The Bonneville Dam count was 18,800 adults, the lowest count since 1983, and a 25% reduction from the 1990 escapement of 25,000.

Upriver Bright fall chinook escapement over McNary Dam, while above the escapement goal of 40,000, continued to decline from the 1987 high of 154,100. Escapement totaled 46,600 adults through October 31, down 19% from the 1990 escapement of 57,600.

5.10 Oregon Coast

Spawning escapements into the 10 standard Oregon Coastal index streams were lower than the last three years, as indicated by counts of the peak number of live and dead fish seen during foot surveys of the spawning grounds. The spawner abundance index for the aggregated north migrating stocks was 93 fish per mile in 1991. This compares with 125 fish per mile in 1990, 150 fish per mile in 1989, and 221 fish per mile in 1988. The abundant 1984 brood year of this stock aggregate has completed its life cycle and subsequent broods have not survived as well, resulting in decreased spawner abundance in 1990 and 1991. Continued lower stock sizes are anticipated

TABLE 1. Summary of the 1988-1991 Chinook catches in fisheries relevant to the U.S./Canada Pacific Salmon Treaty (numbers in thousands of fish). Note: Catches for 1991 are preliminary (estimates as of 3-Feb-92).

Area	Troll				Net				Sport				Total			
	1991	1990	1989	1988	1991	1990	1989	1988	1991	1990	1989	1988	1991	1990	1989	1988
S.E. ALASKA a/	264	288	236	231	33	28	24	21	68	51	31	26	365	367	291	278
BRITISH COLUMBIA b/c/																
North/Cent. Coast	220	181	225	182	48	41	42	44	33	32	36	19	301	254	303	245
U. Vanc. Island d/	196	296	204	409	55	29	40	15	80	61	48	33	331	386	292	457
Georgia St./Fraser e/	32	32	29	20	14	15	24	8	116	112	133	119	162	159	186	147
Johnstone St.	1	2	2	2	13	18	29	6	10	10	10	10	24	30	41	18
Juan de Fuca Strait	0	0	0	0	7	7	22	4					7	7	22	4
sub-total	449	511	460	613	147	110	157	77	239	215	227	181	825	836	844	871
WASHINGTON INSIDE f/																
Strait (mar) g/	35	46	65	49	3	5	10	10	NA	NA	52	39	NA	NA	127	98
San Juans (mar) h/	0	1	1	0	14	9	16	32	NA	NA	9	9	NA	NA	26	41
Other PS (mar+fw) i/	0	0	0	0	130	179	156	133	NA	NA	70	63	NA	NA	226	196
Coastal (mar+fw) i/	0	0	0	0	54	58	85	74	NA	NA	6	7	NA	NA	91	81
sub-total	35	47	66	49	201	251	267	249	NA	NA	137	118	NA	NA	470	416
COLUMBIA RIVER j/k/	-	-	-	-	110	147	275	489	80	95	97	110	190	242	372	599
WA/OR N OF FALCON l/	51	65	75	108	0	0	1	3	14	33	21	19	65	98	97	130
OREGON																
Inside Waters m/	0	0	5	4	-	-	-	-	NA	38	45	49	NA	38	50	53
GRAND TOTAL	799	911	842	1005	481	536	724	839	NA	NA	558	503	NA	NA	2124	2347

- a/ Southeast Alaska troll chinook catches shown for Oct. 1 - Sept. 30 catch counting year.
- b/ British Columbia net catches includes only fish over 5 lb. round weight. Native food fishery catches are not included. 1989, 1990, and 1991 exclude catch from terminal gillnet fisheries (3 year total of 16,425) which are excluded from the catch ceiling.
- c/ Sport catches are for tidal waters only.
- d/ Estimates of WCVI tidal sport catches are from creel surveys in Barkley Sound only. Survey times and areas may vary from year to year.
- e/ Georgia Strait sport catches include Juan de Fuca Strait sport catches.
- f/ All WA inside sport numbers adjusted for punch card bias. See "1988 WA State Sport Catch Report" for details.
- g/ Strait troll catch includes all catch in areas 5 and 6C and catch in area 4B outside of the PFMC management period (Jan.- May and Oct.- Dec.).
- h/ San Juan net catch includes catch in areas 6, 6A, 7 and 7A; sport catch includes area 7.
- i/ Coastal and Puget Sound sport catches include marine and freshwater, but only adults in freshwater.
- j/ Columbia River net catches include Oregon, Washington and treaty catches, but not ceremonial.
- k/ Columbia River sport catches include adults only, for Washington, Oregon, Idaho and Buoy 10 anglers.
- l/ North of Falcon troll catch includes catch in area 4B during the PFMC management period (May-Sept.).
- m/ Troll = late season troll off Elk River mouth (Cape Blanco); sport = estuary and inland (preliminary for 1990).

TABLE 2. Summary of the 1987-1991 escapement of Pacific Salmon Commission Chinook Escapement Indicator Stocks. Escapements for 1991 are very preliminary (estimates as of 3-Feb-92).

Production Unit	Stock Type	Ave Esc. Base a/	Esc. Goal	1987 Esc.	1988 Esc.	1989 Esc.	1990 Esc.	1991 Esc.	1991 % Base	1991 % Goal
S.E. Alaska										
Situk	Spring	1,299	600	1,884	885	652	700	875	67%	146%
King Salmon	Spring	92	250	193	206	238	168	134	146%	54%
Andrew Creek	Spring	379	750	1,042	752	848	1,062	640	169%	85%
Blossom	Spring	163	1,280	2,158	614	550	411	382	234%	30%
Keta	Spring	325	800	1,229	920	1,848	970	435	134%	54%
Transboundary Rivers Not Addressed in Treaty Annexes										
Unuk (U.S.)	Spring	1,469	2,880	3,157	2,794	1,838	946	1,221	83%	42%
Chickamin (U.S.)	Spring	338	1,440	1,560	1,258	1,494	902	779	231%	54%
Transboundary Rivers Addressed in Treaty Annexes										
Klukshu R. (Alsek)	Spring	2,696	4,700	2,615	2,018	2,456	1,915	2,489	92%	53%
Taku Index	Spring	4,582	13,200	5,743	8,626	9,480	12,249	10,153	222%	77%
Little Tahltan (Stikine)	Spring	1,945	5,300	4,783	7,292	4,715	4,392	4,500	230%	85%
B.C. North Coast										
Yakoun River	Summer	788	1,580	2,000	2,000	2,800	2,000	1,900	241%	120%
Nass area	Spr/Sum	7,944	15,890	11,431	10,000	12,525	12,103	4,017	51%	25%
Skeena area	Spr/Sum	20,883	41,770	59,120	68,705	57,202	55,976	52,753	253%	126%
B.C. Central Coast										
Area 6 Index	Summer	2,760	5,520	1,566	3,165	998	281	709	26%	13%
Area 8 Index	Spring	2,725	5,450	1,456	1,650	2,535	2,385	2,470	91%	45%
Rivers Inlet	Spr/Sum	2,475	4,950	5,239	4,429	3,265	4,039	6,500	263%	131%
Smith Inlet	Summer	1,055	2,110	1,050	1,050	225	510	500	47%	24%
West Coast Vancouver Island Indicator Stocks										
Fraser River	Fall	5,832	11,670	3,545	5,725	7,720	6,110	6,440	110%	55%
Upper River	Spring	12,229	24,460	39,420	34,248	25,310	35,907	21,757	178%	89%
Middle River	Spr/Sum	9,216	21,130	27,330	24,164	15,095	26,060	21,255	231%	101%
Thompson River	Summer	22,059	55,710	36,730	47,103	37,975	41,995	36,307	165%	65%
Harrison River	Fall	120,837	241,700	78,038	35,116	74,685	177,375	86,500	72%	36%
Georgia Strait										
Upper	Sum/Fall	2,546	5,100	5,700	3,300	6,600	2,200	2,850	112%	56%
Lower	Fall	11,139	22,280	2,530	6,914	6,830	7,605	11,645	105%	52%
Puget Sound										
Skagit	Spring	1,217	3,000	2,108	1,988	1,853	1,902	1,495	123%	50%
Skagit	Sum/Fall	13,265	14,900	9,647	11,954	6,776	17,206	NA		
Stillaguamish	Sum/Fall	817	2,000	1,321	717	811	842	NA		
Snohomish	Sum/Fall	5,028	5,250	4,689	4,513	3,138	4,209	NA		
Green	Fall	5,723	5,800	10,338	7,994	11,512	7,035	NA		
Washington Coast										
Hoh	Spr/Sum	1,325	NA b/	1,700	2,600	4,800	3,900	NA		
Queets	Spr/Sum	925	NA b/	600	1,800	2,600	1,800	NA		
Grays Harbor	Spring	425	1,400	900	3,500	2,100	1,600	1,289	303%	92%
Grays Harbor	Fall	8,575	14,600	18,800	28,200	26,100	17,475	NA		
Quillayute	Summer	1,275	1,200	600	1,300	2,200	1,300	NA		
Quillayute	Fall	5,850	NA b/	12,400	15,200	10,000	13,700	NA		
Hoh	Fall	2,875	NA b/	4,000	4,100	5,100	4,200	NA		
Queets	Fall	3,875	NA b/	6,000	7,600	8,900	10,100	NA		

TABLE 2 continued.

Production Unit	Stock Type	Ave Esc. Base a/	Esc. Goal	1987 Esc.	1988 Esc.	1989 Esc.	1990 Esc.	1991 Esc.	1991 % Base	1991 % Goal
Columbia River										
Upper River	Spring	28,050	84,000	41,400	35,100	27,000	20,100	19,100	c/ 68%	23%
Upper River	Summer	23,100	85,000	31,800	30,100	28,700	25,000	18,800	81%	22%
Lewis River	Fall	13,021	NA	12,900	12,100	21,200	17,500	12,000	92%	
Upriver Bright	Fall	28,325	40,000	154,100	114,700	96,500	57,600	46,600	165%	117%
Oregon Coast										
Aggregate Index d/	Fall	91	NA	131	221	151	125	93	101%	

a/ Base period for Alaskan and Transboundary stocks 1975-80; base for all other stocks 1979-82.

b/ Stocks managed on the basis of an escapement floor and fixed harvest rates.

c/ Based on average wild proportion of total adult escapement.

d/ Oregon coastal north-migrating chinook stocks are assessed in terms of spawners per mile survey units.

CHINOOK SALMON FISHERIES AND HARVESTS IN SOUTHEAST ALASKA

Informational Report to the Alaska Board of Fisheries

January, 1992

Prepared By:

Alaska Department of Fish and Game

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SYNOPSIS

On November 21, 1991, the Alaska Trollers Association submitted a request to the Alaska Board of Fisheries for a change of agenda. The Alaska Trollers Association asked specifically to consider 5 AAC 33.365, The Southeast Alaska-Yakutat Chinook and Coho Salmon Troll Fisheries Management Plan and 5 AAC 33.311 Fishing Seasons and Periods for Troll Gear. The request asks that 5 AAC 33.365 be amended by "allocating a percentage of the U.S./Canada Salmon Treaty chinook salmon quota to the commercial troll fleet" and that 5 AAC 33.311 be amended by "granting the Department, in consultation with affected fisherman, the authority to make specific modifications to the June troll fishery".

The request to consider modifications to 5 AAC 33.365 stems from a recent trend of a decrease in the portion of the Southeast Alaska chinook salmon all gear harvest ceiling established by the Pacific salmon Commission, going to trollers. Currently, only the net groups have received an allocation by the Board of Fisheries (20,000 base plus Alaskan hatchery add-on). The recreational harvest has no board specified limit and is restricted only by bag and size limits. A projection of the recreational harvest is made each year prior to the general summer troll season (beginning July 1). This number, along with the net allocation is subtracted from the all-gear PSC ceiling. The number is further adjusted for any prior years' ceiling overages or underages and the troll fishery is then managed to target this amount. This request would establish a percentage of the all gear PSC ceiling for the trollers and indirectly establish one for the recreational fishery.

The request to consider modifications to 5 AAC 33.311 results from a desire to keep as many chinook salmon as possible available for the general summer fishery. Currently, the June fisheries are designed primarily to harvest returning Alaska hatchery chinook salmon and to provide some general access to Southeast Alaska wild stocks. During 1991, there was a 40,000 non Alaskan hatchery chinook ceiling, established by the Board, placed on the June fisheries. During 1991, a large portion of the June harvest occurred in areas with low percentages of Alaska hatchery chinook salmon and the 40,000 ceiling was exceeded by 6,000. This request would seek to limit both the open area and ceiling for the June fisheries.

BACKGROUND

Chinook salmon fisheries have occurred in Southeast Alaska since the 1890's. The troll and net fisheries have been the primary harvesters although trap fisheries harvested chinook salmon until statehood (and still do at Annette Island) and recreational fisheries undoubtedly took place throughout the whole period. Until the 1970's, there was only minimal management action on any of these fisheries. Active management programs to rebuild depressed native Alaskan stocks began during the mid 1970's and included closures of the troll fishery for coho salmon, closure of directed gill net chinook salmon fisheries and establishment of a size limit on recreational chinook salmon beginning in 1976. Later during the early 1980's, commercial harvests became limited by ceilings, first by the North Pacific Fisheries Management Council (NPFMC) (Table 1). This was soon followed by further limitations by the Alaska Board of Fisheries (Board). Finally, since 1985, the fisheries have been managed under chinook harvest ceilings established by the Pacific Salmon Commission (PSC) under terms of the Pacific Salmon Treaty (PST).

The Commission-established ceilings apply to all gears combined, including all commercial and recreational fisheries. Allocations between gear types are left to the discretion of the Alaska Board of Fisheries. Alaska hatchery produced chinook salmon may be harvested in addition to the "base" ceilings. [Note: In the remainder of this discussion, unless otherwise noted, chinook harvests and ceilings will refer to "base" harvests and ceilings exclusive of Alaska hatchery chinook.]

Treaty ceilings are also established for a number of Canadian fisheries. Non-ceilinged fisheries in Canada and the Pacific Northwest are managed under Treaty "pass-through" provisions. These require that the bulk of savings of depressed natural chinook stocks resulting from imposition of ceilings be passed through intervening fisheries to spawning grounds. The purpose of the Treaty's ceilings and pass-through provisions are to rebuild depressed natural chinook stocks over a 15-year period, or by 1998.

Current Treaty provisions for chinook salmon apply through the 1992 season; new agreements must be renegotiated prior to the 1993 season. Negotiations will begin in November 1992 and are scheduled to be completed by February 1993, however, additional negotiations may be required. The Commission is considering alternative management approaches for chinook salmon which, if implemented, would automatically adjust ceilings based on variations in annual chinook abundance.

CURRENT CHINOOK AGREEMENT

The current two-year chinook annex establishes all-gear base harvest ceilings of 273,000 and 263,000 for Southeast Alaska fisheries in 1991 and 1992 respectively. As noted above, Alaska hatchery chinook may be taken in addition to these base ceilings. The Treaty also requires that cumulative deviations from the harvest ceilings since 1987 be limited to no more than 7 1/2% of 263,000 chinook, or about 20,000 fish. If cumulative deviations exceed this management range, harvests must be reduced the following year to bring the cumulative deviation back within the management range. The Treaty establishes no penalty for such an overage provided it is not allowed to exceed the range for more than one year.

SOUTHEAST ALASKA CHINOOK HARVESTS AND CEILING OVERAGES

Excluding Alaska hatchery chinook harvests, the 1991 "base" harvest of 299,000 chinook by all Southeast Alaska fisheries exceeded the 273,000 ceiling by 26,000 fish. Combined with a 1987-90 cumulative deviation of about 12,000, this resulted in a cumulative overage through 1991 of about 38,000 fish. These overages were a result of greater than expected harvests in the recreational fishery which were not reported until October, 1991. This exceeds the 7 1/2% or 20,000 management range by 18,000 fish. (This is the first year since 1987, when the management range was established, that ceiling overages in Southeast Alaska have exceeded that range.) Treaty provisions require that the 1992 Southeast Alaska base harvest be reduced below the established 263,000 ceiling by at least 18,000 chinook to compensate for past deviations.

From a practical management standpoint, the Department will have to target the 1992 chinook harvest somewhat below the maximum allowable Treaty harvest of 245,000 (= 263,000 - 18,000). This is necessary to ensure that, as a result of unavoidable management variations, the maximum allowable Treaty harvest for 1992 is not exceeded. If that occurs, the cumulative deviation will exceed the 7 1/2% management range for a second consecutive year, and this would represent non-compliance with the Treaty provisions. To prevent this, the Department will need to target the harvest inseason to a level at least 10,000 to 15,000 below the maximum allowable Treaty harvest. This would represent a 1992 inseason target range of no more 230,000 to 235,000 chinook for the base harvest by all commercial and recreational fisheries.

Because the Treaty intent is "to insure that, on average, the annual harvest in ceilinged fisheries is equal to the agreed target ceiling", future cumulative deviations for Southeast Alaska fisheries will have to be reduced so as to generally fluctuate around zero.

OTHER TREATY ISSUES

There are two other Treaty-related issues which could arise as a result of recent changes in the Southeast Alaska fisheries. Commission attention focused on these issues during the 1992/93 negotiations is likely to increase if recent Southeast Alaska fishing patterns continue in 1992.

Fishery Impacts on Depressed Chinook Stocks

The Treaty chinook annex requires that the fishery regimes of the two countries be "structured so as not to affect unduly or to concentrate disproportionately on stocks in need of conservation." The composition or mix of chinook stocks in inside waters is different from that in the outer coastal areas. Thus, any changes in harvest methods or areas affects the final stock composition of the harvest. For example, it is known that the proportion of Canadian origin chinook in inside Southeast Alaska waters is generally higher than in outer coastal areas. Conversely, the proportion of southern U.S. origin chinook found in outer coastal areas is generally higher than in inside waters. Both the June troll fisheries and the recreational fishery harvest chinook salmon primarily in inside waters. A quantitative analysis of these effects, particularly in relationship to depressed natural stocks, has not yet been conducted. However, this issue could be raised in future Commission discussions.

Incidental Fishing Mortalities

The second Treaty issue which could arise is that of incidental fishing mortalities. These are non-harvest mortalities resulting from such causes as hook and release of sub-legal size chinook in troll and recreational fisheries, catch and release of legal-size chinook during chinook non-retention fisheries, or other fishery related activities. Recognizing that incidental fishing mortalities can affect the chinook rebuilding program, the two countries are instructed to "minimize the effects of such mortalities." While the term "minimize" has not been defined in a quantitative sense by the Commission, attention generally focuses on changes in fishing patterns which have the potential to significantly increase incidental mortalities.

When the allowable harvest of chinook salmon for the general summer troll season (beginning July 1) is reduced, the chinook non-retention period can be expected to increase. Chinook non-retention regulations are implemented after the allowable chinook harvest has been reached, and the troll fleet continues to fish for coho and other non-chinook species. A longer chinook non-retention period will increase incidental hook and release mortalities.

In 1992 the allowable summer troll harvest will be reduced both by harvest reductions required to compensate for previous ceiling overages, and the likely continuation of higher recreational chinook harvests. The length of chinook non-retention periods is also affected by the relative abundance and availability of chinook salmon, however, no projections for the 1992 season are available yet.

Since the treaty began, the number of chinook salmon non-retention days has ranged from 42 in 1986 to 65 in 1991. With the current starting date for the general summer troll opening, there are only 82 days of trolling (July 1 through September 20). Since 1980, there has been a 10 day closure each year of the troll fishery for coho salmon conservation and allocation purposes. Even if chinook salmon caught in the June and recreational fisheries (88,000 chinook salmon that would count towards the base in 1991) were included for the general summer troll fishery, only a few to several more days of trolling would be added to the summer season at 1991 harvest rates. However, the timing of chinook salmon non-retention days is important. A chinook salmon non-retention day in late August or September results in fewer chinook salmon mortalities. This is a result of lower abundance of chinook salmon and lower troll effort in later in the season.

These issues are not expected to affect the Treaty provisions for Southeast Alaska fisheries in 1992, which are already in place. Regarding provisions for 1993 and beyond, however, it is not now possible to anticipate exactly how either of these issues might affect Alaska's ability to renegotiate future Treaty chinook agreements. Shifting a greater proportion of the Southeast Alaska chinook harvest to inside waters is likely to generate more of a negotiating problem with Canada. Increasing incidental hook and release mortalities in the troll fishery will be a negative factor in Alaska's negotiations with both Canada and the southern U.S. jurisdictions.

TREATY SUMMARY

Because Treaty chinook ceilings apply to all Southeast Alaska fisheries in aggregate, changes in internal allocations between user groups do not directly affect Alaska's performance under the Treaty. If, however, allocation changes result in significant changes in overall fishery impacts, such as increased incidental mortalities or increased impacts on certain depressed natural stocks, then the Commission may take these into account when negotiating future fishery agreements.

The fact that cumulative deviations between Treaty-established ceilings and actual harvests by Southeast Alaska fisheries exceeded the 7 1/2% management range in 1991 does not put Alaska out of compliance with Treaty provisions. Alaska is required, however, to reduce its 1992 harvest below the established ceiling by an amount sufficient to bring the cumulative deviation back within the management range. A jurisdiction is out of compliance if cumulative deviations exceed the management range for two consecutive years.

HARVEST

Records documenting commercial harvest (including Alaskan hatchery produced chinook salmon) of chinook salmon in Southeast Alaska exist as far back as 1890 (Figure 1). The commercial all gear harvest peaked during the 1930's with a decade average of slightly more than 600,000 chinook salmon. The decade average declined steadily through the 1960's, increased during the 1970's and decreased to the lowest level since 1900's during the 1980's. The low levels during the 1980's are partially due to ceilings imposed by the NPFMC, the Board and the PST. Harvests by gear type exist only since statehood. Only results since 1965 are presented.

Troll

Since 1965, the troll harvest of chinook salmon, including the chinook salmon produced in Alaskan hatcheries, has ranged from 216,086 in 1985 to 375,433 in 1978 (Figure 2, Appendix Table 1). The highest 5 year average harvest occurred from 1975 through 1979 with an average of 300,814 chinook salmon. During 1985 through 1989, the first 5 years of the treaty, the harvest averaged 232,500 chinook salmon, the lowest since statehood. The 1990 and 1991 average was 274,947 chinook salmon. However, if fishing had been regulated to achieve the specified harvest ceiling, the harvest would have been only 255,847.

The troll harvest of chinook salmon excluding those produced in Alaskan hatcheries since the treaty began has ranged from 207,986 in 1985 to 257,052 in 1990 (Figure 3, Appendix Table 2). However, if fishing had been regulated to achieve the ceiling exactly, the 1990 harvest would have only been 245,052.

Nets

There are currently no chinook salmon directed net fisheries in Southeast Alaska except for terminal hatchery harvests. Chinook salmon taken in mixed stock net fisheries are taken incidental to the harvest of targeted pink, sockeye, chum and coho salmon. The total net harvest includes purse seine, drift gill net and set gill net and includes harvests in the traditional and terminal fisheries. Since 1965, the total net harvest, including the chinook salmon produced in Alaskan hatcheries, has ranged from 10,478 in 1976 to 47,859 in 1982 (Figure 2, Appendix Table 1). The highest 5 year average harvest occurred from 1970 to 1974 with 29,015 yearly average. The 1990 and 1991 average of 29,361 was higher than previous 5 year high.

The net harvest of chinook salmon excluding those produced in Alaskan hatcheries since the treaty began has ranged from 12,707 in 1987 to 32,315 in 1985 (Figure 3, Appendix Table 2). The Board mandated ceiling for the net fisheries did not start until 1986.

Recreational

Annual sport harvests of chinook salmon, including Alaskan hatchery salmon, in Southeast Alaska from 1977 to 1984 averaged about 20,300 fish, while from 1985 to 1989 harvests increased about 27% to an average of about 25,800 fish (Table 2, Figure 2). In 1990, the estimated sport harvest increased by about 20,000 fish from the 1989 total of 31,100 fish to about 51,200 fish. Total estimates of sport harvests of chinook salmon for years previous to 1977 are not available because 1977 was the first year postal surveys were used to estimate total statewide sport harvests of fish by species and area.

The Juneau and Ketchikan boat sport fisheries are the largest sport fisheries in the southeast region. During the period from 1977 to 1989, nearly 60% of the total harvest of chinook salmon occurred in these two fisheries combined. In 1990, however, only about 45% of the harvest occurred in these two fisheries as harvests increased greatly in the Petersburg/Wrangell, Sitka, and other areas.

On-site creel surveys were used in 1991 to monitor in-season harvest and performance of the Juneau and Ketchikan marine boat sport fisheries. Chinook salmon harvest of the 1991 Ketchikan fishery was estimated to be 12,730 fish of which slightly less than 6,000 were taken by charter boats (Figure 4) while the Juneau fishery was estimated to have taken 12,234 fish with slightly less than 3,000 taken by charter boats. Both of these estimates are historic highs for the fisheries and are more than double the long term averages for the fisheries. Estimates from these surveys were used to project a total regional sport harvest of a record 68,400 chinook salmon in 1991 (final estimate will not be available until sometime later in 1992). This total would constitute about 18% of the combined sport and commercial harvest.

The recreational harvest excluding chinook salmon produced in Alaskan hatcheries since 1985 has ranged from 17,541 in 1986 to a projected 41,700 in 1991 (Figure 3, Appendix Table 2).

All Gear

Due to the various limits placed upon the chinook fisheries throughout the 1980's, the overall harvest has remained relatively steady (Figure 2, Appendix Table 2). Increases in 1990 and 1991 are due primarily to increases in the quota (39,000 in 1990 and 10,000 in 1991) increases in the production of Alaskan hatchery chinook salmon and to the overages in each year (38,200 overall overage).

The total all gear harvest excluding Alaskan hatchery produced salmon has remained steady except for the

ceiling increases and overages in 1990 and 1991 (Figure 3, Appendix Table 2).

EFFORT

Commercial

All commercial fisheries harvesting chinook salmon in Southeast Alaska are under limited entry. The power troll and all net fisheries first came under limited entry provisions in 1975. The hand troll fishery did not come under limited entry until 1980. In general, the number of permits fished each year is less than the total number of permits. The number of the available power troll permits fished has increased slowly since 1975. Of the 957 permits available for 1991, only 854 were actually fished. The number of hand troll permits actually fished has declined steadily since 1980. During 1991, 697 of the 1,784 permitted to fish actually made a delivery. With a fixed number of permits, effort is best viewed by the number of days in the general summer season. Since 1979, the number of days of fishing during the summer has decreased from 169 (a full summer season) to 7.5 days in 1991 (Figure 5). The 1989, 1990 and 1991 totals do not include 6 inside days in June in 1989 and 1990 and 4.5 inside days in 1991.

Effort for net gear is not presented since they are currently under limited entry and are receiving an allocation of chinook salmon. There are also no net fisheries targeting chinook salmon.

Recreational

The total amount of sport fishing effort in the marine waters of southeast Alaska has increased fairly steadily since the late 1970's. From 1977 to 1979, the average saltwater effort was about 184,000 angler-days, but average effort had increased 67% to an average of 307,000 angler-days for the period from 1985 to 1989 (Figure 6). In 1990, saltwater effort totaled about 375,000 angler-days, over twice that recorded in the late 1970's. The greatest increases in marine fishing effort for chinook salmon occurred in the Prince of Wales, Petersburg, Wrangell, and Sitka areas. Charter boats on average, have accounted for less than 50,000 days of effort in Juneau (Figure 7). In Ketchikan, the effort by charter boats averaged approximately 50,000 through 1990. In 1991, it jumped to approximately 100,000. This amounts to approximately 10% of the effort and 20% to 30% of the harvest in Juneau. In Ketchikan, this amounts to 20% to 35% of the effort and 45% to 50% of the chinook salmon harvest (Figure 8).

Although data have not yet been finalized, it appears that about 385 charter boats were registered regionwide in 1991, an increase of 7% from the 360 registered in 1990.

HARVEST RATES

Commercial

The troll fleet harvest rate of chinook salmon during the general summer season has varied from less than 5,000 per day in 1984 to 21,500 per day in 1991 (Figure 9). This high abundance, along with increases in the recreational harvests and shifts of harvest to the winter and June troll fisheries have led to a 7.5 day general

summer troll season in 1991 (Figure 5).

Recreational

Recreational harvest rate data (chinook salmon per angler hour of salmon effort) exists from 1987 on (Figure 10). In Juneau, the non-charter CPUE has been steadily increasing since 1988. The charter CPUE has varied, but was highest in 1991. In Ketchikan, in general, the non-charter CPUE has been increasing since 1987 (1988 was slightly higher than 1989), while the charter CPUE has varied with the highest CPUE in 1990.

Consistent long-term harvest rate data are only available for the Juneau marine sport fishery (Figure 11). The non-targeted (includes effort for halibut) chinook salmon harvest rate for the Juneau fishery during the 1991 season was the highest since 1969. Harvest rates for chinook salmon were generally much higher during the 1960's and early 1970's, probably because there was no minimum size limit during this time.

ALASKA HATCHERY CHINOOK SALMON PROGRAM

Although releases of chinook salmon from Alaskan hatcheries began in 1977 they took on a significant increased importance with the signing of the treaty in 1985. It was thought that the decrease of chinook salmon harvested under terms of the treaty could be mitigated with releases of Alaskan hatchery chinook salmon and the add-on program to document them in the harvest. The goal of the program is to add 100,000 chinook salmon to the troll harvest.

Releases were small in 1977 (Figure 12). Significant releases did not begin until approximately 1981 when approximately 100,000 age 1 smolt were released. Beginning in 1983, effort shifted to release of age zero smolts. The number of age zero smolts released rose quickly and peaked in 1986. At this time, it was determined that the success initially seen with age zero smolts was not being repeated. The program then concentrated on releases of age 1 smolts. The largest release of age 1 smolts occurred in 1988 with a release of more than 9,000,000. When all facilities are at full capacity, the total release of age 1 smolts will be approximately 12,000,000. Recent work has also indicated a greater hope for age zero smolts. However, at full capacity, slightly less than 4,000,000 will be released annually.

Survival of hatchery produced chinook salmon is highly variable and production methods are constantly being reviewed and improved. It should be noted that the 1991 harvest of 79,546 Alaskan hatchery produced chinook salmon came from releases of the 1986 and 1987 brood years. Production should continue to increase during the coming years.

ALASKA HATCHERY CONTRIBUTIONS

The contribution of chinook salmon produced in Alaskan hatcheries is documented since 1983. The contribution has steadily increased from 872 in 1983 to a total of 79,546 in 1991 (Figure 13, Appendix Table 3). The largest number have been taken each year by the troll fleet, followed by the recreational harvest.

As a percent of the harvest, the contribution of Alaskan hatchery chinook is most important to the net fisheries. Approximately 46% of the 1991 total net chinook salmon harvest was composed of fish from Alaska hatcheries. Alaska hatchery produced chinook salmon comprised 40% of the 1991 recreational harvest and 15% of the 1991

troll harvest.

PERCENT OF HARVEST BY GEAR GROUP

U.S./Canada chinook salmon ceilings imposed since 1985 have had an effect upon the percentage of the total harvest taken by each gear group. Prior to the imposition of any quotas in 1980, the troll fleet, in general harvested from 88% to 90% of the total harvest (Figure 14). Since the imposition of quotas, the percent taken by the troll fleet has been less particularly in 1982, 1984 and 1985 due to large harvests by the net groups. Since 1986, the net groups have been limited to 20,000 base harvest. With the nets capped, the recreational harvest began to increase and the troll percentage decreased to less than 80% in 1989 through 1991.

If the troll harvest is adjusted in 1990 and 1991 to reflect the number that should have been harvested in order to prevent a ceiling overage, then the percent of the base harvest harvested by the troll fleet approaches 70% in 1991 (Figure 15).

Practically, the Alaska hatchery portion of the total harvest cannot be allocated since it is impossible to accurately project the total return. Only the base portion of the harvest can be allocated. If just the portion of the base harvest is graphed, then the troll portion has dropped to approximately 80% (Figure 16). If the troll harvest is adjusted in 1990 and 1991 to reflect the number that should have been harvested in order to prevent an overage, then the percent of the harvest drops to approximately 77% (Figure 17).

JUNE TROLL FISHERIES

Prior to 1981, the starting date of the general summer troll season was April 15. Since 1981, the starting date has been delayed until 1988 when it became July 1. The delay in starting dates was done originally to decrease the harvest of wild Alaskan chinook stocks which return to spawn in May and June. It was further delayed in order to reduce harvest of some Canadian and Southern U.S. stocks and to reduce the number of days during which chinook salmon could not be retained.

However, in order to harvest mature chinook salmon from Alaskan hatcheries, fisheries needed to be established prior to the July 1 date. The experimental fisheries were the first to target these fish. Several small areas were open in 1986 to accomplish this. The areas and time expanded and in 1991, there were 8 experimental fisheries open for 9 days in June and 3 terminal fisheries open continuously during June (Figure 18). In addition, there was an additional experimental fishery open to target on pink and chum salmon.

Prior to 1991, these fisheries never exceeded 7,000 chinook salmon. During 1991, the expansion in time and area allowed a total harvest of approximately 20,000. Of these, only about half were from Alaskan hatcheries.

During the 1989 Board meeting, an additional fishery, the hatchery access, was created to help increase the harvest of Alaskan hatchery chinook and to provide some general access to wild Alaskan stocks which were rebuilding. During 1989 and 1990, the fishery occurred in inside waters for 3 days in early June and 3 days in late June. In 1990, the U.S./Canada treaty specified a limit of 30,000 non-Alaskan hatchery fish for June. In 1991, the fishery was modified to a 40,000 cap and the Department was given flexibility to adjust time in the fishery. The area was also decreased (Figure 19).

Harvests by district and the percent of Alaskan hatchery fish during the period is shown in Table 3. In general, the outside districts, District 103 and 113, have had high harvests with relatively low percentages of Alaskan

hatchery fish.

1992 SEASON

In 1992, the treaty all-gear harvest ceiling for Southeast Alaska drops back to 263,000. If the 1991 projection of the recreational harvest is used for 1992 (42,000 base harvest), and a net base harvest of 20,000 and an adjustment of 28,000 for overage and 11,000 for risk adjustment and pre treaty production, this leaves only 162,000 non Alaskan hatchery produced chinook salmon for the troll fleet. Currently, the winter fishery has taken approximately 22,000 base chinook salmon. This is the second highest harvest for this period. Projecting a final winter harvest of 35,000 non Alaskan hatchery and a June harvest of 40,000 non Alaskan hatchery produced chinook salmon, there would only be 87,000 base chinook salmon available for harvest during the general summer opening. In the past, the Alaska hatchery component of the general summer troll fishery has averaged approximately 5%. This would bring the total amount of chinook salmon available for harvest to 91,000. This is far less than that available in previous years (Figure 20). If the abundance of chinook salmon and troll fleet harvest rates in 1992 are similar to the 20,000 per day in 1991, this would imply a 1992 summer troll season of only 4 to 5 days.

ADDITIONAL ISSUES AND QUESTIONS

If the Board should decide to accept this agenda change request, there are related issues that need to be considered. Issues that the department is aware of include:

1. If a specific allocation is given to the troll fleet this will in effect give the recreational fishery an allocation and regulations in 5 AAC 46 and 49 would have to change in order to restrict the recreational harvest. This could include reduction of the bag and possession limit, reducing time and/or area and/or making methods and means more restrictive. The board may also want to consider if regulations should differ between anglers staying at lodges and going out on charter boats and anglers out on private boats.
2. Reductions in the recreational chinook salmon harvest may lead to reductions in effort for chinook that will shift to other species such as coho, steelhead, halibut and rockfish.
3. A reduction in the number of days during the general summer troll opening for chinook salmon will result in more effort on other salmon species, primarily coho salmon.
4. A permanent reduction in the sport harvest of chinook salmon may lead to protests by qualified subsistence users throughout Southeast by denying them the only legal means (rod and reel sport fishing bag and possession limits) of obtaining chinook salmon used for personal consumption. Any public notice should include 5 AAC Chapter 1.
5. What portions of 5 AAC 33.365 should be considered? Should the current net allocation be reconsidered? Since the concerns focus on the length of the general summer troll season, should other methods of lengthening the season be considered? Should the focus be on just the 1992 season or longer?
6. Would the Board generate a specific proposal or a generic proposal similar to the board generated statewide proposals? Or would it be a set of specific proposals that covers a range of options or allocations levels for public review and comment. Would public proposals be called for? What would

be the time schedule and where would the meeting be held? It is very unlikely that any regulations adopted would be in place in time for the 1992 June and summer troll seasons.

7. If the Board chooses to consider this issue, the Department is prepared to develop the following reports and/or any others the Board would choose.
 - a. Harvest and effort information from commercial fish tickets and the Statewide Harvest Survey and dockside creel surveys.
 - b. Descriptions of the various components of the recreational fishery (ie. marine and freshwater fisheries, charter boat operations, lodges, nonchartered anglers).
 - c. Breakdown of commercial harvests by base and Alaskan hatchery harvests and by gear and type of fishery (ie. terminal, troll experimental, troll hatchery access, winter troll, summer troll).
 - d. Economic projections of the Southeast Alaska recreational fishery based on the 1988 Jones and Stokes report.
 - e. Landed value of the commercial harvest.
 - f. Hatchery contribution rates by fishery.
 - g. Harvest rates in commercial and recreational fisheries.
 - h. Participation by resident and non-resident.
 - i. A report on non-commercial salmon harvest and use by residents of rural Southeast Alaska communities.

Table 1. Southeast Alaska chinook salmon guideline harvest levels (1980 to 1984) and treaty ceilings for Southeast Alaska and Canadian Fisheries (1985 to present).

I. State of Alaska and North Pacific Fishery Management Council Guidelines

Year	Southeast Alaska Commercial	
	1980	286,000 - 320,000
1981	243,000 - 286,000	
1982	243,000 - 286,000	
1983	243,000 - 272,000	
1984	243,000 - 272,000	

II. Pacific Salmon Treaty Chinook Salmon Harvest Ceilings

Year	Southeast Alaska	North Coast B.C.	West Coast Vancouver Is	Georgia St Sport and Troll
	All Gear	All Gear	Troll	Troll
1985	263,000	263,000	360,000	275,000
1986	254,000	256,000	360,000	275,000
1987	263,000	263,000	360,000	275,000
1988	263,000	263,000	360,000	275,000
1989	263,000	263,000	360,000	275,000
1990	302,000	302,000	360,000	275,000
1991	273,000	273,000	360,000	275,000
1992	263,000	263,000	360,000	275,000

Table 2. Annual sport harvests of chinook salmon in southeast Alaska by selected fisheries, 1977-1991. Data for 1977-1990 were taken from Statewide Harvest Surveys.

Year	Juneau Marine ^a	Ketchikan Marine	Petersburg-Wrangell Marine	Sitka Marine	Haines Marine	Other	Total
1977	5,815	4,672	2,671	1,738	471	2,082	17,449
1978	5,348	3,845	2,109	1,841	769	2,727	16,639
1979	5,626	4,165	2,173	2,054	664	1,899	16,581
1980	6,518	5,415	3,495	1,489	792	2,504	20,213
1981	6,901	5,683	2,906	1,955	1,372	2,483	21,300
1982	9,169	6,215	4,076	1,781	1,592	2,923	25,756
1983	4,797	7,968	3,332	2,108	1,426	2,690	22,321
1984	7,751	5,063	3,067	2,251	1,313	2,605	22,050
1985	9,451	6,170	4,060	1,430	2,041	1,706	24,858
1986	6,355	6,197	3,906	1,902	2,054	2,137	22,551
1987	8,679	5,826	3,534	2,537	1,419	2,329	24,324
1988	6,573	7,422	4,668	3,539	789	3,169	26,160
1989	8,244	7,642	4,702	5,569	750	4,156	31,071
Mean 77-84	6,491	5,378	2,979	1,902	1,050	2,489	20,289
Percent	32%	27%	15%	9%	5%	12%	100%
Mean 85-89	7,860	6,651	4,174	2,995	1,412	2,699	25,793
Percent	30%	26%	16%	12%	5%	10%	99%
1990	10,178	12,784	10,185	8,041	1,809	8,221	51,218
	20%	25%	20%	16%	4%	16%	101%
1991 PRELIMINARY PROJECTION							68,400

^a Only includes Doty Cove to Berners Bay boat and shoreline, not entire Juneau area as listed in postal surveys.

Table 3. The Harvest and percent Alaska hatchery contribution by district in the June hatchery access fisheries, 1989 - 1991.

District	Harvest	Percent	Harvest	Percent	Harvest	Percent	Harvest	Percent	Harvest	Percent	Harvest	Percent
	during first period	from Alaska Hatchery	during second period	from Alaska Hatchery	during first period	from Alaska Hatchery	during second period	from Alaska Hatchery	during first period	from Alaska Hatchery	during second period	from Alaska Hatchery
	1989				1990				1991			
101	433	0.0	1,184	79.1	945	17.3	2,624	83.0	1,535	32.2	1,077	42.5
102	974	46.0	527	18.9	1,056	19.5	2,006	55.2	3,311	31.1	1,946	24.0
103	1,192	6.0	1,959	2.6	1,021	18.8	4,255		3,166	14.7	3,742	7.8
105	327	0.0	544	1.3	166	0.0	1,382		506	0.0	221	17.2
106	456	16.1	728	50.5	300	38.2	657	95.2	1,131	40.7	690	29.7
107	478	13.1	309	6.2	517	18.7	435	44.8	593	41.0	207	30.9
109	4,226	16.7	5,306	20.8	1,377	15.9	2,354	21.5	2,968	28.8	1,160	20.0
110	1,769	33.5	706	24.5	1,753	33.5	3,009	29.7	2,585	55.5	1,243	21.7
112	331	66.2	464	45.6	42		588	88.5	971	30.9	408	48.3
113	1,573	8.0	3,948	0.1	1,148	4.8	6,347	11.7	3,210	4.0	11,448	3.1
114	2,162	12.0	1,266	23.5	470	16.7	2,301	5.8	2,470	20.9	1,544	27.1
183									83	0.0	123	0.0

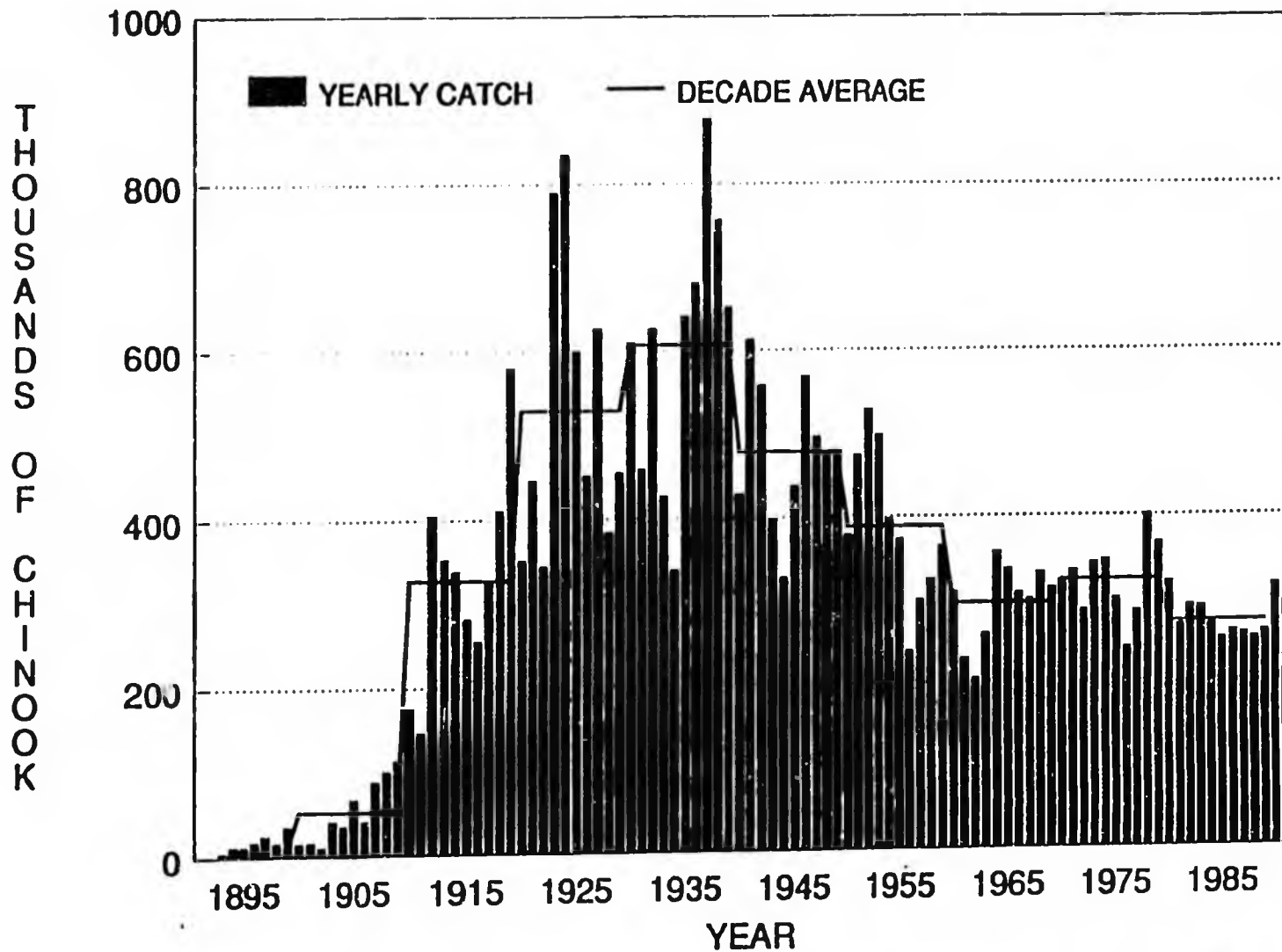


Figure 1. Commercial ALL-GEAR chifhook salmon harvest (includes Alaska hatchery chinook salmon) in Southeast Alaska, 1890 to 1991.

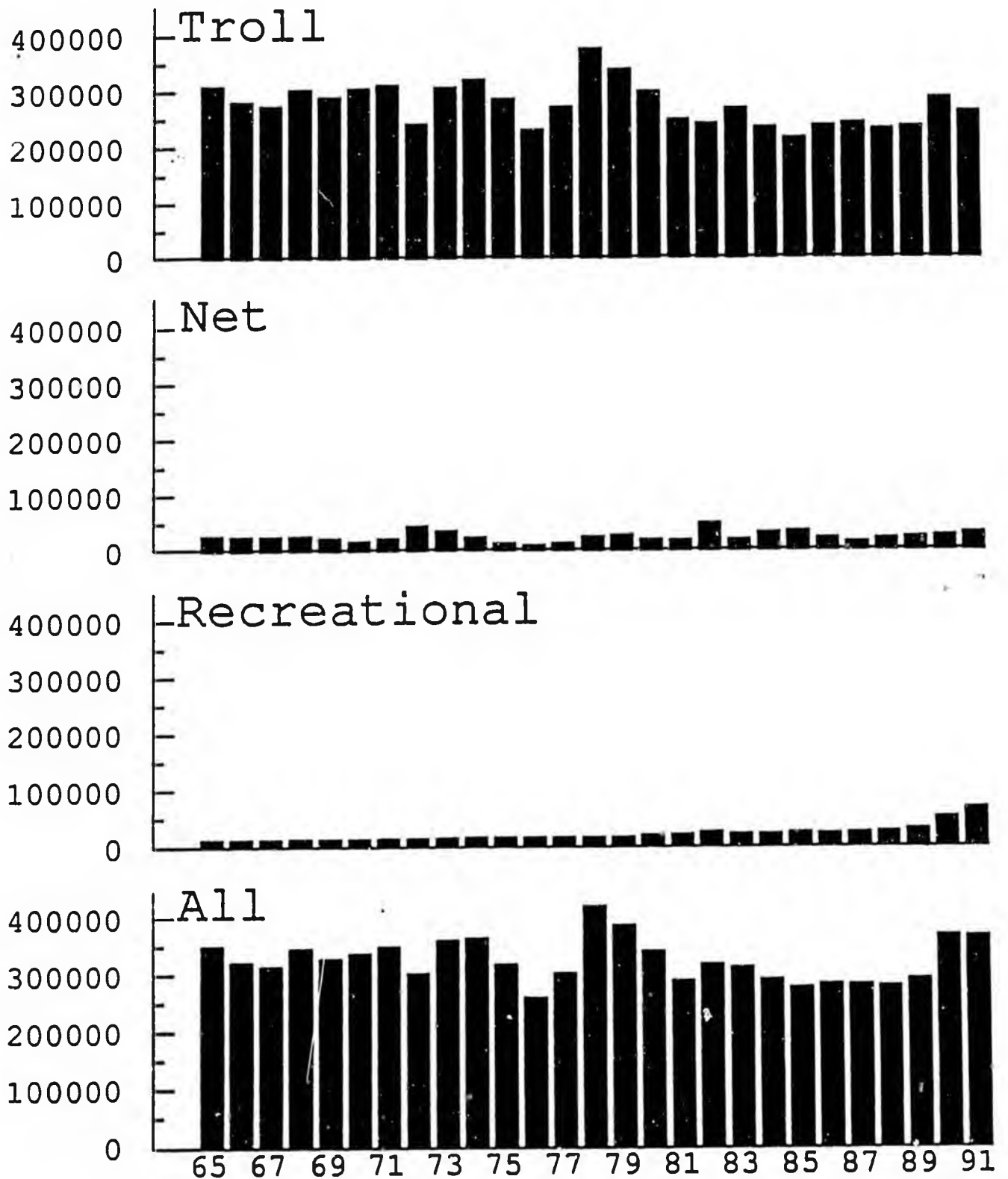


Figure 2. Total chinook salmon harvest (includes Alaska hatchery chinook salmon) by gear, 1965 to 1991.

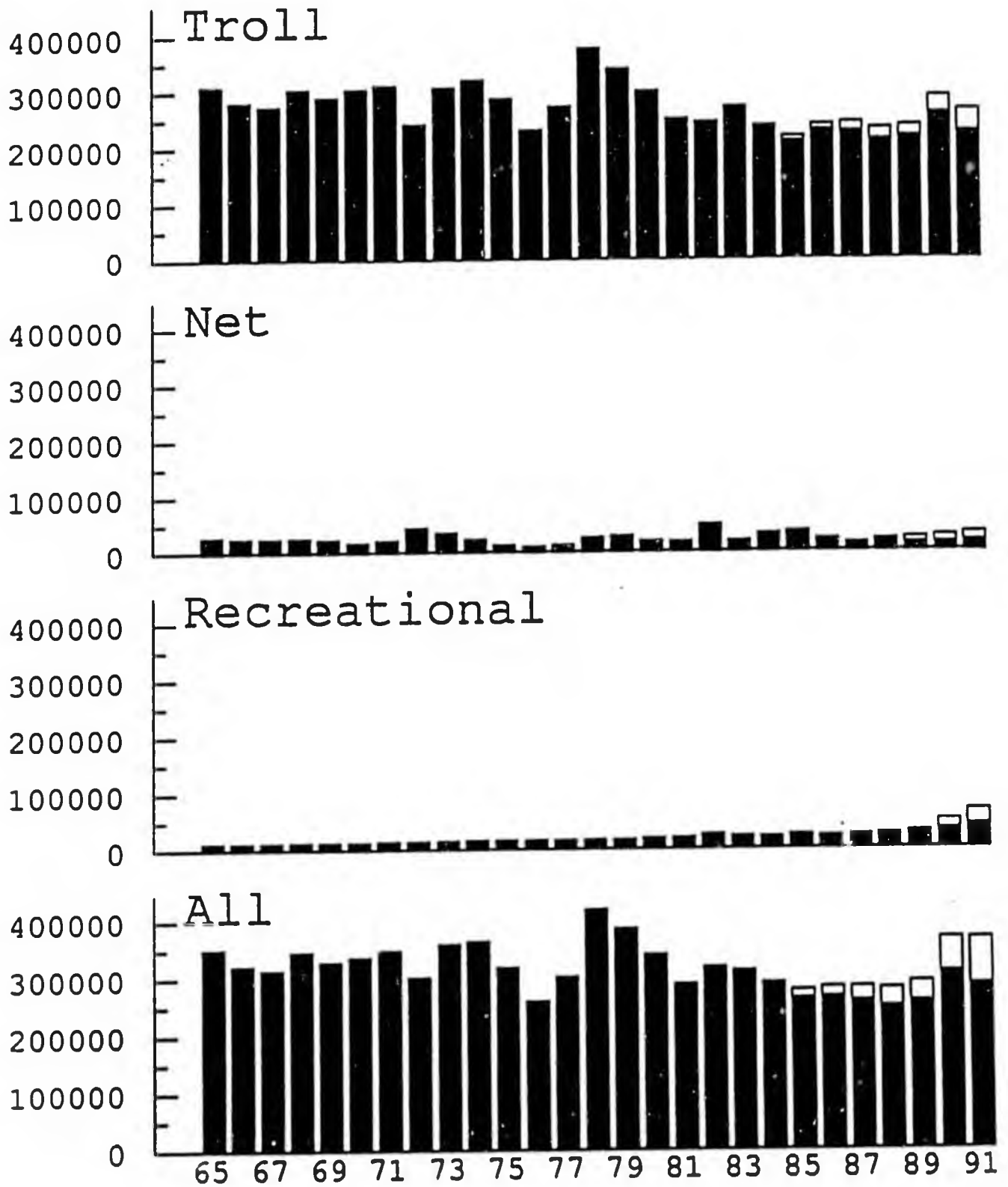


Figure 3. Total chinook salmon catch excluding fish produced in Alaskan hatcheries, by gear, 1965 to 1991. Black bar indicates base catch, white bar Alaska hatchery production.

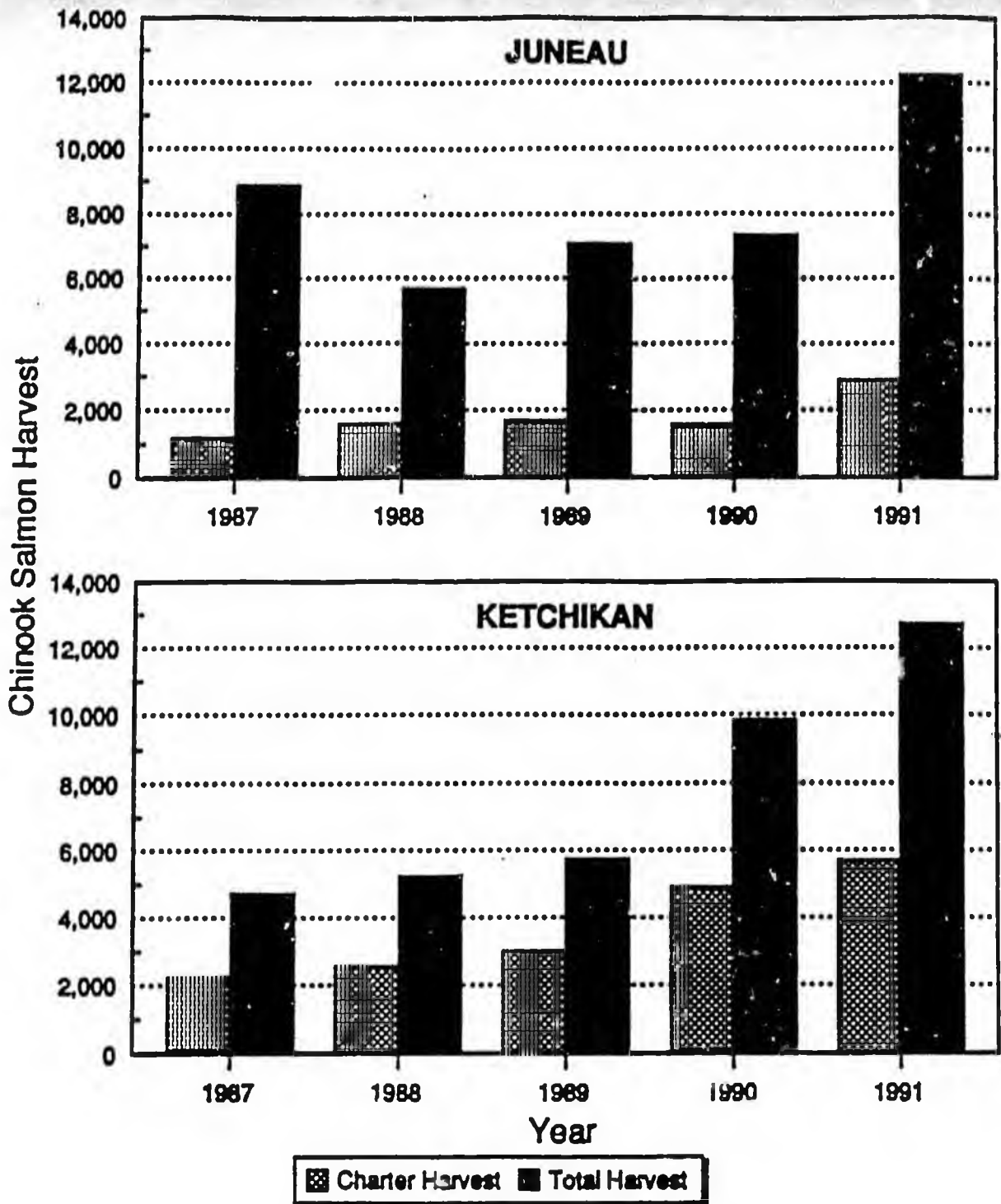


Figure 4. Chinook salmon harvests in the Juneau and Ketchikan marine sport fisheries by the total sport fishing fleet (including charter) and the charter fleet for the years 1987 to 1991. Data are from on-site creel surveys.

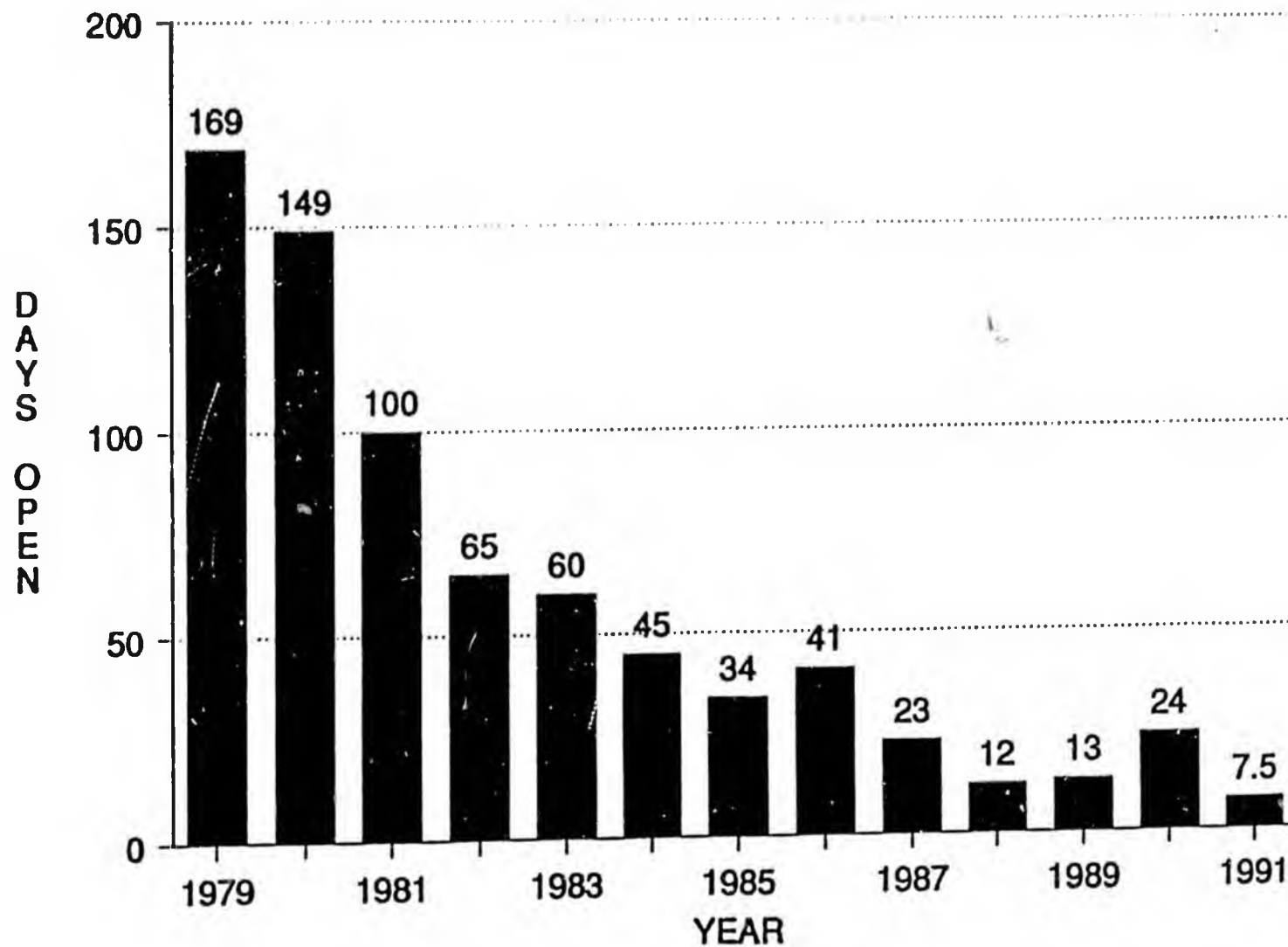


Figure 5. The number of days of chinook salmon trolling during the general summer season, 1979 to 1991.

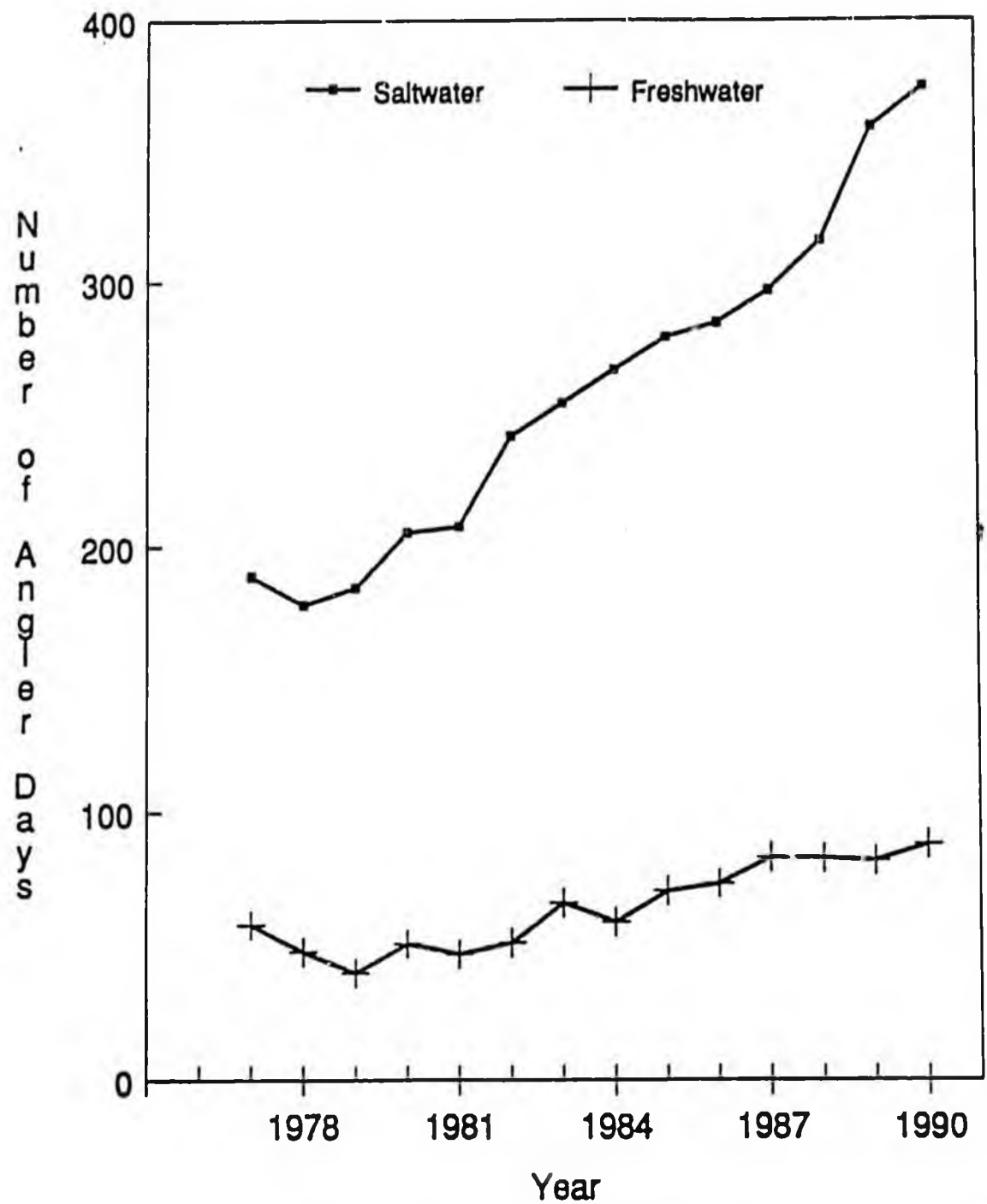


Figure 6. The total number of saltwater and freshwater effort-days in the Southeast Alaska recreational fishery (1977 to 1990).

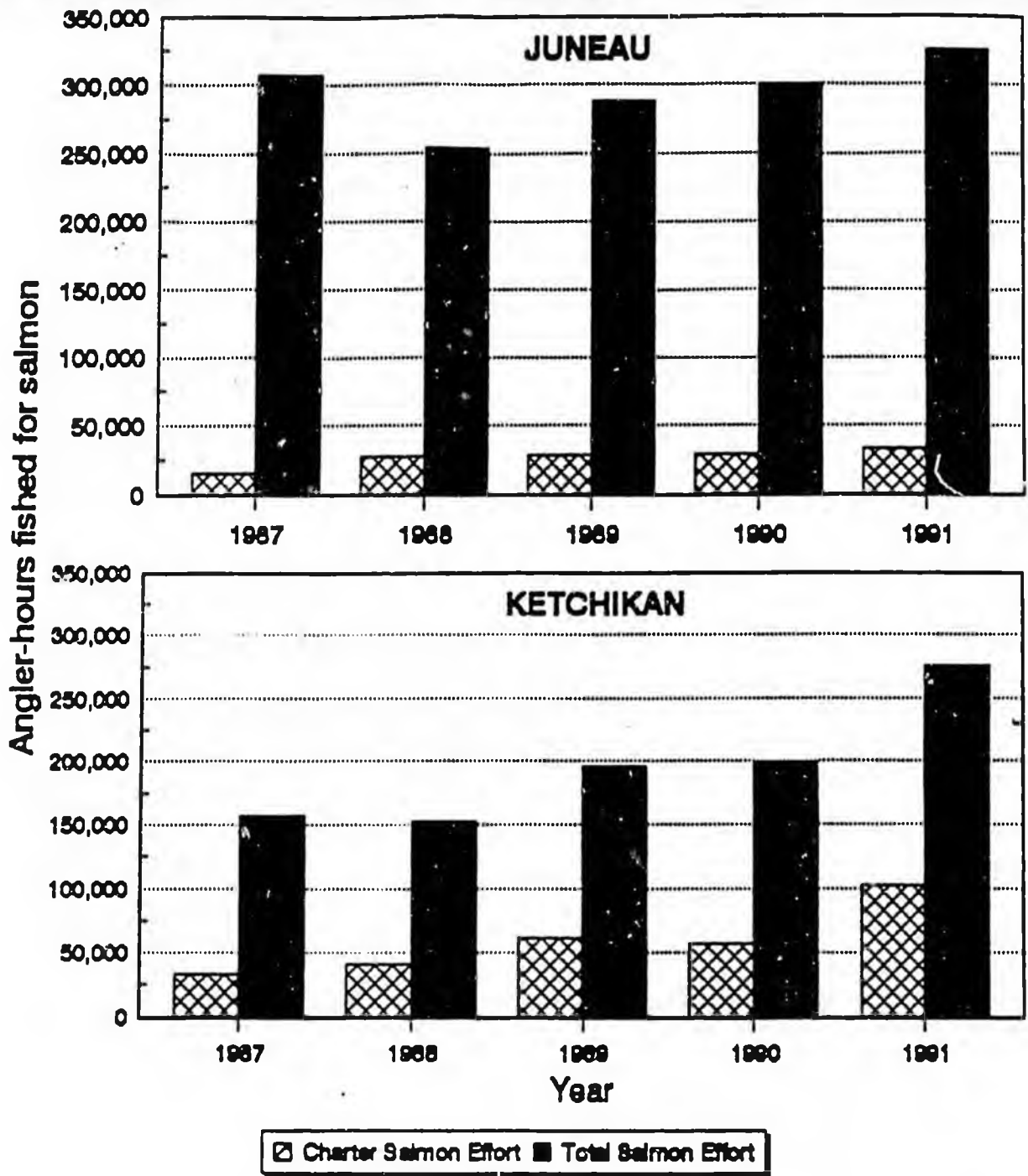
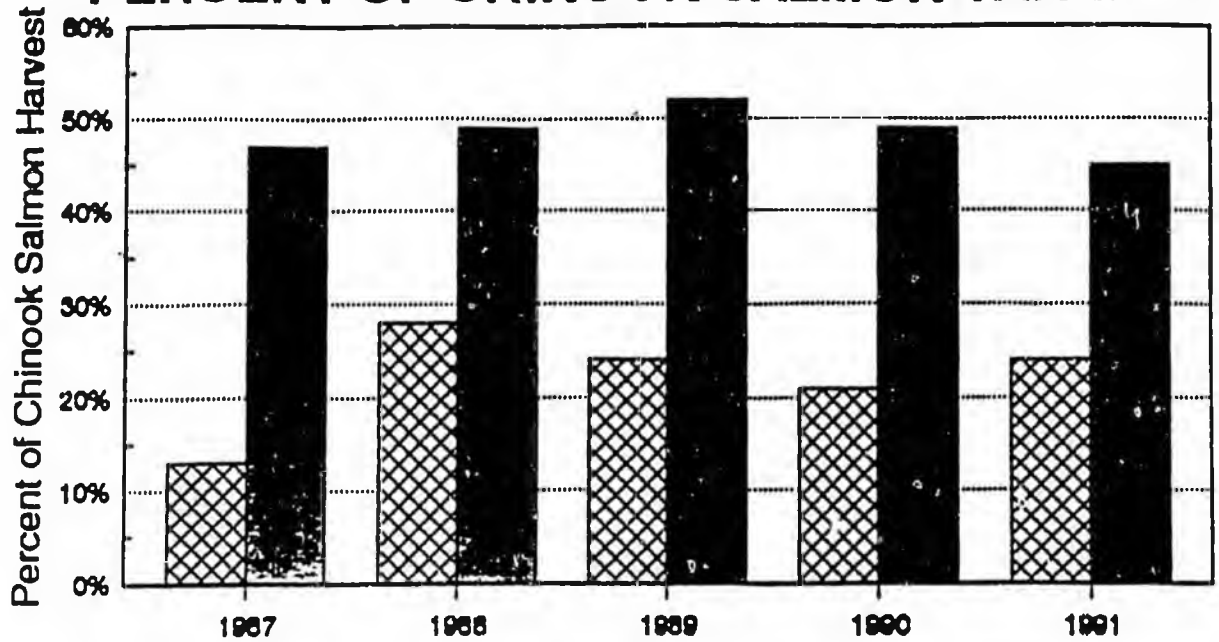


Figure 7. Angler-hours of sport fishing effort in the Juneau and Ketchikan areas targeted on salmon for the total sport fishing fleet (including charter) and for the charter fleet, 1987 to 1991. Data are from on-site creel surveys.

PERCENT OF CHINOOK SALMON TAKEN



CHARTER FLEET SALMON EFFORT

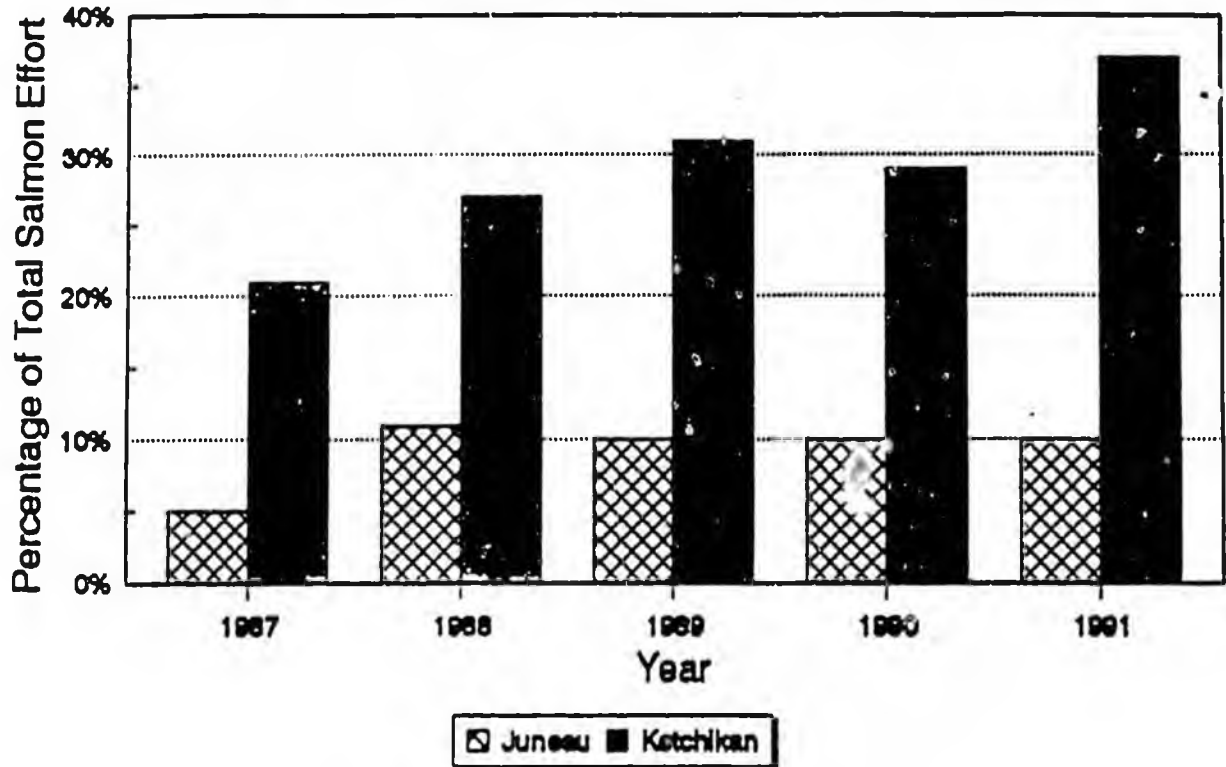


Figure 8. Percentage of chinook salmon taken by the charter fleet and percentage of salmon effort expended by the charter fleet in the Juneau and Ketchikan marine sport fisheries for the years 1987 to 1991. Data are from on-site creel surveys.

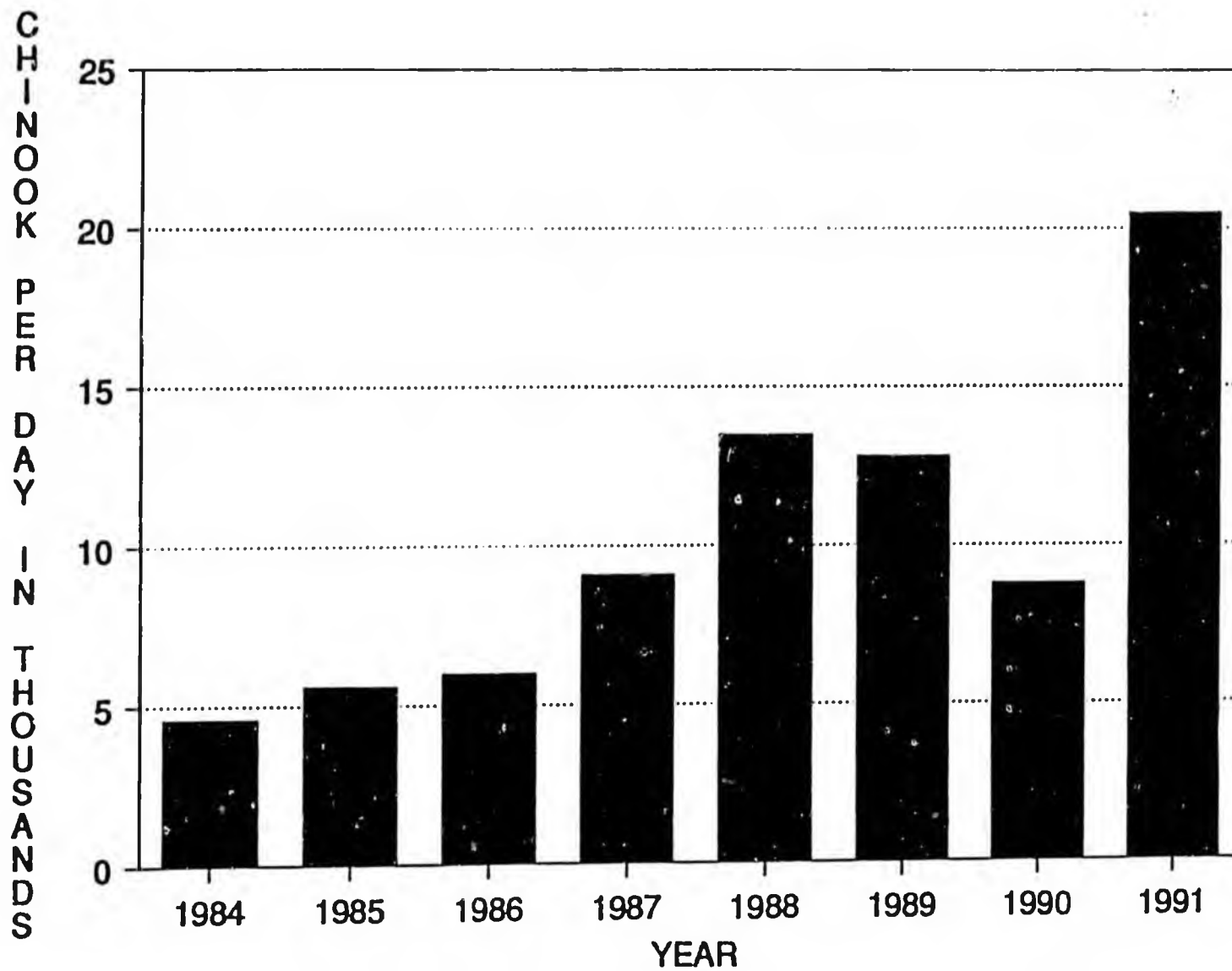


Figure 9. The harvest-per-day of chinook salmon by the troll fleet during the general summer troll opening, 1984 to 1991.

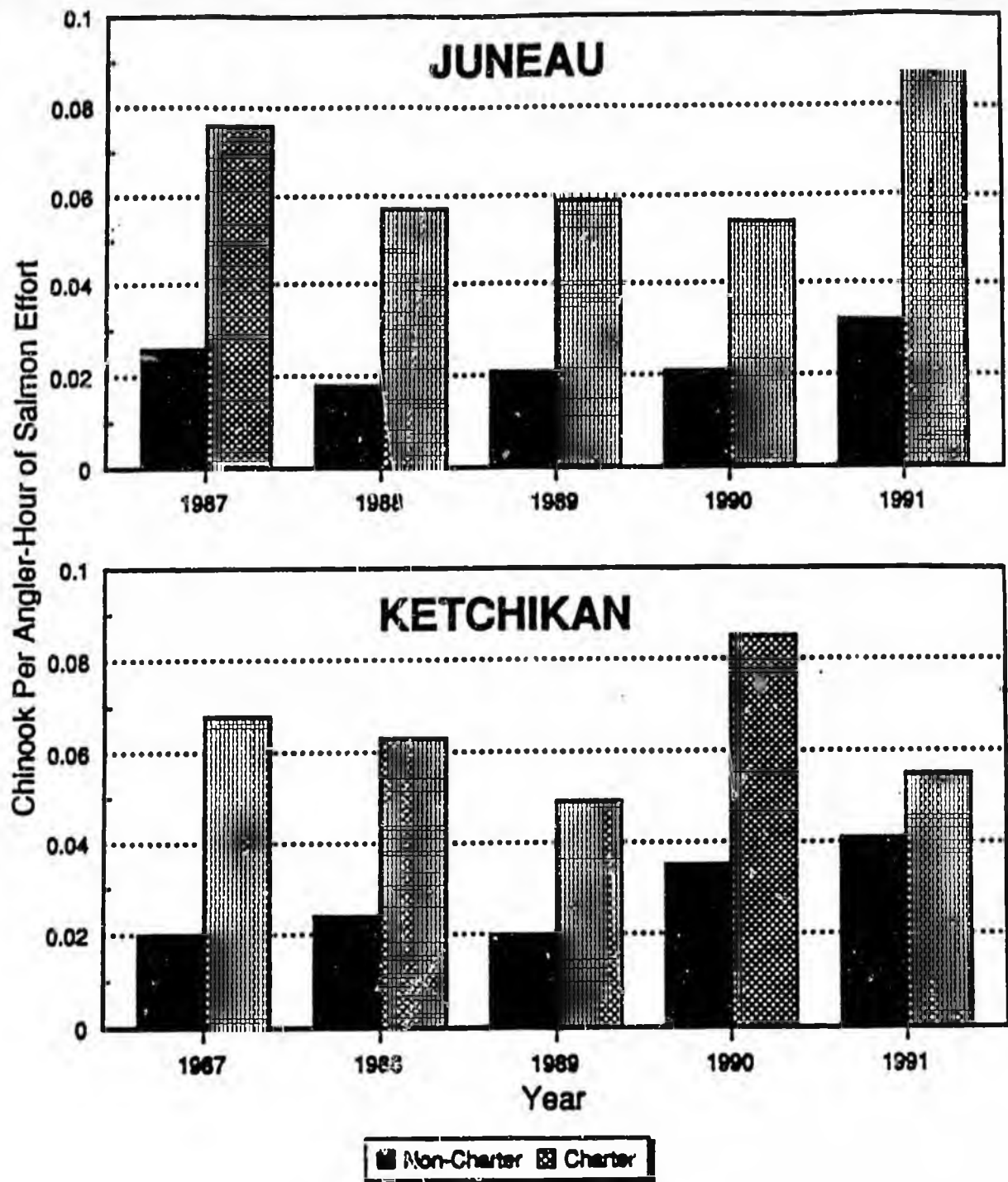


Figure 10. Catch rates for chinook salmon (chinook harvest per angler-hour of salmon effort) for the charter and non-charter portion of the Juneau and Ketchikan marine sport fisheries for the years 1987 to 1991. Data are from on-site creel surveys.

JUNEAU MARINE CHINOOK SPORT FISHERY

(ALL EFFORT 5/01 - 9/03)

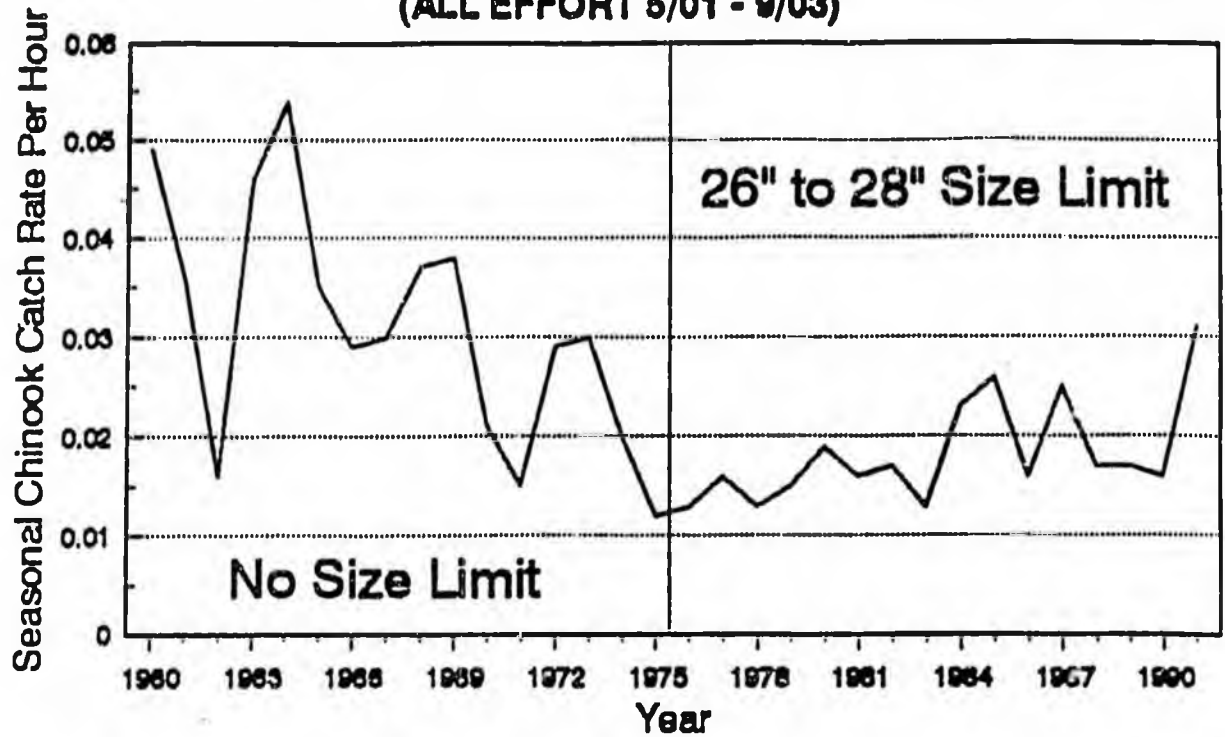


Figure 11. Seasonal catch rates for chinook salmon (chinook harvest per angler-hour of all effort) for the Juneau marine sport fishery from 1960 to 1991. Data are from on-site creel surveys.

S.E. ALASKA CHINOOK SALMON RELEASES
 HATCHERY PRODUCTION OF CHINOOK SALMON

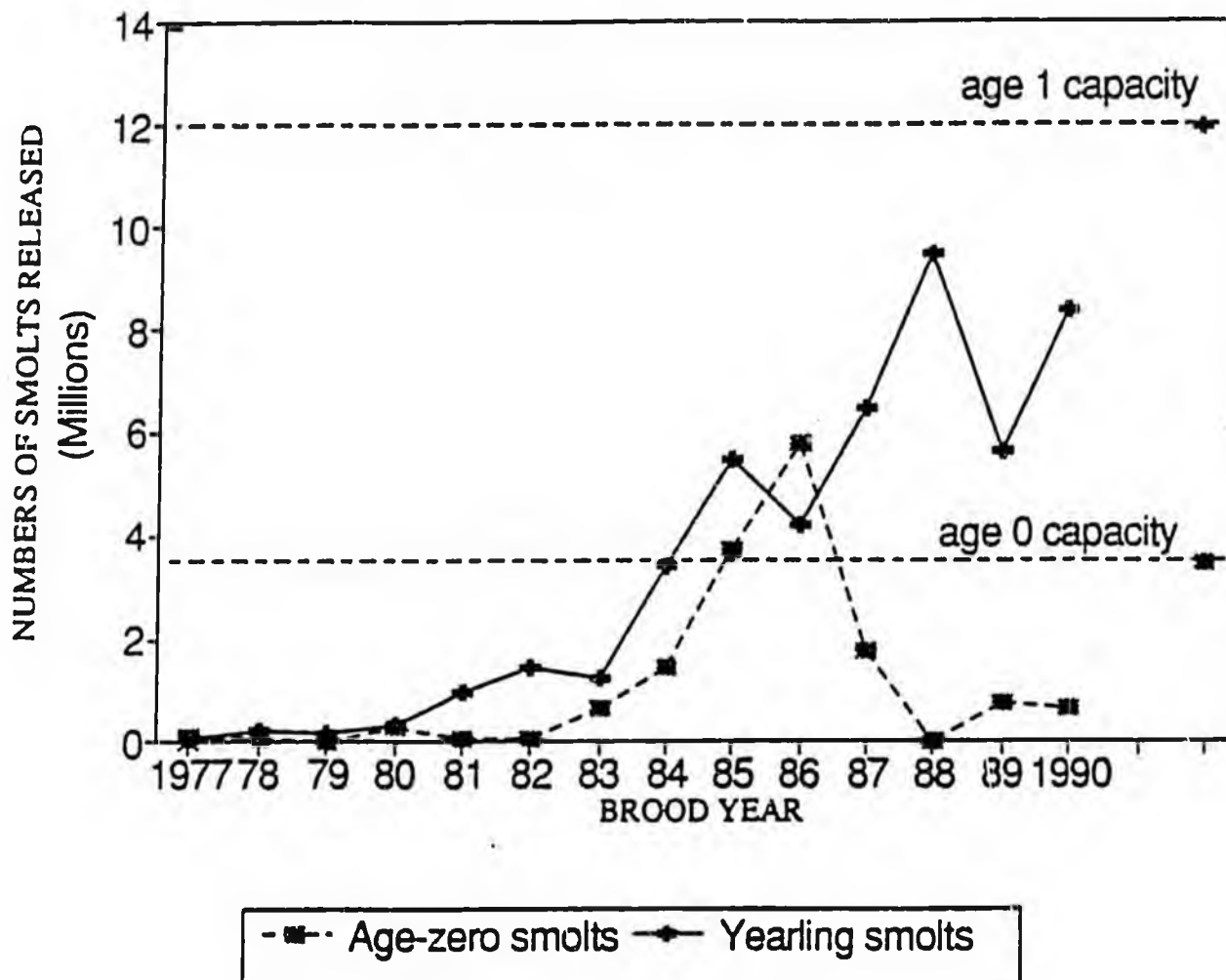


Figure 12. The number of age-0 and age-1 chinook salmon smolts released from hatcheries in Southeast Alaska, by brood year, 1977 to 1990.

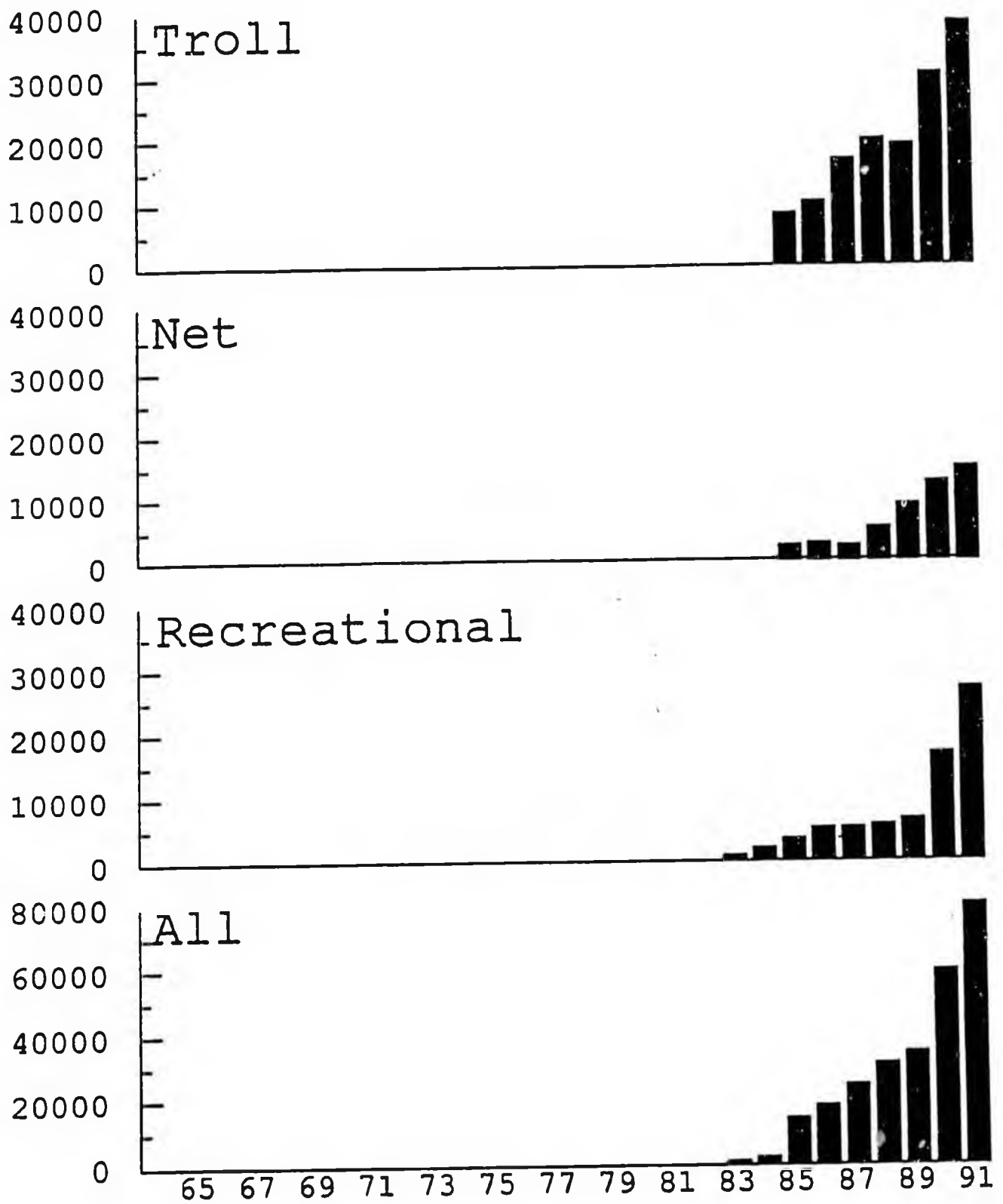


Figure 13. The number of Alaska hatchery chinook salmon harvested by gear group, 1965 to 1991.

% of the Total Chinook Salmon
Catch by Gear, Not Adjusted

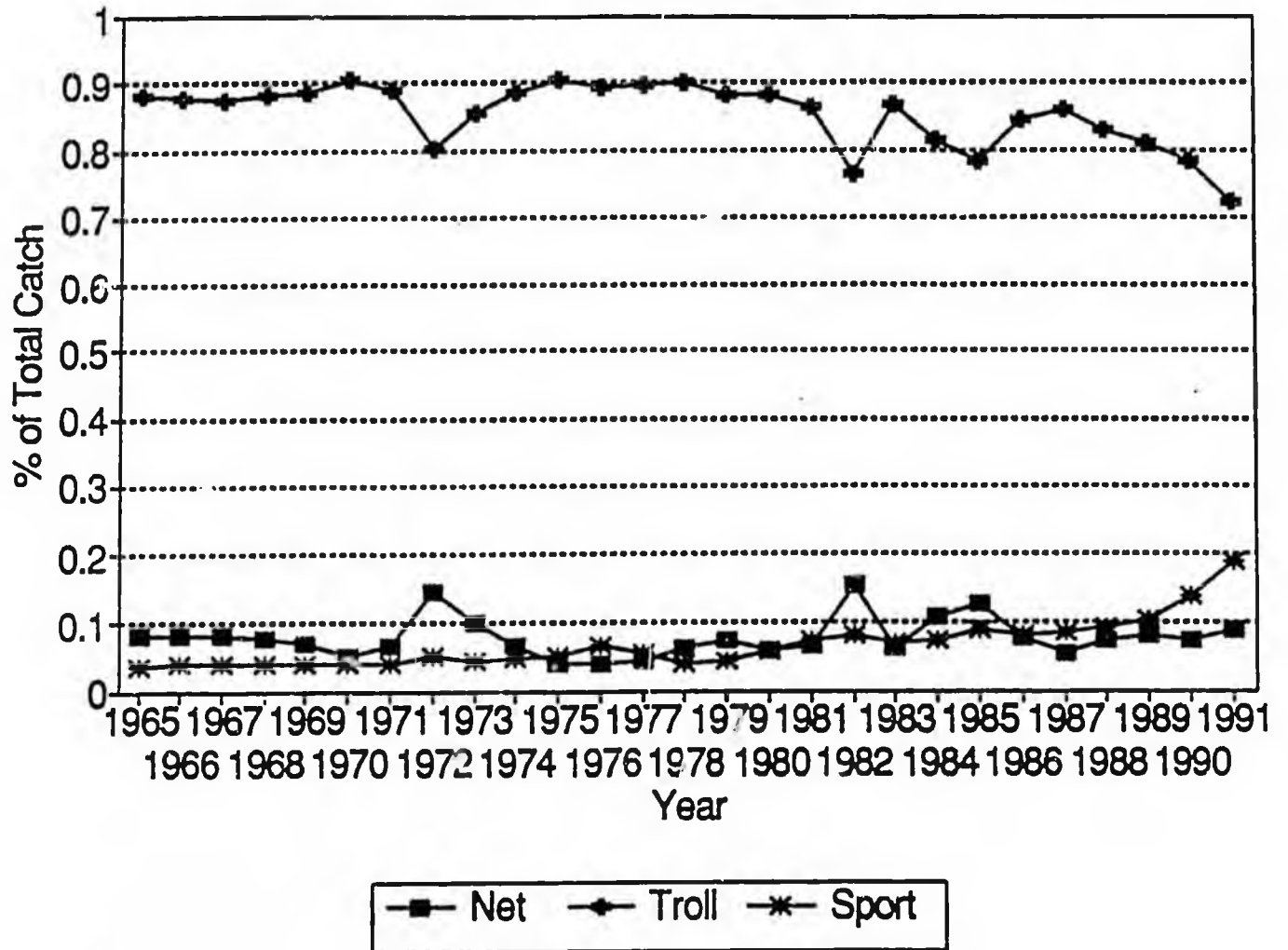


Figure 14. The annual percent of the total catch of chinook salmon (including Alaska hatchery fish) by gear, 1965 to 1991.

% of the Total Chinook Salmon
Catch by Gear, 90,91 Adjusted

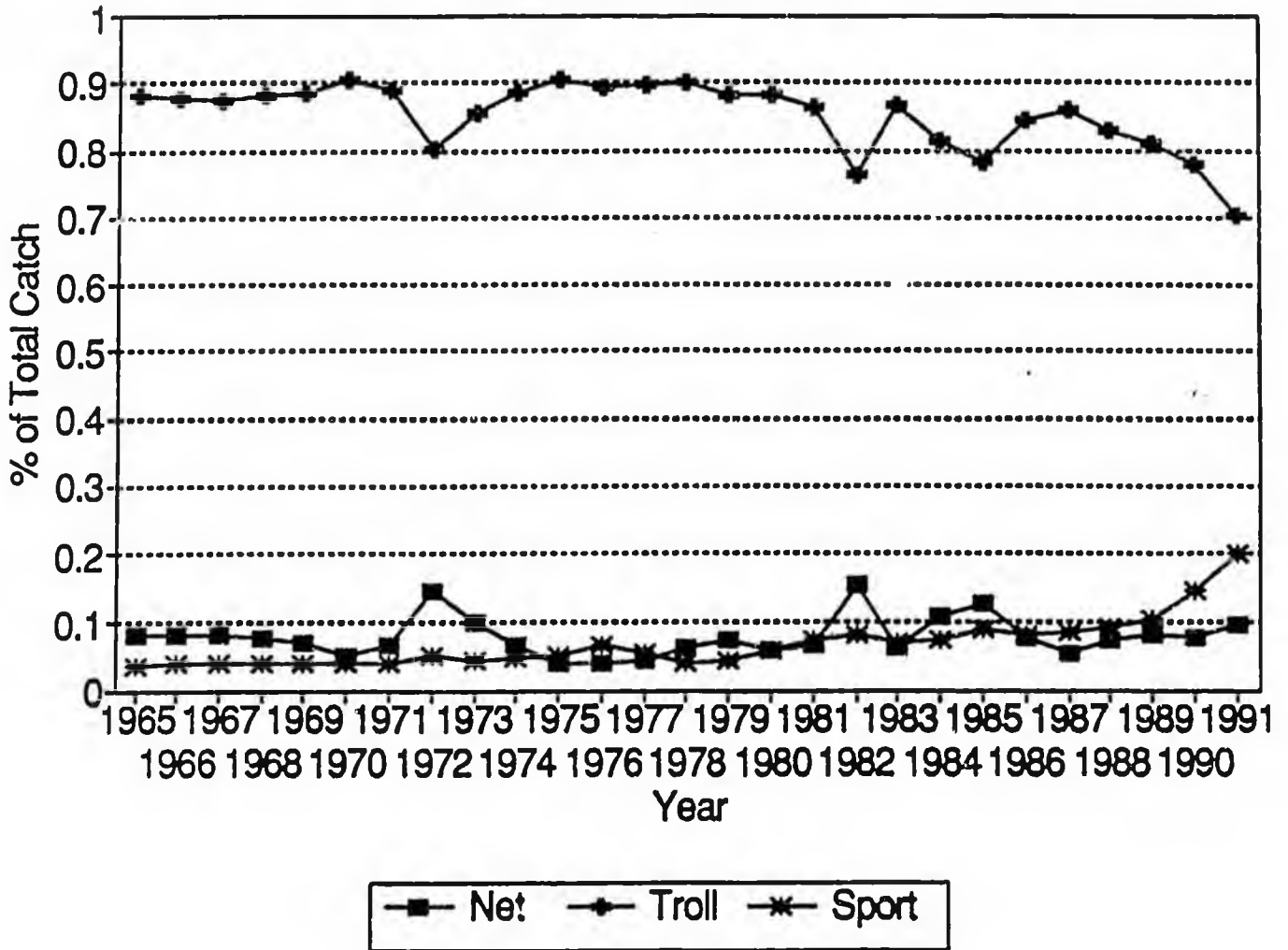


Figure 15. The annual percent of the total catch of chinook salmon (including Alaska hatchery fish) by gear, 1965 to 1991. The 1990 and 1991 troll harvests have been reduced 12,000 and 20,000 respectively in order to reflect the percentage that would have been taken without an overage.

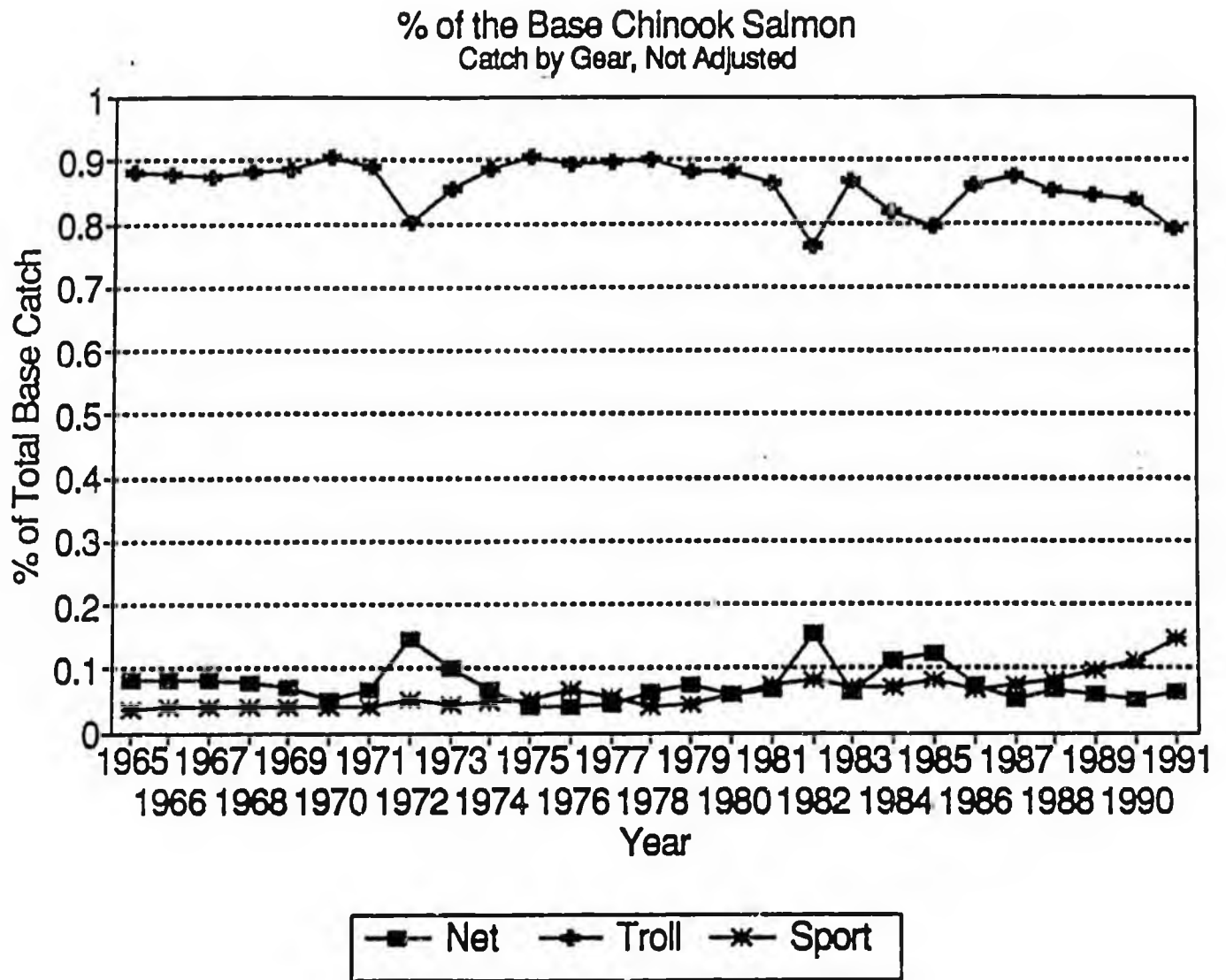


Figure 16. Annual percentage of the total base catch of chinook salmon (does not include Alaska hatchery fish) by gear, 1965 to 1991.

% of the Base Chinook Salmon
Catch by Gear, 90,91 Adjusted

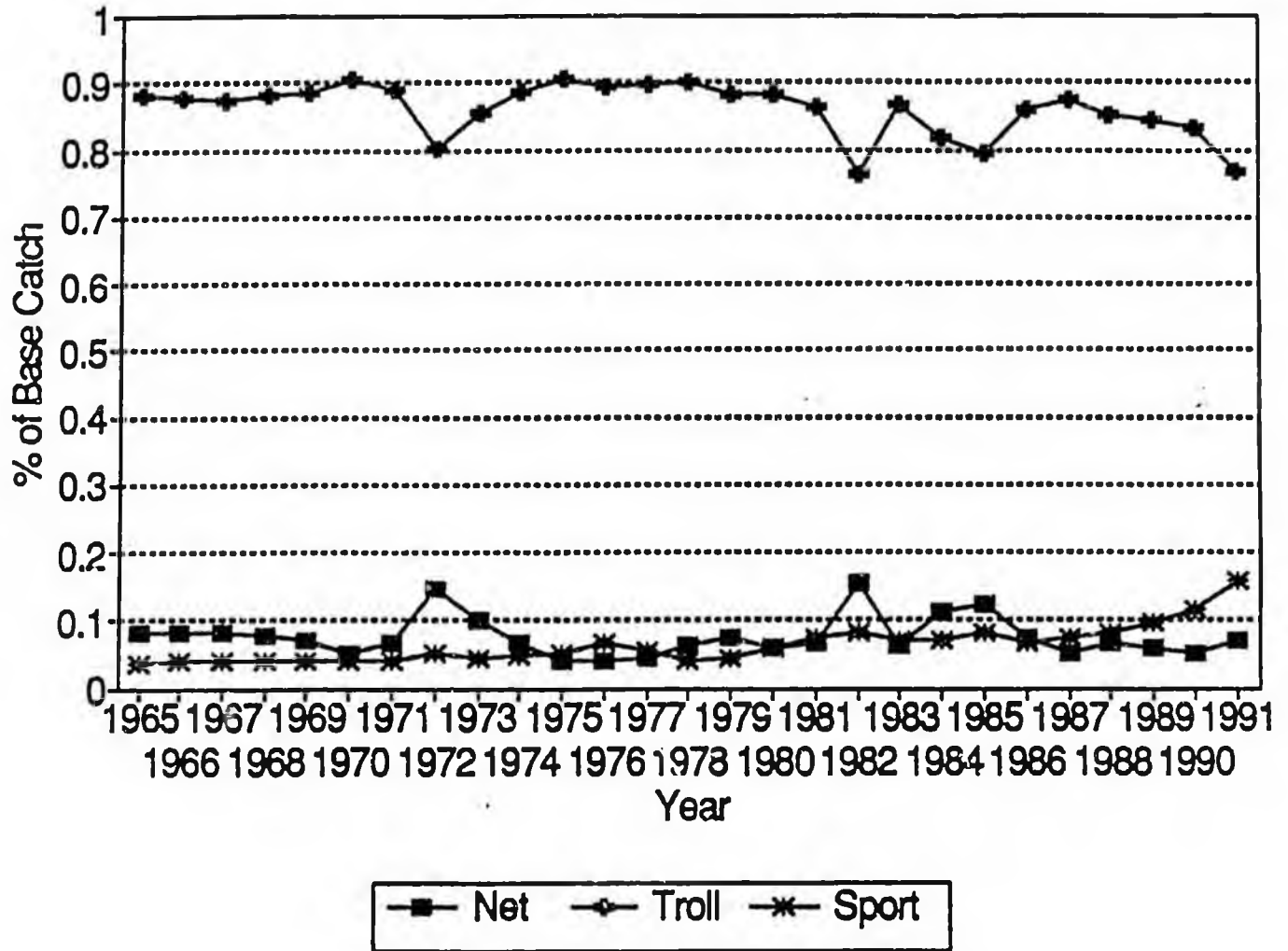


Figure 17. Annual percentage of the total base catch of chinook salmon (does not include Alaska hatchery fish) by gear, 1965 to 1991. The 1990 and 1991 troll catches have been reduced by 12,000 and 20,000 respectively, in order to reflect the percentage that would have been taken with no overage.

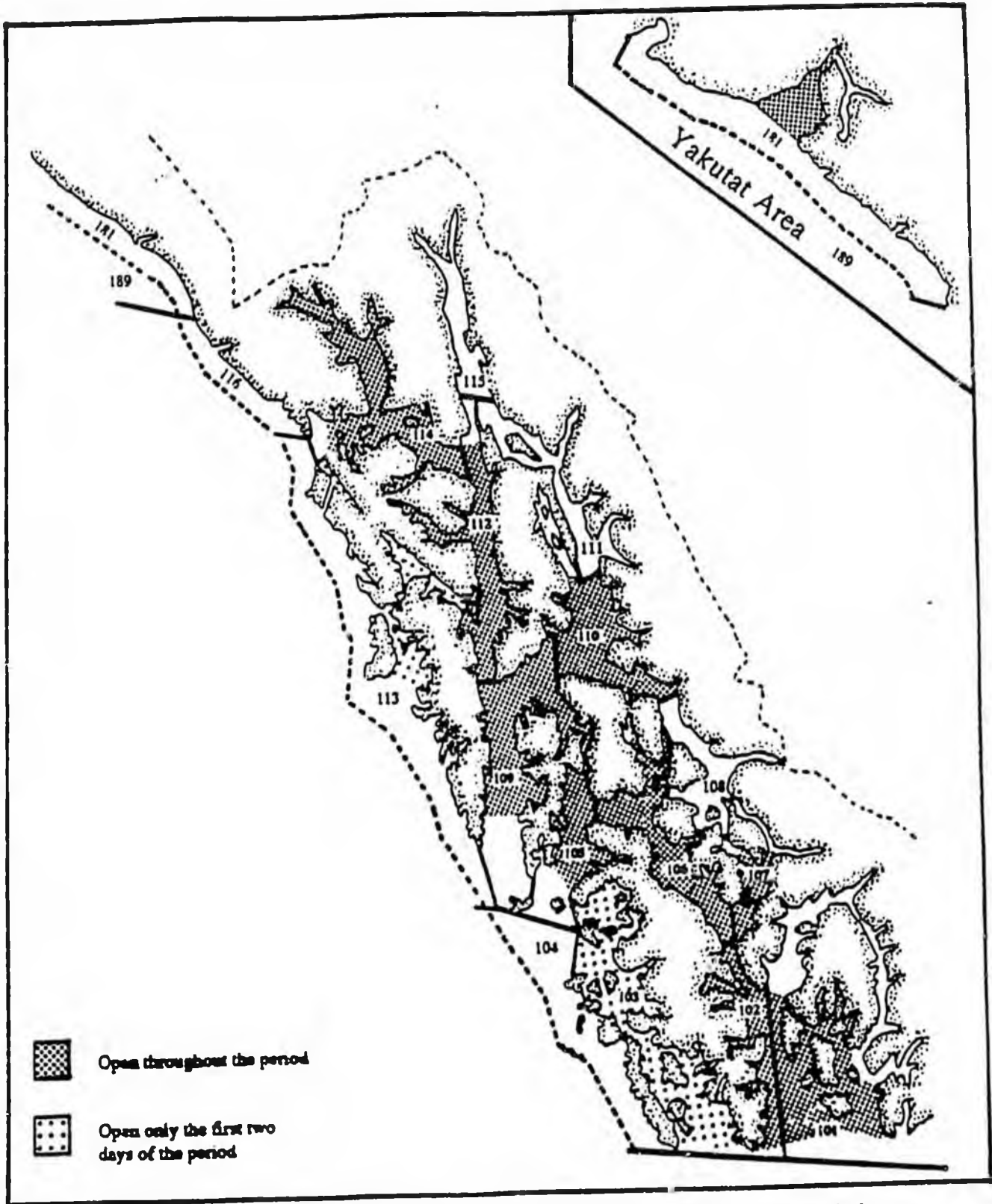


Figure 19. Open areas during the June 1991 Hatchery Access Fishery.