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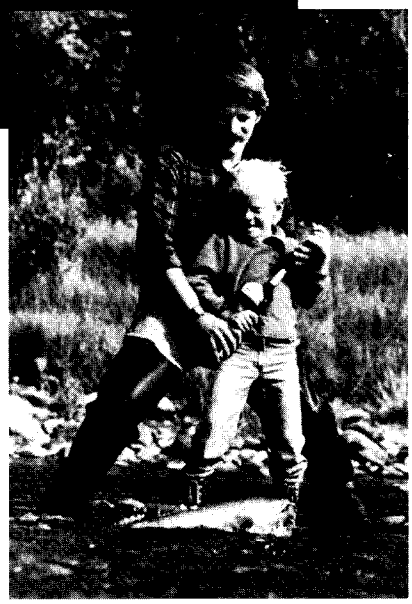
ANADROMOUS FISH MANAGEMENT PLAN 1992-1996



IDAHO FISH & GAME

IDAHO DEPARTMENT OF FISH AND GAME

Anadromous Fish Management Plan
1992-1996

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ANADROMOUS FISH MANAGEMENT PLAN
1992-1996

PART I. INTRODUCTION

Purpose

This document presents the Idaho Department of Fish and Game's objectives, policies, and strategies for production, harvest, and enhancement of anadromous fish for the period 1992-1996. Anadromous chinook salmon (Oncorhynchus tshawytscha), steelhead (O. mykiss), sockeye (O. nerka), and coho (O. kisutch) are addressed. This plan does not encompass other anadromous fish such as sturgeon, lamprey, and shad or non-anadromous salmonids such as kokanee, coho, and chinook which are managed for resident fisheries.

This fishery management plan describes the management direction which the Idaho Department of Fish and Game (Department) intends to pursue in order to provide the continued supplies of fish and fishing opportunity as mandated by law. However, this is a planning document, and does not carry legal status. Title 36, Idaho Code, declares fish and wildlife to be the property of the State of Idaho and mandates the Idaho Fish and Game Commission to "preserve, protect, and perpetuate such wildlife and provide for the citizens of this state and as by law permitted to others, continued supplies of such wildlife for hunting, fishing and trapping." Under the Commission's guidance, the Idaho Department of Fish and Game manages the fish and wildlife of the state.

Anadromous fish management efforts encompass the fish management, research, and hatchery sections of the Department. Management activities include manipulation of fish population levels, hatchery production, fish habitat protection and enhancement, and development of harvest regulations for anadromous fish. Anadromous fish management and research activities of the Department will be conducted within the guidelines set down in this plan. Programs listed are those which the Department intends to initiate or accomplish within this planning period. In some cases, the management direction outlined in this plan is a continuation of long-established programs. In other cases, new programs are proposed.

Anadromous fish management is an extremely complex and dynamic function, subject to many variables both within and outside of Idaho's borders. This plan is subject to change by Commission action to accommodate changed conditions, regional plans, court

orders, and other factors which may arise prior to 1996. However, as much as possible, this plan will guide the Department's anadromous fish management through 1996.

The Department's intentions and commitments to restoration of Idaho's anadromous salmon and steelhead resources are identified through the goals, policies, and implementation strategies provided in this plan as the foundation and framework for future anadromous salmon and steelhead management initiatives in the state.

Historical Overview

The following is a brief review of the history of anadromous fish in Idaho. Details regarding chronological and life histories of Idaho anadromous fish resources can be found in the Salmon, Clearwater, and Snake subbasin plans (Idaho Department of Fish and Game et al. 1990, Nez Perce Tribe of Idaho and Idaho Department of Fish and Game 1990, Washington Department of Fisheries 1990.)

Idaho's anadromous fish species are truly unique because few Columbia River salmon and steelhead currently have the ability to make spawning migrations of up to 900 miles. Stanley Basin sockeye represent the southernmost extension of the range of sockeye in the Pacific northwest. In the Columbia Basin, B-run steelhead return only to the Clearwater and Salmon rivers in Idaho. Three races of chinook, based on their migration time over Bonneville Dam, spawn and rear in Idaho waters. Fall chinook return primarily to the Snake River to spawn and rear. Currently, summer chinook return mainly to the Salmon River, however, historical evidence suggests summer chinook formerly existed in the Clearwater River prior to Lewiston Dam. Spring chinook and steelhead are found throughout the Salmon and Clearwater rivers and some of the minor Idaho Snake River tributaries.

The Snake River Basin within Idaho, including the Salmon, Clearwater and upper Snake River drainages, once produced an estimated 39% of the total spring chinook salmon, 45% of the total summer chinook salmon, 5% of the fall chinook salmon, and 55% of the total summer steelhead in the Columbia River Basin (Mallet 1974). Substantial numbers of sockeye and possibly coho were also produced.

Anadromous fish resources provided an important food source for Indians in Idaho for thousands of years. Ceremonial and subsistence fisheries continue, albeit at reduced levels. During the 1800s, non-Indian commercial and subsistence fisheries also developed. As the state became even more settled, sport fisheries increased in popularity and number.

Much of the upper Snake Basin habitat was blocked in the early 1900s by Barber Dam

(1906) on the Boise River, Swan Falls (1906) on the Snake River and Black Canyon Dam (1923) on the Payette River. The remaining upper Snake habitat was finally blocked by the Hells Canyon complex in 1958. Lewiston Dam, on the mainstem Clearwater, nearly eliminated chinook production in this basin after its construction in 1927 and before its removal in 1973. In 1969, the construction of Dworshak Dam on the North Fork blocked 26 percent of the Clearwater drainage to anadromous fish. Despite these major production habitat losses, about 6,400 miles of stream habitat for anadromous fish spawning and rearing still remain in Idaho (Figure 1). Much of this, including large expanses of the Frank Church River of No Return Wilderness in the Salmon River drainage and the Selway-Bitterroot Wilderness in the Clearwater River drainage are in pristine condition.

Species Review

Spring and Summer Chinook-Idaho's spring and summer chinook populations currently are depressed relative to 1960s levels, and appeared headed toward extinction in the late 1970s as illustrated by 5-year average index redd counts, (Figure 2). This condition led to severe sport harvest restrictions or closures of fisheries throughout the Snake Basin (Table 1). Popular sport fisheries disappeared and the local economies dependent upon them suffered. There has been improvement in run sizes since the early 1980s for spring and summer chinook and some limited terminal harvest on hatchery stocks has been allowed. The last general season for chinook salmon, however, was in 1978. Portions of the Clearwater drainage have shown increases in natural spawners following a reintroduction program which began in the 1960s. However, many wild chinook populations in smaller tributaries are now at remnant status. Drought and inadequate juvenile outmigration conditions through the mainstem Snake and Columbia federal hydroelectric system in the 1985-1990 period have eliminated gains of the early 1980s. Recent redd counts conducted in Salmon River index spawning areas for wild chinook indicate 15 to 20 percent as many redds as 20 years ago. The Clearwater River is also experiencing low levels of natural production. Chinook parr densities are estimated to be less than 15 percent of potential habitat carrying capacity, based on monitoring of standard transects. Other naturally produced populations show similar levels of production.

The low production level of Idaho's naturally produced chinook is alarming. Maintenance of genetic resources contained in wild stocks of salmon and steelhead is crucial to the sustenance of Idaho's anadromous fish resources. Wild fish carry with them genes that have been selected for through time which are critical to the long-term survival of the species. The productivity of Idaho's anadromous fish runs is governed by genetic resources. Research has shown that hatchery populations and wild populations that have mixed with hatchery fish tend to be less productive than pure wild populations. Information has also suggested that productivity of hatchery populations may become less

ANADROMOUS FISH IN IDAHO

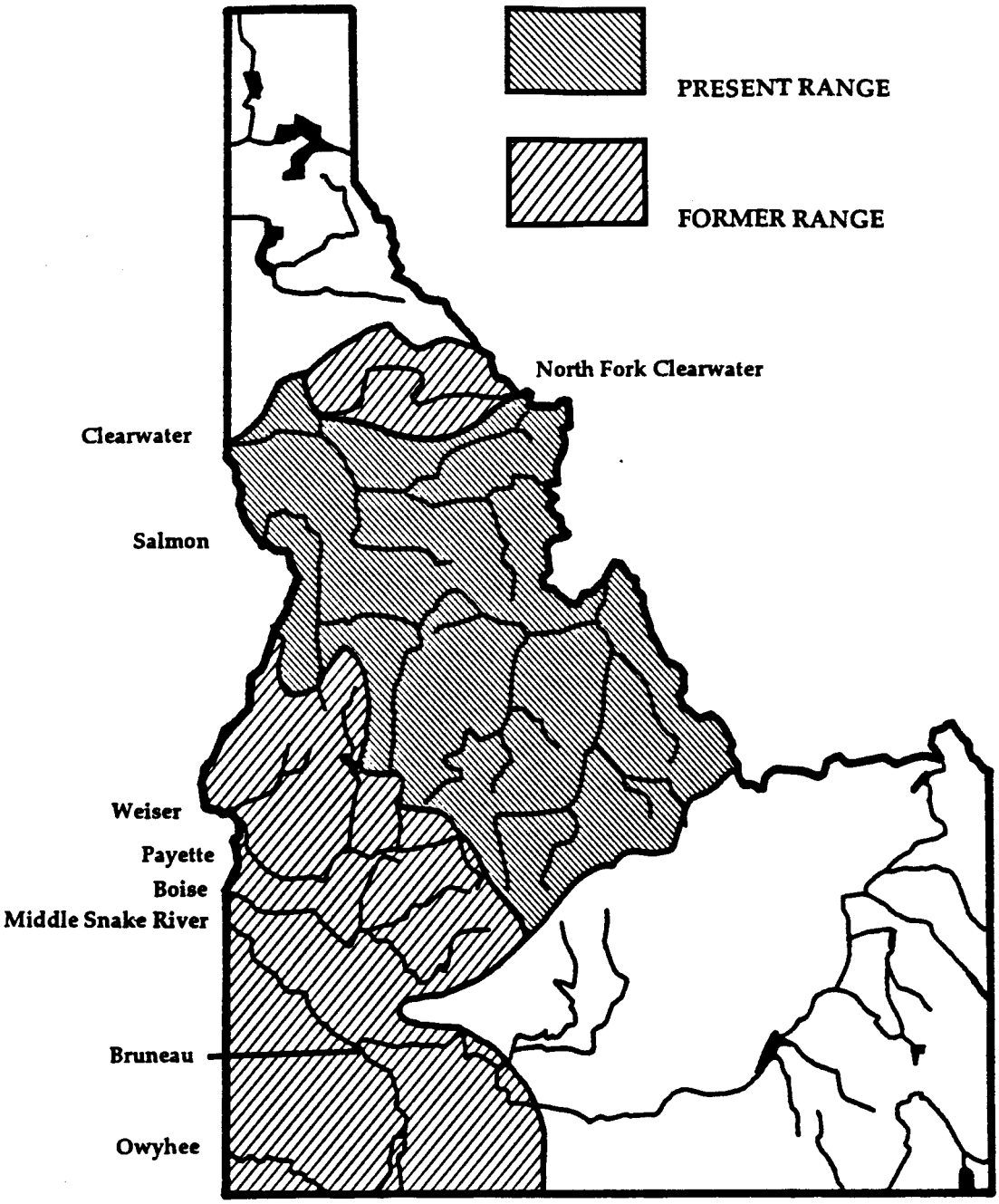


Figure 1. Former and present range of anadromous fish in Idaho.

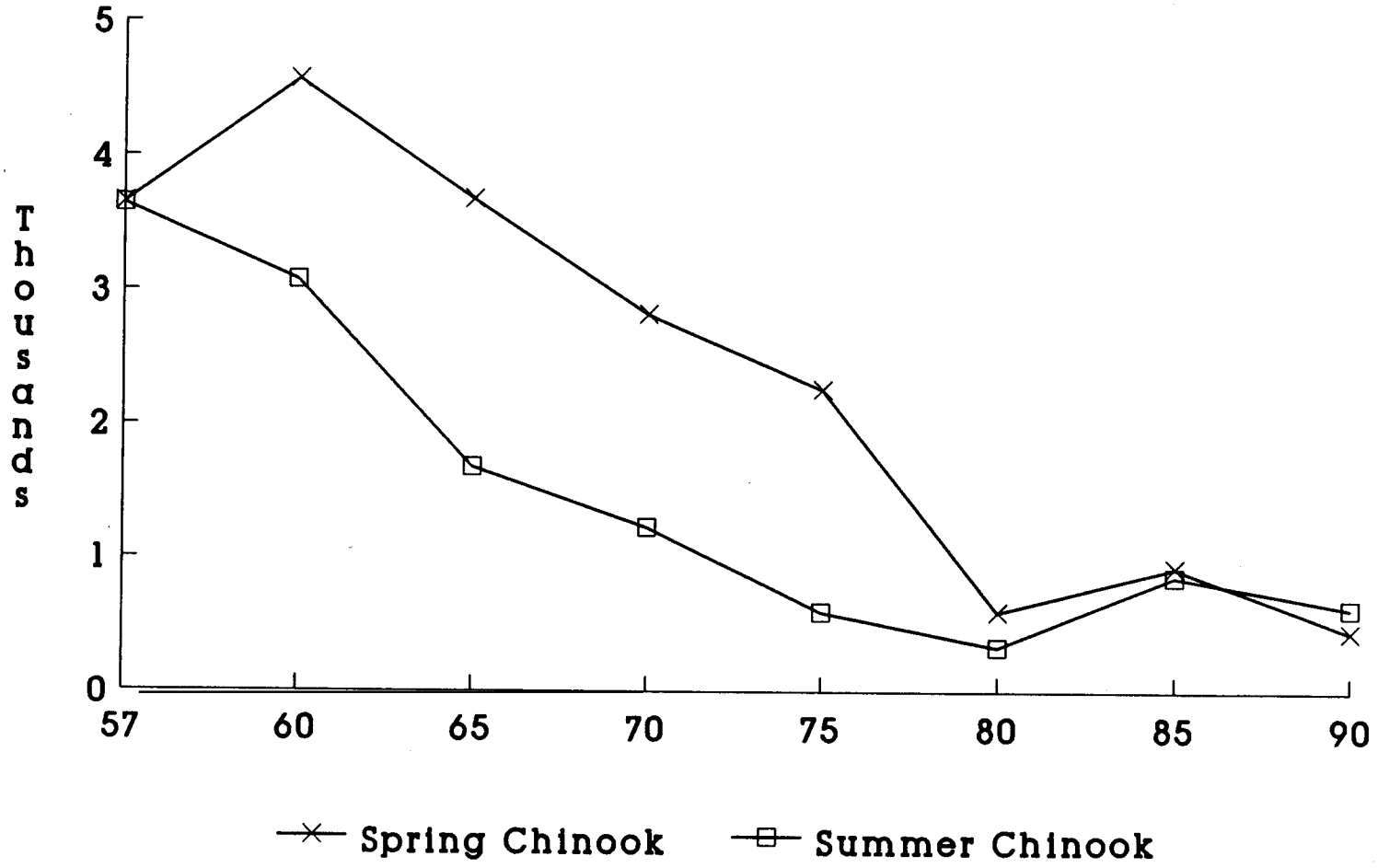


Figure 2. Average index redd counts for Idaho spring and summer chinook, 1957-1991. A three year average is shown for the 1957-59 period. Five year averages are shown for the 1960-1989 period. A two year average is shown for the 1990-1991 period.

Table 1. Idaho salmon and steelhead sport harvest estimates, 1954-1990. All figures are reported for the calendar year and rounded to the nearest 500.

Year	Chinook salmon harvest estimate	Steelhead harvest estimate
1954	15,000	12,000
1955	19,000	13,000
1956	21,000	8,000
1957	39,000	20,000
1958	24,000	30,000
1959	20,000	31,000
1960	21,000	30,000
1961	13,000	25,000
1962	12,000	19,000
1963	12,000	26,000
1964	8,000	18,000
1965	Season Closed	20,000
1966	8,500	20,000
1967	6,500	22,500
1968	10,000	23,000
1969	11,500	15,500
1970	5,500	20,500
1971	3,500	17,500
1972	6,500	13,500
1973	9,500	10,500
1974	1,500	3,000
1975	Season Closed	Season Closed
1976	Season Closed	2,000
1977	3,500	13,000
1978	7,000	11,500
1979	Season Closed	5,500
1980	Season Closed	9,000
1981	Season Closed	13,000
1982	Season Closed	20,500
1983	Season Closed	32,000
1984	Season Closed	25,000
1985	2,300	34,500
1986	1,400	40,000
1987	500	30,000
1988	700	21,500
1989	Season Closed	38,500
1990	1,000	30,000

productive with time. Should wild populations become extinct, and hatchery stocks become less productive, numbers of adult salmon and steelhead returning to Idaho will decline further. Therefore, it is imperative that the genetic resources contained in wild stocks be conserved. It is also very important that wild stocks rebuild to productive levels so that the full natural production capacity of Idaho's habitat is realized, important historical fisheries resume, and wild fish are available for integration into the hatchery to maintain or increase the productivity of hatchery stocks.

The precarious condition of many once-productive stocks of chinook salmon is a result of many interrelated factors, but the major factor is operation of the federal hydroelectric system. Anadromous fish migrating from Idaho to the ocean must pass eight hydroelectric facilities located on the Snake and Columbia rivers (Figure 3). High mortalities occur as smolts pass through the reservoirs and turbines at the dams. Improvements have been attempted recently by bypassing smolts around the turbines and collecting and transporting them below Bonneville Dam. To date, smolt transportation has been more beneficial for steelhead than chinook. Compounding factors, such as high prevalence of Bacterial Kidney Disease (BKD) in hatchery chinook, have prevented a complete evaluation. However, water management for power marketing and flood control constrains mainstem flow during the critical migration period. Significant mortality occurs in the reservoir prior to the first collection point at Lower Granite Dam, particularly in years of low runoff. In addition, smolts have a narrow window of time for entry into the saltwater environment. Reservoirs increase smolt travel time and this delay makes them arrive too late to adapt to salt water. Most delayed fish perish. Little progress has been made to increase water velocity through reservoirs to aid smolt migration, which is essential to smolt survival and subsequent adult returns. Provision for adequate mainstem survival remains the key to improving Idaho's chinook status. Losses also occur to adults at the dams on their return migration due to difficulty in finding and ascending ladders. As noted previously, many of Idaho's anadromous fish production streams are in good condition. Only lack of returning adults limits production. In some areas, severe habitat degradation has impacted populations.

Idaho's hatchery capacity and production of chinook and steelhead has increased in an attempt to offset losses to natural production and migration survival. Between 1980 and 1990, artificial production of salmon and steelhead essentially doubled (Figures 4 and 5). Facilities for artificial propagation of chinook and steelhead are located around the state (Figure 6). Hatchery-produced adults, fry, and smolts have been used to attempt to rebuild naturally-produced populations. However, contrary to expectations, low smolt-to-adult survival rates due to migrant juvenile mortalities have generally held hatchery supported chinook runs at or below maintenance levels of abundance.

Potentially, enough spawners could return to allow both hatchery programs and natural spawners to produce harvestable surpluses if smolt-to-adult survival increased. Improved

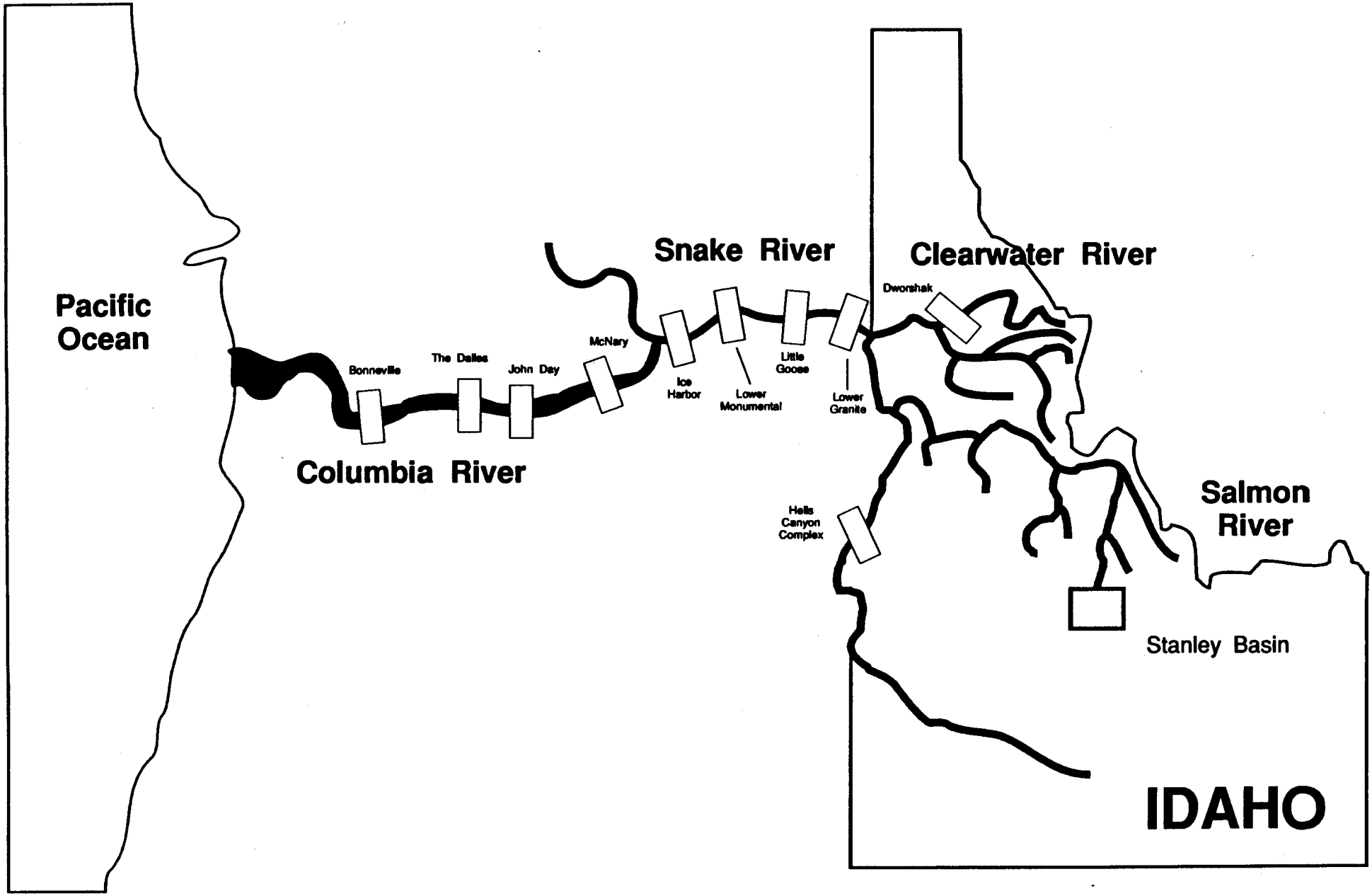


Figure 3. Idaho salmon and steelhead migration route to the ocean.

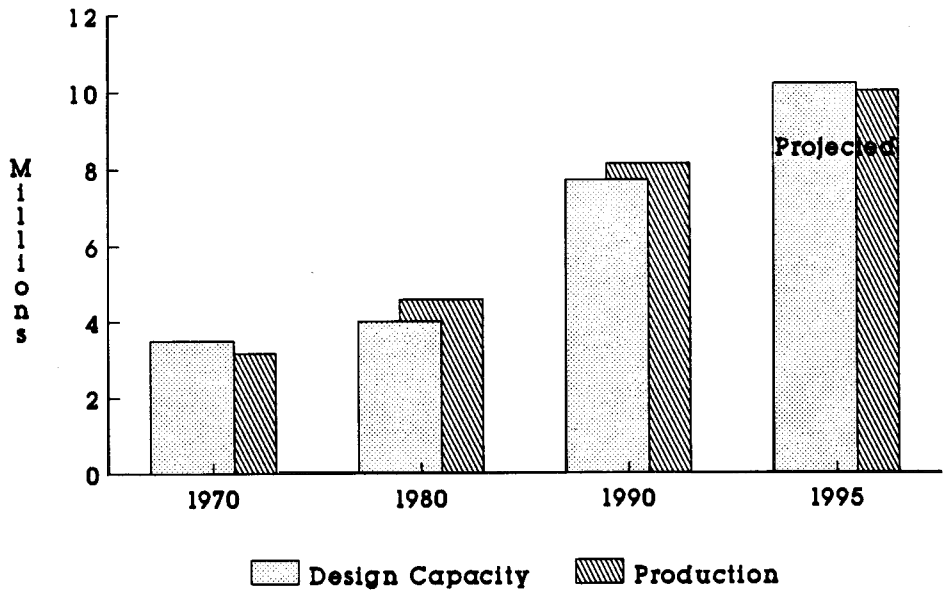


Figure 4. Idaho steelhead hatcheries designed smolt capacity and production for selected years.

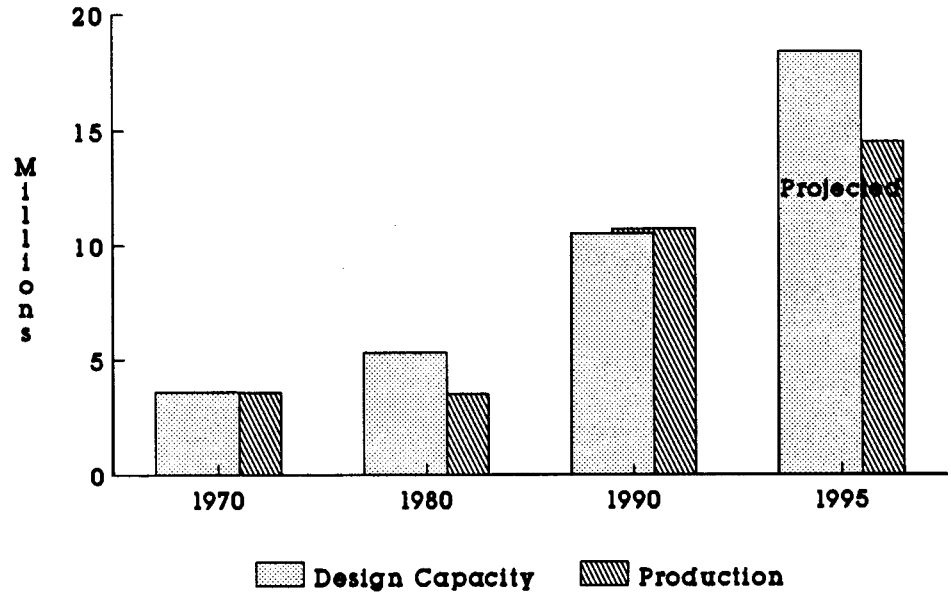


Figure 5. Idaho chinook hatcheries designed smolt capacity and production for selected years. Presmolt capacity and production from Clearwater Anadromous Fish Hatchery satellites ponds and proposed Nez Perce Tribal Hatchery are included in the 1995 projection.

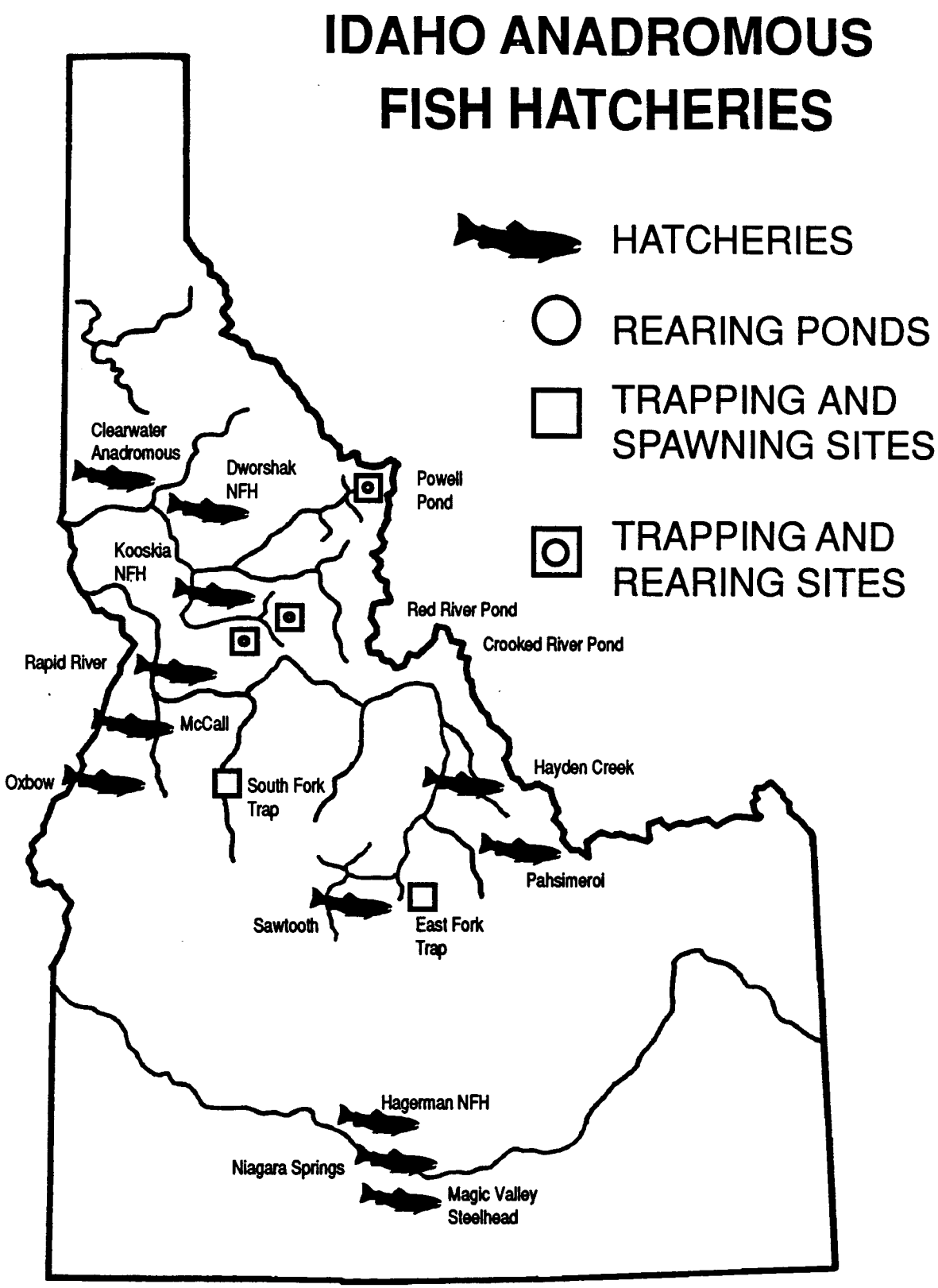


Figure 6. Location of anadromous fish hatchery facilities in Idaho.

flow and passage conditions and control of hatchery diseases are needed. Without improved smolt-to-adult survival, current artificial production programs will fail to produce consistent harvestable surpluses of adult salmon. Furthermore, recent studies (Reisenbichler and McIntyre 1977; Chilcote et al. 1986; Nickelson et al. 1986) of wild and hatchery fish interactions in the natural environment emphasize that healthy wild fish populations represent a critical genetic resource necessary for maximizing natural production from existing habitat and can represent a source of broodstock to assure continued strength of *hatchery* programs. Elements of genetic fitness and diversity that make a wild population successful cannot be replaced by hatchery fish over the long term.

Steelhead-Wild steelhead populations declined to low levels in the 1970s, and have generally remained at low levels for the same reasons cited for spring and summer chinook. Following termination of the non-treaty commercial fishery in the Columbia River and the flooding of Celilo Falls, steelhead populations began to rebuild. Protective regulations in terminal fisheries, downstream passage improvements, and smolt transportation contributed to increases in wild and natural steelhead populations through the mid-1980s. Drought conditions and *high* treaty harvest rates accompanied declining numbers of wild and natural steelhead.

Numbers of steelhead returning to Idaho increase greatly following years of better-than-average smolt survival and when above-average adult migration conditions occur in the lower Columbia and Snake Rivers. Favorable adult passage conditions include increased streamflow, decreased temperature, and reduced Columbia River harvest impacts. Smolt transportation has been more beneficial for steelhead smolts than chinook but has not completely compensated for mortality associated with reduced mainstem Snake River velocity caused by impoundments and current federal hydroelectric system water management strategies.

The majority of steelhead spawning and rearing habitat remains underseeded in Idaho. Annually, wild B-run steelhead parr densities averaged less than 15 percent of potential habitat carrying capacity for 1985-89. Parr densities for wild A-run steelhead have been much *higher,* with annual averages ranging from 63 to 85 percent of estimated carrying capacity. This reflected *higher* wild A-run steelhead adult escapement. However, recent declines in numbers of wild/natural A- and B-run steelhead returning to Idaho in 1988 are expected to yield lower densities in the future (Figure 7). Smolt-to-adult survival improvements are needed to enable these populations to consistently support productive spawning escapements and fisheries.

Hatchery steelhead programs have been successful and Idaho *hatchery* steelhead are now a major component of summer steelhead runs entering the Columbia River. In general, Idaho harvest of hatchery steelhead has increased to levels equal to or exceeding harvest in the 1960s. Since the mid-1980s, marked smolts have enabled anglers in terminal areas

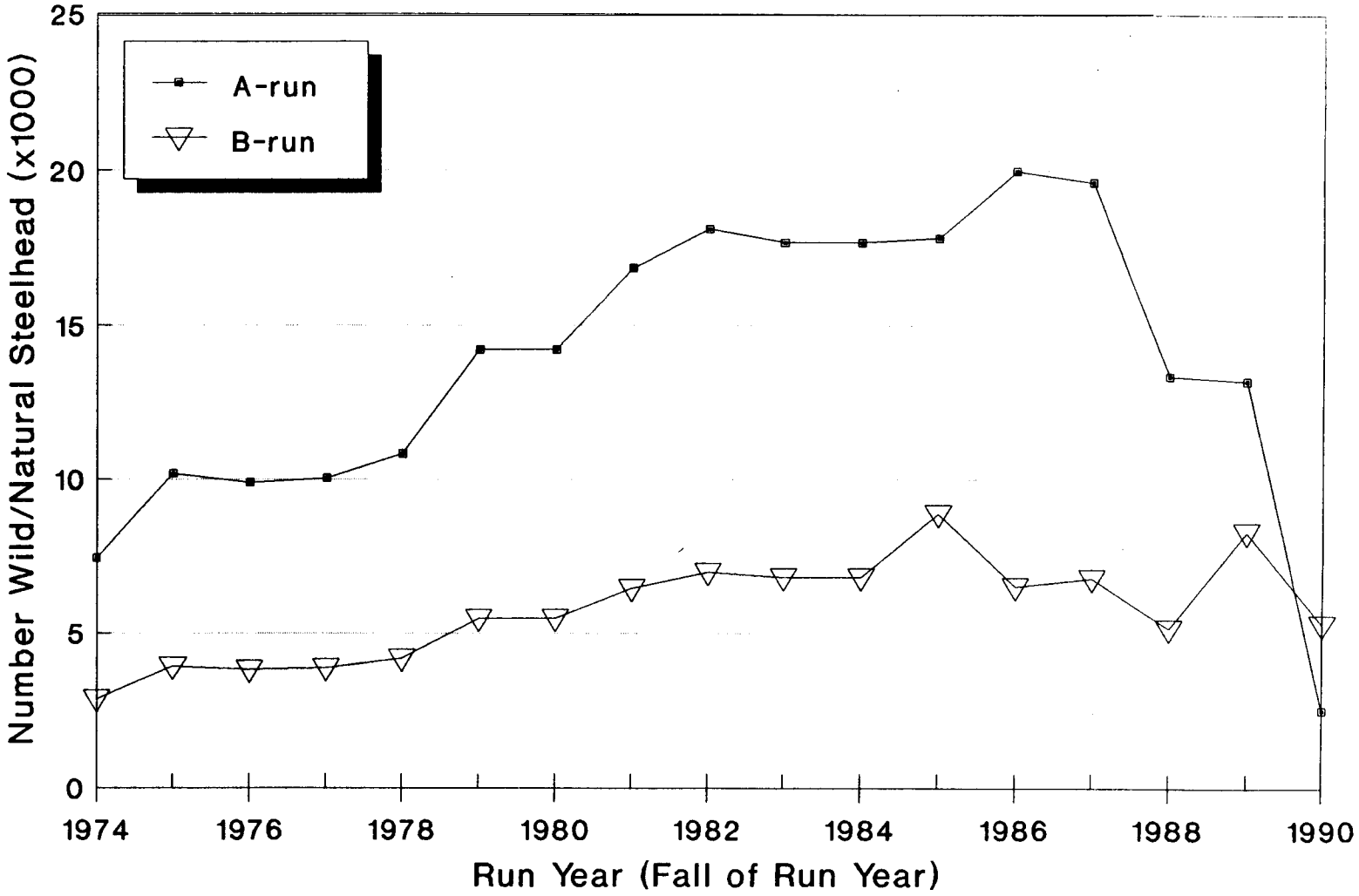


Figure 7. Estimated number of wild/natural A-run and B-run steelhead at Lower Granite Dam, 1974-1991.

to selectively harvest hatchery fish and minimize impacts on naturally produced fish. Steelhead hatchery capacity has increased tremendously since the 1960s when Idaho Power Company initiated spring chinook and steelhead artificial production in the Salmon drainage as mitigation for the construction of the Hells Canyon Dam complex. Hatchery-produced adults, fry, and smolts have been used in attempts to supplement and enhance naturally produced populations. Results of these attempts have not been fully evaluated. Regardless, consistently meeting adult production and harvest goals is dependent upon favorable passage conditions during the juvenile and adult migration periods, irrespective of the numbers of hatchery, natural, or wild smolts produced.

Sockeye-During the 1800s, significant numbers of sockeye returned to the Payette River, South Fork Salmon River, and the upper Salmon River. All runs were eliminated, or nearly so, by 1923, primarily by dams. Following removal of Sunbeam Dam in 1934, sockeye reestablished in Redfish Lake in the upper Salmon River. Abundance of that run increased through the 1950s and then declined precipitously with mainstem Snake and Columbia river dam construction. Sockeye fry from Babine Lake, British Columbia were introduced into Stanley and Alturas lakes during 1981-84 to try to increase abundance of sockeye returning to the Sawtooth Basin. Also, returning Redfish Lake sockeye were trapped, spawned, and progeny were released into Redfish Lake in 1986. Few, if any, adults returned from these efforts to enhance Snake River sockeye.

Fall Chinook-The Snake River fall chinook run which crosses Lower Granite Dam has declined to very low levels (Figure 8). This stock is considered to be indigenous to the Snake River. Historically, Snake River fall chinook spawned as far up the river as Shoshone Falls. After Swan Falls Dam was built, the major spawning area was from Swan Falls Dam to Marsing (Howell et al. 1985). Construction of Brownlee and Oxbow dams removed additional river miles from production. Presently, most of the Snake River fall chinook spawn and rear in the mainstem Snake River, but a few adults and redds have been sighted in the lower Clearwater and Salmon Rivers.

Active ocean and Columbia River sport, commercial and Indian fisheries occur on the upriver bright fall chinook run. Coded wire tagged Snake River bright fall chinook have been recovered from these fisheries. Harvest rates are currently the highest on these Snake River chinook compared to spring and summer chinook, and are believed to have an impact on their decline. As with the other Snake River anadromous fish species, loss of velocity for juvenile passage due to dam construction and water management is the major factor responsible for decline.

Fall chinook hatchery propagation efforts, initiated following construction of Hells Canyon Dam, were unsuccessful. Attempts were also made to expand fall chinook

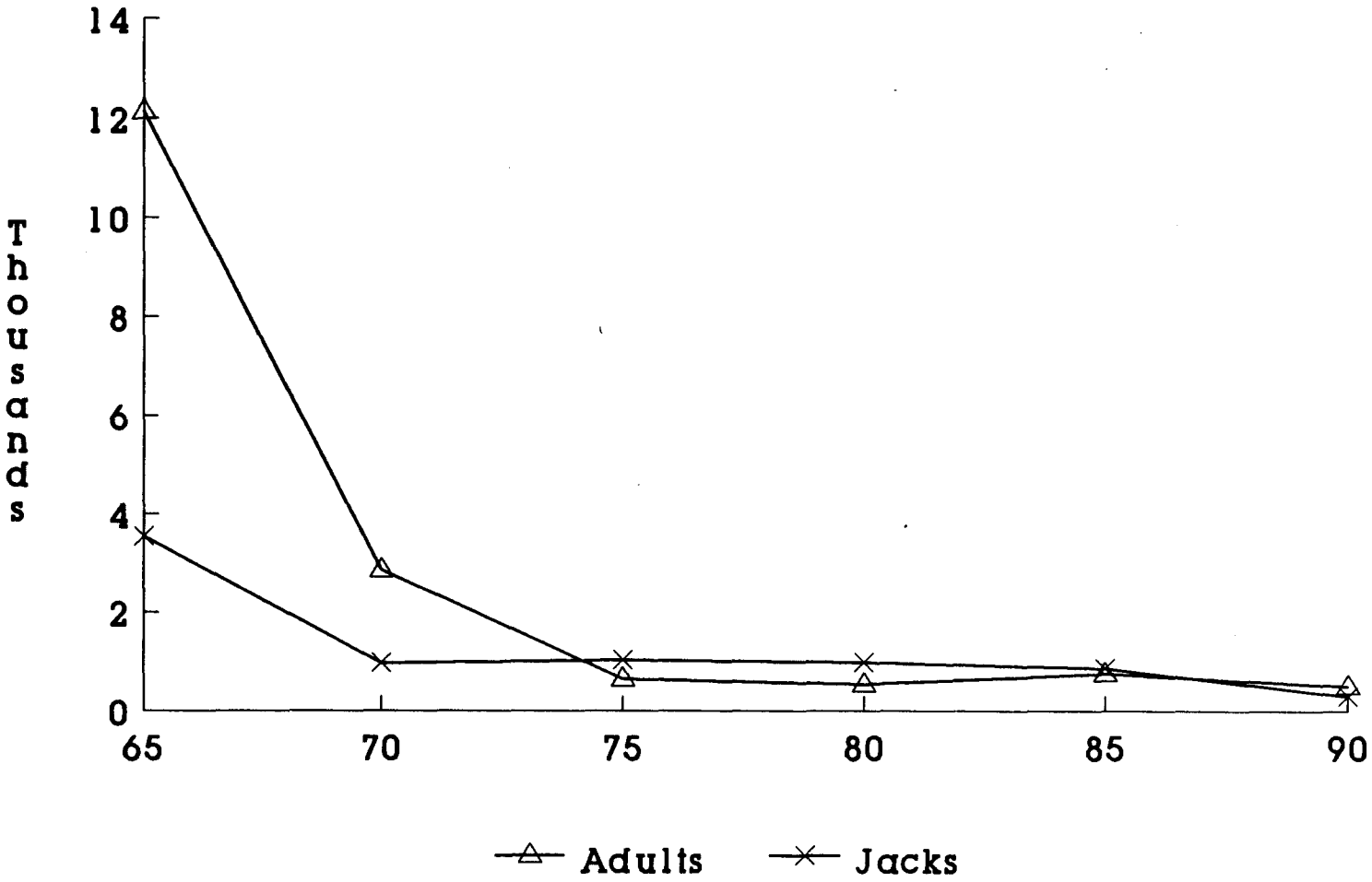


Figure 8. Average dam counts for Snake River fall chinook at the uppermost Snake River dam, 1965-1991. Five year averages are shown for the 1965-1989 period. The 1990 count is a two year average consisting of 1990 and preliminary 1991 dam counts.

production in the Clearwater drainage with plants of eggs in the 1960s. Currently, Lyons Ferry Hatchery, Washington, rears fall chinook from broodstock obtained by trapping adults at Ice Harbor Dam and adult returns to the hatchery. Prior to completion of Lyons Ferry, the Snake River Egg Bank Program collected adults at Ice Harbor Dam and transferred adults and eyed eggs to other facilities for rearing to develop a Snake River fall chinook egg source.

Coho-The Snake River stock of coho was declared extinct in 1986. Available information is documented in the Clearwater Subbasin Plan (Nez Perce Tribe of Idaho and Idaho Department of Fish and Game 1990). Oregon's Grande Ronde River was the only known coho production area in the Snake River in recent history. Idaho streams might once have produced coho, but little historical information exists. Attempts to introduce coho in the Clearwater Basin in the 1960s were unsuccessful.

Mitigation Programs-Several actions of national significance during the last decade recognized the plight of the Snake River anadromous fish runs. In 1980, the Federal Energy Regulatory Commission approved a settlement agreement to compensate for fishery impacts caused by the Hells Canyon Dam complex between Idaho Power Company and the fishery agencies. The Pacific Northwest Electric Power Planning and Conservation Act of 1980 mandated a program to protect, mitigate, and enhance the fish and wildlife resources of the Columbia River Basin affected by the development of the federal hydroelectric system. The Lower Snake River Fish and Wildlife Compensation Plan was implemented in Idaho in the late 1970s to mitigate for salmon and steelhead losses at four federal hydroelectric dams on the lower Snake River. These major salmon and steelhead restoration programs are the backbone of funds for anadromous fish mitigation measures in Idaho. In spite of massive increases in artificial production and millions of dollars spent on anadromous fish programs, Idaho salmon runs remain depressed because none of these programs have significantly improved passage survival occurring beyond Idaho's borders.

Recent Status. 1985-1991

The following is a summary of the recent status of salmon and steelhead in Idaho for the 1985-1991 period. As noted in the historical overview, run sizes of anadromous fish decreased as the number of hydroelectric projects on the Snake and Columbia rivers increased. Because of this decline, all species of naturally produced anadromous fish in Idaho are now considered by the Department to be threatened, endangered, or of special concern. In contrast with the six bird and mammal species listed as Threatened and Endangered Wildlife under Idaho Code, the fish species listed as threatened or endangered receive no special statutory protection under Idaho Code. However, taking of game fish listed as "threatened" or "endangered" can be prohibited by Commission regulation, and has been in the case of naturally produced salmon and steelhead.

The Fisheries Bureau defines Threatened and Endangered Species in this Plan as follows:

> Threatened Species: Any species which is likely to become an endangered species within the foreseeable future in all or a significant portion of its range within Idaho.
>
> Endangered Species: Any species which is in danger of extinction throughout all or a significant portion of its range within Idaho.

Coho

Snake River coho are considered extinct, and the Department does not manage for this species at the present time. Since 1983, only three coho adults (1985 = 2, 1986 = 1) have been counted over Lower Granite Dam. The number of juveniles collected at Lower Granite Dam has ranged from 8 to 256, since 1982. No coho juveniles were collected at Lower Granite Dam 1988 through 1990, although 65 were collected in 1991.

Sockeye

Sockeye were listed as an "Endangered" species in November, 1991 by the National Marine Fisheries Service (NMFS). Extremely low run sizes (Table 2) had prompted the Shoshone-Bannock Tribes to petition NMFS in 1990 for listing of Snake River sockeye under the Federal Endangered Species Act. Prior to federal listing, sockeye were identified as an Endangered Species by the Department (Idaho Department of Fish and Game 1991) and as a sensitive species by the Bureau of Land Management and the Northern Region of the Forest Service.

Table 2. Sockeye counts for selected Columbia and Snake river dams, 1985-1991.

Year	Bonneville	McNary	Priest Rapids	Lower Granite
1985	166,340	98,157	118,541	35
1986	58,123	46,443	43,084	15
1987	116,993	72,190	76,578	29
1988	79,714	50,080	51,135	23
1989	41,884	41,318	45,299	2
1990	49,581	46,145	46,331	0
1991	76,482	69,364	71,213	**8**

Eight adult sockeye crossed Lower Granite Dam and four returned to Redfish Lake in 1991. The four adults were collected by the Department and artificially spawned to initiate a captive broodstock program needed to provide short-term protection and preserve options for future recovery of this species. Also, juvenile sockeye migrants were collected in Redfish Lake Creek in 1991 for captive broodstock.

Only Redfish Lake is currently accessible to returning sockeye adults. This lake contains 49 percent of the historical Stanley Basin sockeye production area and has an estimated smolt capacity of approximately 665,000 sockeye (Idaho Department of Fish and Game et al. 1990).

Several lakes in the Stanley Basin which historically contained sockeye were treated in the 1960s to remove rough fish. These lakes (Pettit, Stanley, and Yelowbelly) contain 23 percent of the historical Stanley Basin sockeye production area. After treatment, fish barriers were installed to prevent rough fish from reentering the lakes from downstream. Stanley Lake was stocked with Babine Lake sockeye.

It is doubtful that Alturas Lake is currently accessible to sockeye adults due to dewatering of Alturas Lake Creek by an irrigation diversion, which was screened in 1991. Alturas Lake contains 27 percent of the historical Stanley Basin sockeye production area. However, 391 emigrating sockeye/kokanee smolts were tagged by Department personnel with passive integrated transponders (PIT tags) in 1990 at the Sawtooth weir. Since few sockeye adults have been seen at the Sawtooth weir since 1988, these fish would appear to be the emigrating offspring of Alturas Lake kokanee. Seventeen percent of the tagged smolts were subsequently collected at Snake River dams in 1990. Information from these juveniles as well as from any returning adults will aid in development of recovery actions for this run. The number of sockeye/kokanee juveniles collected at Snake River dams did increase during the latter part of the 1980s (Table 3). The majority are likely kokanee purged from Dworshak Reservoir with discharge during the spring.

In 1986, in an attempt to enhance Redfish Lake sockeye, the Department spawned adults collected at a weir on Redfish Lake Creek. However, this program was discontinued due to lack of broodstock and poor survival of trapped adults and eggs. Poor migration survival was also a contributing factor in the decision to discontinue production efforts.

Table 3. Summary of sockeye/kokanee collected and transported at Lower Granite and Little Goose dams, 1985-1991. Data for 1985-1990 from Ceballos et al. 1991. Data for 1991 is from the Fish Passage Center 1991 and is preliminary.

Year	Number Collected	Number Transported	Percent Transported
1985	10,188	9,221	91
1986	9,722	9,515	98
1987	7,426	7,373	99
1988	4,347	4,291	99
1989	20,140	18,893	94
1990	24,910	24,376	98
1991	40.113	38.482	96

Sockeye redd counts in Redfish Lake have declined precipitously since 1983. Although there is evidence that resident kokanee may produce anadromous offspring, the relationship and its potential as a recovery tool is unknown. As part of the status review required by the Endangered Species Act petition, efforts were resumed in 1990 to enumerate adults returning to Redfish Lake by reinstalling the weir on Redfish Lake Creek. The NMFS also initiated a genetic survey of kokanee populations in Idaho. Preliminary recovery actions were implemented in the Spring, 1991. Actions included collecting sockeye emigrating from Redfish Lake Creek and in the Salmon River at the Sawtooth weir. Collected fish (761 from Redfish Lake Creek and 141 from Salmon River) were taken to Eagle Hatchery to begin rearing to adults. Thirty-seven emigrants from Redfish Lake Creek were PIT-tagged and at least 21 (57.6 percent) were detected at Lower Granite or Little Goose dams, indicating a successful 450 mile migration. A sockeye recovery plan will be developed as a result of Endangered Species Act listing.

Spring, Summer, and Fall Chinook

Chinook runs crossing Lower Granite Dam have declined during the last five years (Tables 4, 5, and 6). This decline prompted Oregon Trout to petition the National NMFS in 1990 to list Snake River spring, summer, and fall chinook under the Endangered Species Act. The NMFS review process led to a preliminary decision in June, 1991 to list Snake River spring, summer, and fall chinook as "threatened". A final decision will be rendered in 1992 after a year of public review. As with sockeye, the NMFS decision could significantly affect Columbia Basin management actions. Moreover, fall chinook were reclassified by the Department in 1990 from threatened to endangered. Spring and summer chinook are classified by the Department as threatened.

Also, chinook are classified as a sensitive species by the Bureau of Land Management and the Northern Region of the Forest Service.

Table 4. Fall chinook counts for selected Columbia and Snake river dams, 1985-1991.

Year	Bonneville	McNary	Priest Rapids	Ice Harbor	Lower Granite
1985	343,042	203,189	20,131	9,165	2,191
1986	416,797	240,542	29,496	5,783	2,585
1987	407,980	200,889	39,807	8,412	1,336
1988	362,755	168,809	26,775	5,882	956
1989	295,883	115,744	17,093	5,990	982
1990	216,711	80,691	7,871	5,316	573
1991'	191,456	74,234	8,434	6,049	1,028

'Preliminary count.

Table 5. Spring chinook counts for selected Columbia and Snake river dams, 1985-1991.

Year	Bonneville	McNary	Priest Rapids	Ice Harbor	Lower Granite
1985	90,961	63,265	24,695	33,527	27,737
1986	123,043	76,077	21,681	39,087	33,074
1987	101,807	60,396	18,775	32,083	29,781
1988	94,746	51,178	13,342	34,394	30,419
1989	87,259	35,954	11,991	17,029	14,504
1990	96,251	44,500	12,288	20,730	17,559
1991	61,235	22,527	8,008	11,281	7,603

Table 6. Summer chinook counts for selected Columbia and Snake river dams, 1985-1991.

Year	Bonneville	McNary	Priest Rapids	Ice Harbor	Lower Granite
1985	29,870	22,029	17,284	5,290	6,646
1986	31,041	25,798	17,074	7,745	7,364
1987	37,707	25,353	14,573	6,982	6,551
1988	36,524	23,621	13,841	7,790	6,507
1989	32,975	24,708	20,162	4,215	4,071
1990	28,021	22,248	15,976	5,794	5,221
1991	21,953	17,588	15,169	5,861	4,988

Idaho Power and the Department have experimented with rearing fall chinook at Oxbow Hatchery, but poor water quality and high temperatures have limited production. There has been no hatchery production of fall chinook above Lower Granite Dam in recent times. The Lyon's Ferry fall chinook program, located downstream from Little Goose Dam, was initiated during the 1980s to perpetuate Snake River fall chinook as part of the Lower Snake River Compensation Program. Plans call for Idaho Power Company to develop a fall chinook mitigation program capable of producing 1,000,000 smolts for release at points in the Snake or Columbia rivers, as determined by the fishery agencies. To date, fall chinook eggs have not been available from Lyon's Ferry to initiate an Idaho Power Company mitigation program.

It became apparent in 1990 that there had been introgression of Umatilla fall chinook broodstock into the Snake River program when coded wire tag analysis showed that 35 percent of the broodyear 1989 adults recovered at Lower Granite Dam had originally been released into the Umatilla River as juveniles. These fish were progeny of fall chinook collected at Bonneville Dam. Management steps are being taken by Washington Department of Fisheries to preclude mixing the two stocks at the Lyon's Ferry Hatchery. However, monitoring at Lower Granite Dam in 1990 again indicated that some of the fall chinook crossing the dam had been released in the Umatilla River and data for 1991 is not available. Actions to minimize the genetic risks of stock mixing to Snake River fall chinook have yet to be defined or agreed upon by Snake River fisheries management entities.

Little is known about Snake River fall chinook natural production in Idaho. Although most of the fish spawn in the mainstem Snake, there have been redds identified in recent years in the lower Clearwater. Recovery actions for this stock will be dependent on reducing downstream mortality factors. As downstream mortality factors are reduced, development of an integrated fall chinook recovery plan addressing hatchery and natural production and harvest issues will be necessary to rebuild fall chinook numbers.

Spring and summer chinook run sizes increased over those in the early 1980s. This is partly attributed to good outmigration conditions for broodyear 1983 fish, leading to a strong 3-ocean component of returning adults in 1988. In 1988, the highest redd counts in many areas since the 1970s were noted. Although index redd counts have not shown any major trends over the last five years (Figures 9 and 10), they remain substantially lower than in the 1950s and 1960s.

Improved hatchery run sizes provided limited harvest opportunity for both sport anglers and tribal fishers during the last five years (Figures 11 and 12). In 1990, an experimental fishery targeting hatchery fish in the North Fork Clearwater River and mainstem Clearwater immediately below the mouth of the North Fork Clearwater River was allowed for the first time since the 1970s.

Unfortunately since 1986, low river flows, exacerbated by drought, have provided poor juvenile migration conditions. This was reflected by low run sizes in 1989 and 1990. Although smolt collection and transportation efforts have increased (Table 7), low run sizes similar to the late 1980s are expected through the early 1990s because of poor water years, and further elevated juvenile losses in the federal hydroelectric system.

Estimates of parr densities for tributaries show that habitat has remained extremely underseeded over the last five years (Table 8, Figure 13). Habitat quality has been degraded by land use activities in localized areas but excellent habitat is also underseeded. Habitat quality and quantity are not generally factors limiting smolt production (Tables 9, 10, and 11).

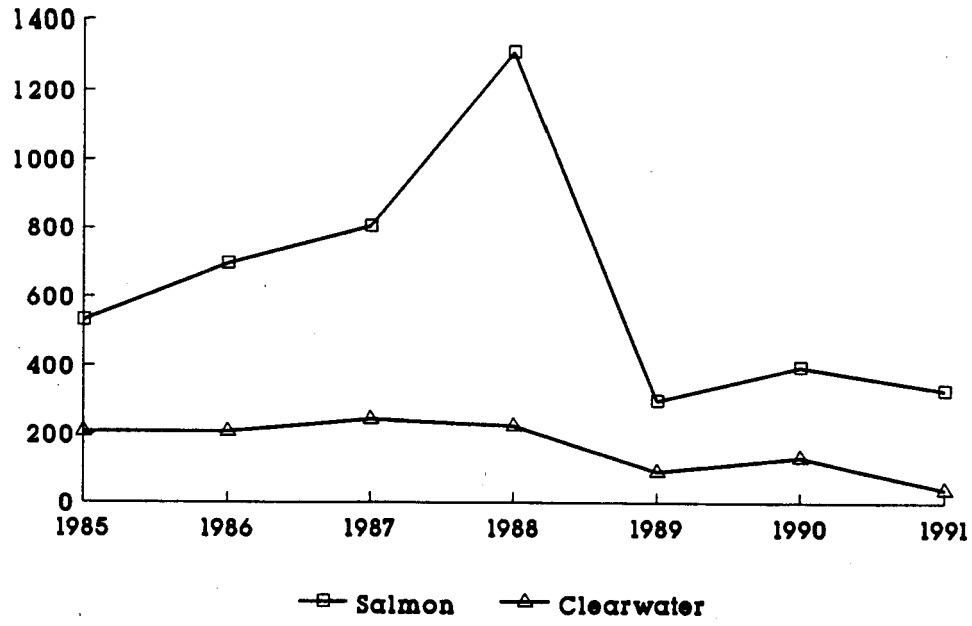


Figure 9. Spring chinook index redd counts for the Salmon and Clearwater drainages, 1985-1991.

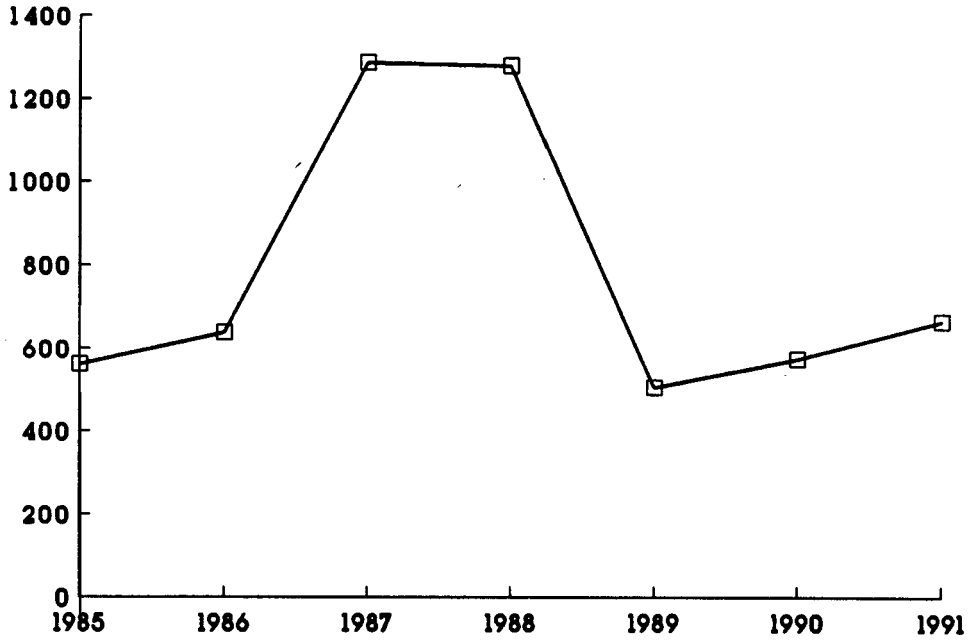


Figure 10. Summer chinook index redd counts for the Salmon River drainage, 1985-1991.

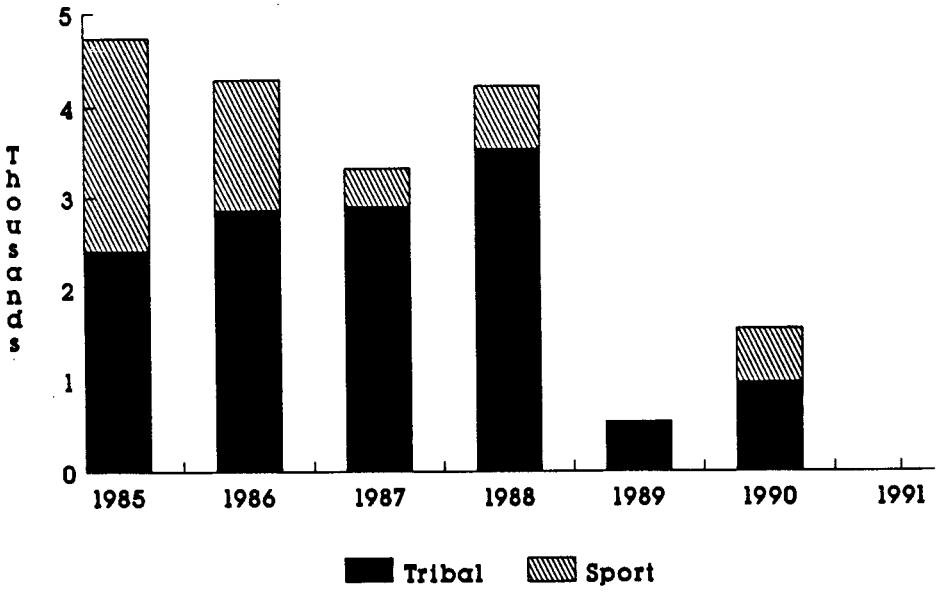


Figure 11. Sport and tribal chinook harvest in the Salmon River drainage, 1985-1991. Sport harvest season was closed in 1989. Conservation closure was in effect in 1991.

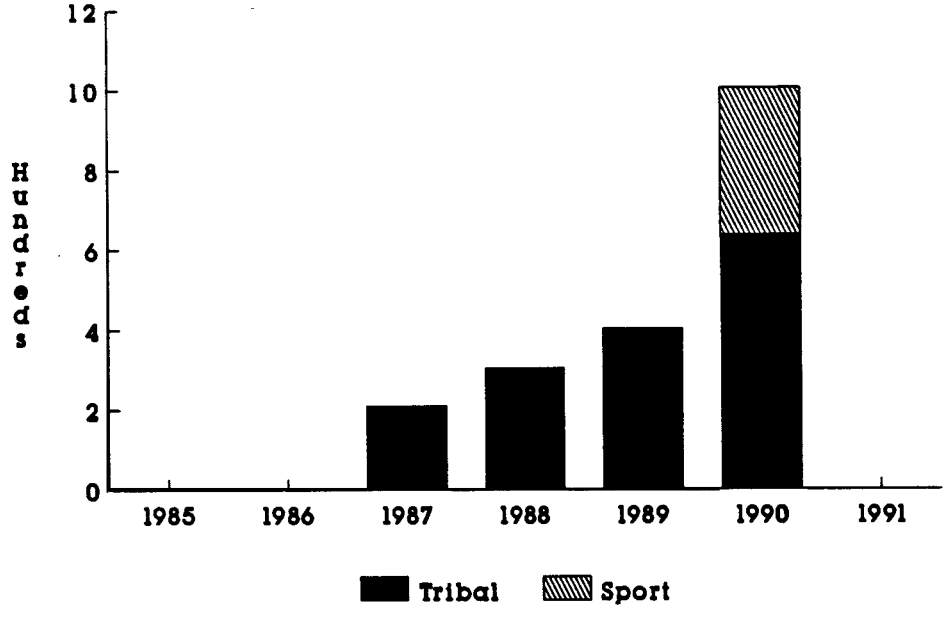


Figure 12. Sport and tribal chinook harvest in the Clearwater River drainage, 1985-1991. Data is not available for tribal harvest, 1985-1986. Sport harvest season was closed, 1985-1989, and 1991. Tribal harvest season was closed in 1991.

Table 7. Summary of yearling chinook collected and transported at Lower Granite and Little Goose dams, 1985-1991. Data for 1985-1990 from Ceballos et al. 1991. Data for 1991 is from the Fish Passage Center 1991 and is preliminary.

Year	Number Collected	Number Transported	Percent Transported
1985	2,929,067	2,705,363	92
1986	2,402,491	2,319,482	97
1987	3,519,395	3,454,317	98
1988	3,618,411	3,591,943	99
1989	3,952,701	3,368,489	85
1990	4,579,696	4,550,178	99
1991	3,421.268	3.395.701	99

Table 8. Mean percent of estimated carrying capacities in IDFG monitoring sections for chinook parr from 1985 through 1989, (Scully and Petrosky 1991).

Production Location/Description	Class	Race	Percent of Estimated Carrying Capacity
Middle Fork Salmon tributaries (without Bear Valley Cr. drainage)	Wild	SP	18
Lower reaches of Salmon R. Canyon tributaries	Wild	SP	1
Chamberlain Basin	Wild	SP	28
Bear Valley Creek (of Middle Fork Salmon R.)	Wild	SP	4
All wild summer chinook areas (from Mid. Fk., Secesh, and upper main Salmon)	Wild	SU	21
Upper Salmon R. and E. Fk. Salmon	Natural	SP	14
Selway River	Natural	SP	2
Lochsa River	Natural	SP	8
South Fk. Clearwater	Natural	SP	40
Lolo Creek	Natural	SP	21
South Fork Salmon River (excluding Secesh)	Natural	SU	24
Little Salmon River	Natural	SP,SU	11
Lemhi, N.Fk Salmon Panther Cr., Pahsimeroi	Natural	SP,SU	13

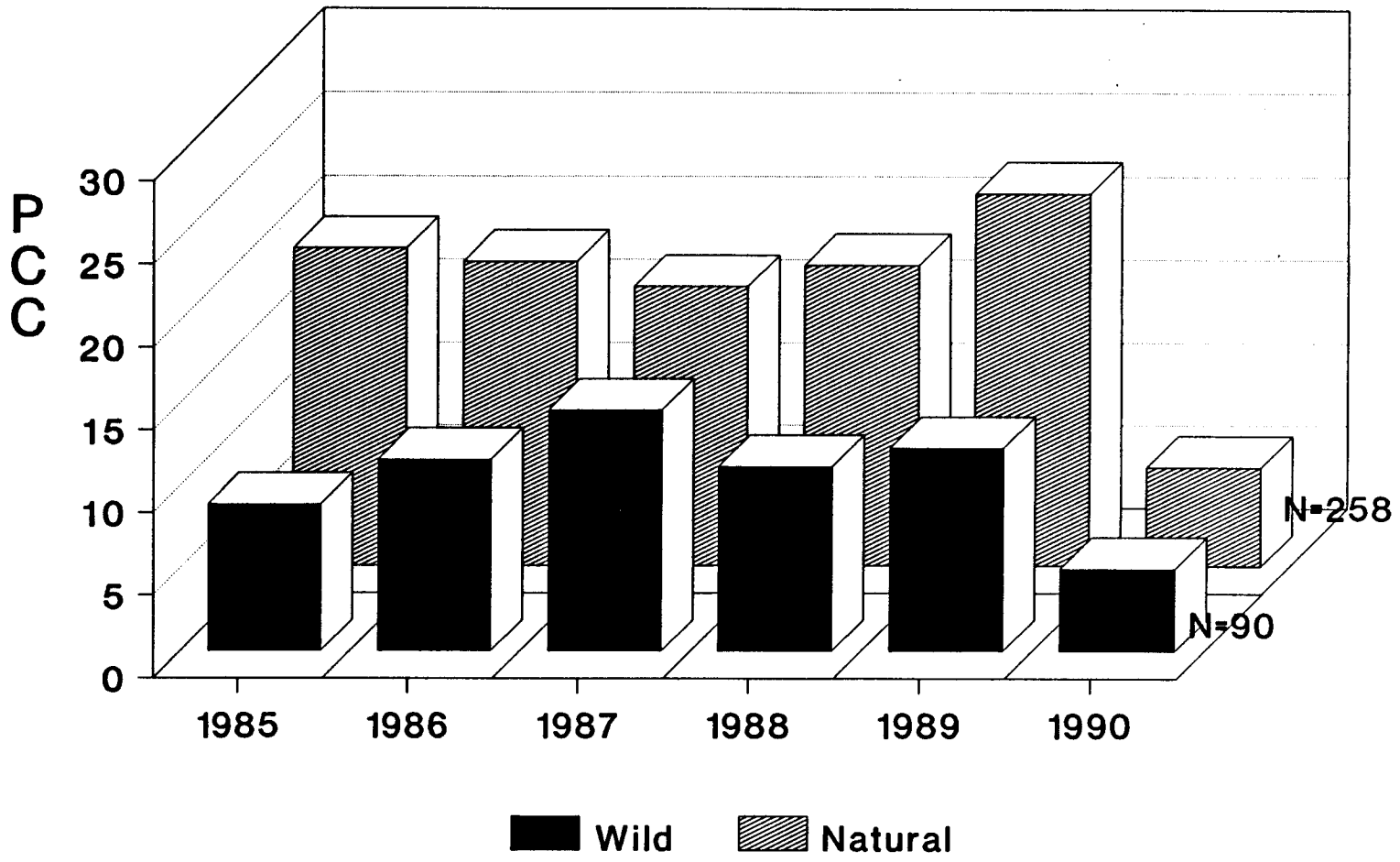


Figure 13. Mean annual percent of estimated carrying capacity (PCC) of two classes of chinook parr (age 0+) in Idaho, 1985-1990 (B. Rich, Idaho Department of Fish and Game, unpublished).

Table 9. Estimated potential smolt capacity and amount of habitat by quality for the Salmon River spring chinook production area. (Smolt capacity derived from the Presence/Absence database, Northwest Power Planning Council 1990).

Salmon River Spring Chinook Potential Smolt Capacity = 7,772,162

	Habitat Quality				
	Excellent	Good	Fair[a]	Poor[a]	Total
Miles (%)	167 (8)	778 (36)	927 (43)	297 (13)	2,169
Acres (%)	350 (7)	2,331 (46)	2.228 (43)	219 (4)	5,128

[a]Ratings of fair and poor habitat quality reflect natural physical features such as high gradient as well as man-caused or other degradation.

Table 10. Estimated potential smolt capacity and amount of habitat by quality for the Salmon River summer chinook production area. (Smolt capacity was derived from the Presence/Absence database, Northwest Power Planning Council 1990).

Salmon River Summer Chinook Potential Smolt Capacity = 3,609,014

	Habitat Quality				
	Excellent	Good	Fair[a]	Poor[a]	Total
Miles (%)	39 (6)	229 (36)	331 (52)	36 (6)	635
Acres (%)	98 (3)	1.082 (31)	1.879 (54)	409 (12)	3.468

[a]Ratings of fair and poor habitat quality reflect natural physical features such as high gradient as well as man-caused or other degradation.

Table 11. Estimated potential smolt capacity and amount of habitat by quality of the Clearwater River chinook production area. (Smolt capacity was derived from the Presence/Absence database Northwest Power Planning Council 1990).

Clearwater River Natural Spring Chinook Potential Smolt Capacity = 3,914,737

	Habitat Quality				
	Excellent	Good	Fair[a]	Poor[a]	Total
Miles (%)	139 (11)	375(30)	531(43)	193(16)	1,238
Acres (%)	274 (3)	1.164(14)	3.600(44)	3.160(39)	8.198

[a]Ratings of fair and poor habitat quality reflect natural physical features such as high gradient as well as man-caused or other degradation.

The major limiting factor to increased natural chinook production is a lack of spawners returning to production areas due to poor juvenile migration survival. Estimates of recent smolt-to-adult return rates for Idaho's wild/natural chinook have been less than 0.5 percent.

Even though chinook hatchery capacity increased with the addition of the Clearwater Anadromous Fish Hatchery satellite ponds, return of sufficient broodstock to maintain artificial production programs remains questionable under current migration conditions (Table 12). Estimates of recent smolt-to-adult return rates for Idaho's hatchery chinook have been less than 0.3 percent. Low water years generally also translate into low, warm water at hatchery facilities which affects early rearing survival and prespawn mortality. Hatchery production of quality fish which can survive under existing adverse conditions will become even more crucial in the next decade. However, initial results from erythromycin feeding are promising. Fish fed erythromycin during rearing appear to have decreased levels of BKD at release but as yet, it is not known if this translates into improved smolt-to-adult survival.

Steelhead

Idaho manages for two runs of steelhead. Since 1963, steelhead crossing Bonneville Dam from April 1 through August 25 have been classified as A-run and those crossing from August 25 through October 31 have been classified as B-run. The later entry into freshwater by B-run steelhead results in a larger average size than A-run steelhead of the same ocean-age. Most B-run steelhead rear two years in the ocean before returning

Table 12. Summary of Idaho chinook hatchery facilities including approximate adult spawning needs and average rack returns.

Funded by	Year of initial operation	Facility	Design Smolt Capacity (millions)	Number of adults needed to spawn[a]	Average adult Return[b]
		Spring Chinook Hatcheries			
IPCo[c]	1964	Rapid River	3.0	2,604[d]	3,366[e]
LSRCP[f]	1981	Dworshak NFH[g]	1.4	1,207	1,169
COE/FWS[h]	1970	Kooskia NFH[g]	0.8	603	514
LSRCP	1981	Sawtooth[i]	2.3	1,090	938
LSRCP	1977	Red River Pond	0.3	241	210
LSRCP	1989	Powell Pond	0.3	241	153
LSRCP	1990	Crooked R. Pond	0.6	483	28
LSRCP	1992	Clearwater	1.3	1,164	0[k]
		Sprina Chinook Adult Traps			
IPCo	1961	Hells Canyon		NA[k]	361
LSRCP	1984	East Fork		477	230
		Summer Chinook Hatcheries			
IPCo	1969[l]	Pahsimeroi	1.0	1,006	226
LSRCP	1980	McCall	1.0	1,214	NA[m]
		Summer Chinook Adult Trap			
LSRCP	1980	South Fork Salmon		NA°	1,035

[a]Average numbers based on hatchery stock and survival information collected during subbasin planning process. Does not include a natural production component for release above hatchery weirs.

[b]1980-90 average rack return for years of operation.

[c]IPCo = Idaho Power Company.

[d]Includes Hells Canyon adult need.

[e]Includes Hells Canyon adult return.

[f]LSRCP = Lower Snake River Compensation Plan.

[g]NFH = National Fish Hatchery. Operated by U.S. Fish and Wildlife personnel. All other facilities operated by Idaho Department of Fish and Game personnel.

[h]COE/FWS = Corps of Engineers/U.S. Fish and Wildlife Service.

[i]Design includes production for East Fork Salmon River

[j]Adults to be collected at Dworshak NFH.

[k]Included with Rapid River's adult need.

[l]Converted completely to summer chinook rearing with BY86 production.

[m]Adults return to South Fork Salmon adult trap.

[n]Included with McCall's capacity and return.

as adults, whereas about fifty percent of the A-run steelhead crossing Bonneville Dam rear one year in the ocean. All B-run steelhead originate in Idaho, in the Clearwater River and in the Middle and South Forks of the Salmon River. They have also been introduced into the East Fork Salmon River.

The migration time separation for A- and B-run steelhead can only be used at Bonneville Dam. Once past Bonneville Dam, runs become commingled, resulting in a mixed stock fishery above Bonneville Dam (Zone 6) and stock accounting problems at upriver dams. More recently, methods to separate the two runs at Bonneville and Lower Granite Dams, using fork length criteria, has been developed by the Department. This technique may provide more accurate accounting of A- and B-run steelhead escapements at Bonneville Dam and catches in the Zone 6 treaty fishery as well.

Idaho's steelhead runs peaked during the 1989-90 run year, but were quite variable over the last five years, with the 1990-91 run size being less than half of the previous year's (Table 13, Figure 14). As with chinook, juvenile outmigration conditions strongly influence the smolt passage survival and thus, the number of returning adults. Numbers of fish transported around the Snake and Columbia hydroelectric dams did increase over the last five years, which is believed to play a part in improved hatchery runs (Table 14). However, steelhead adult migration conditions are also a major variable in determining strength of the steelhead runs to Idaho. Poor adult migration conditions due to low, warm water in the late summer and fall, resulted in high losses of adults between dams during 1988 and 1990.

Harvest of steelhead in Columbia and Snake rivers fisheries increased during the previous planning period (Figure 15). The Columbia River Fish Management Plan (U.S. v Oregon Plan) harvest guidelines allow harvest of up to 15 percent of the wild/natural A-run steelhead and up to 32 percent of the wild/natural B-run steelhead crossing Bonneville Dam at any run size less than 75,500 wild fish, which is considered to be underescaped. Harvest and migration mortality of hatchery steelhead have generally not prevented hatcheries in Idaho from achieving escapement goals. However, interim escapement goals for naturally produced steelhead have not been met at Lower Granite Dam. Inadequate escapement of wild/natural steelhead is currently limiting natural production in Idaho.

Table 13. Summer steelhead counts by fish run year, June 1-May 31, for selected Columbia and Snake river dams, 1985-1991. Bonneville Dam counts are April 1 through October 31 of the first year listed. A-run steelhead are counted across Bonneville Dam April 1 through August 25 and B-run steelhead are counted August 26 through October 31.

Run	Bonneville			Priest	Ice	Lower
Year	A	B	McNary	Rapids	Harbor	Granite
1984-85	188,786	125,742	142,246	26,204	101,008	104,417
1985-86	250,746	91,617	181,694	34,010	123,289	116,334
1986-87	276,442	99,910	193,096	22,331	142,273	129,983
1987-88	222,772	78,258	151,587	14,048	77,565	71,280
1988-89	188,872	88,281	150,350	10,118	98,950	81,137
1989-90	170,836	115,579	169,571	10,730	149,361	131,242
1990-91	94,100	87,371	94,936	7,830	54,793	56,884
1991-92[a]	149,897	123,292	159,920	14,008	121,212	89,175

[a]Preliminary count.

Table 14. Summary of summer steelhead juveniles collected and transported at Lower Granite and Little Goose dams, 1985-1991. Data for 1985-1990 from Ceballos et al. 1991. Data for 1991 is from the Fish Passage Center 1991 and is preliminary.

Year	Number Collected	Percent Hatchery	Number Transported	Percent Transported
1985	3,813,661	84	3,753,799	98
1986	4,454,960	83	4,406,332	99
1987	3,967,903	83	3,917,986	99
1988	5,638,231	87	5,617,039	99
1989	6,848,676	89	5,814,139	85
1990	7,092,310	88	7,082,302	99
1991	7.390.798	ND[a]	7.218.603	98

[a]No data.

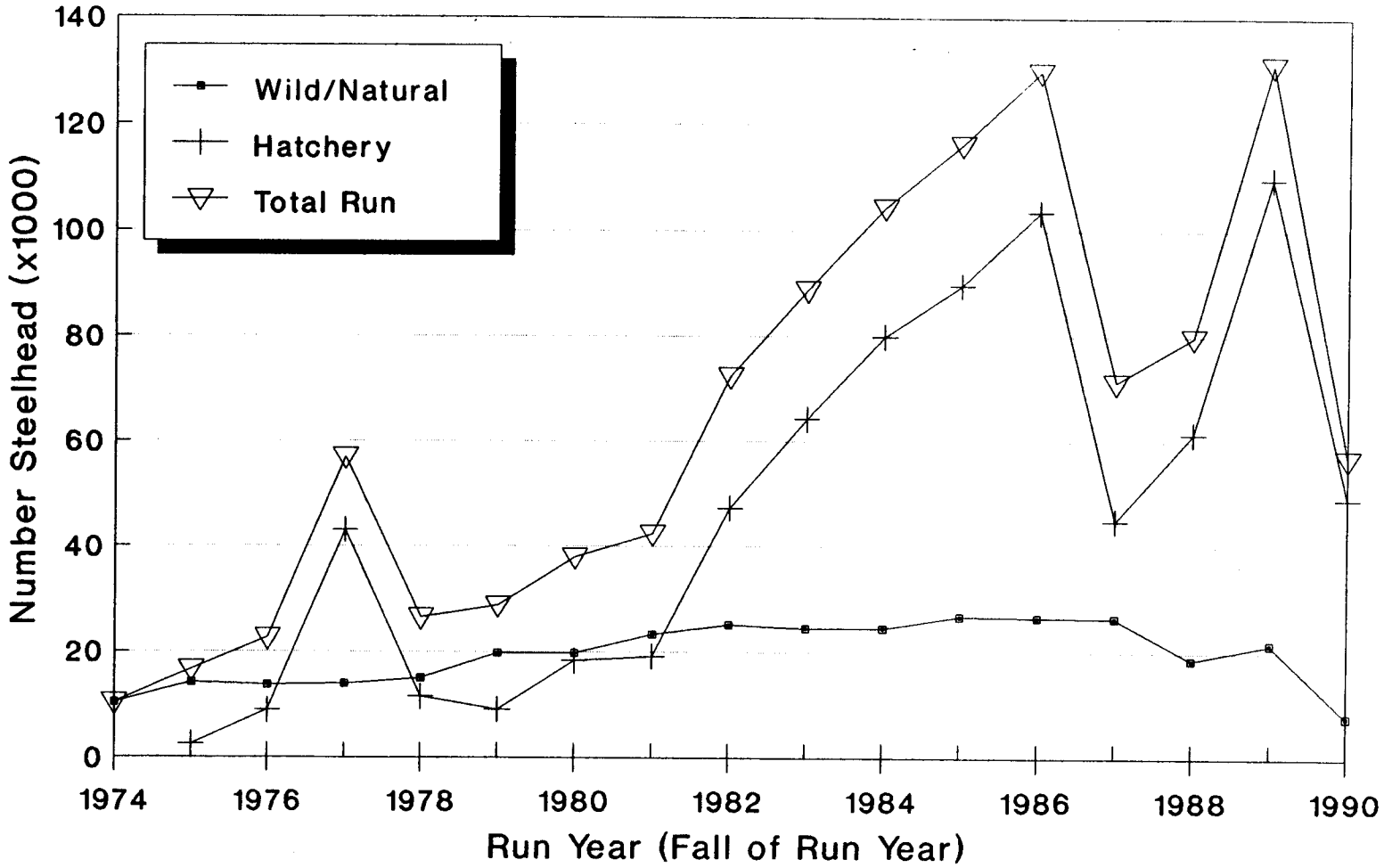


Figure 14. Hatchery and wild/natural steelhead run size, Lower Granite Dam, 1974-1990.

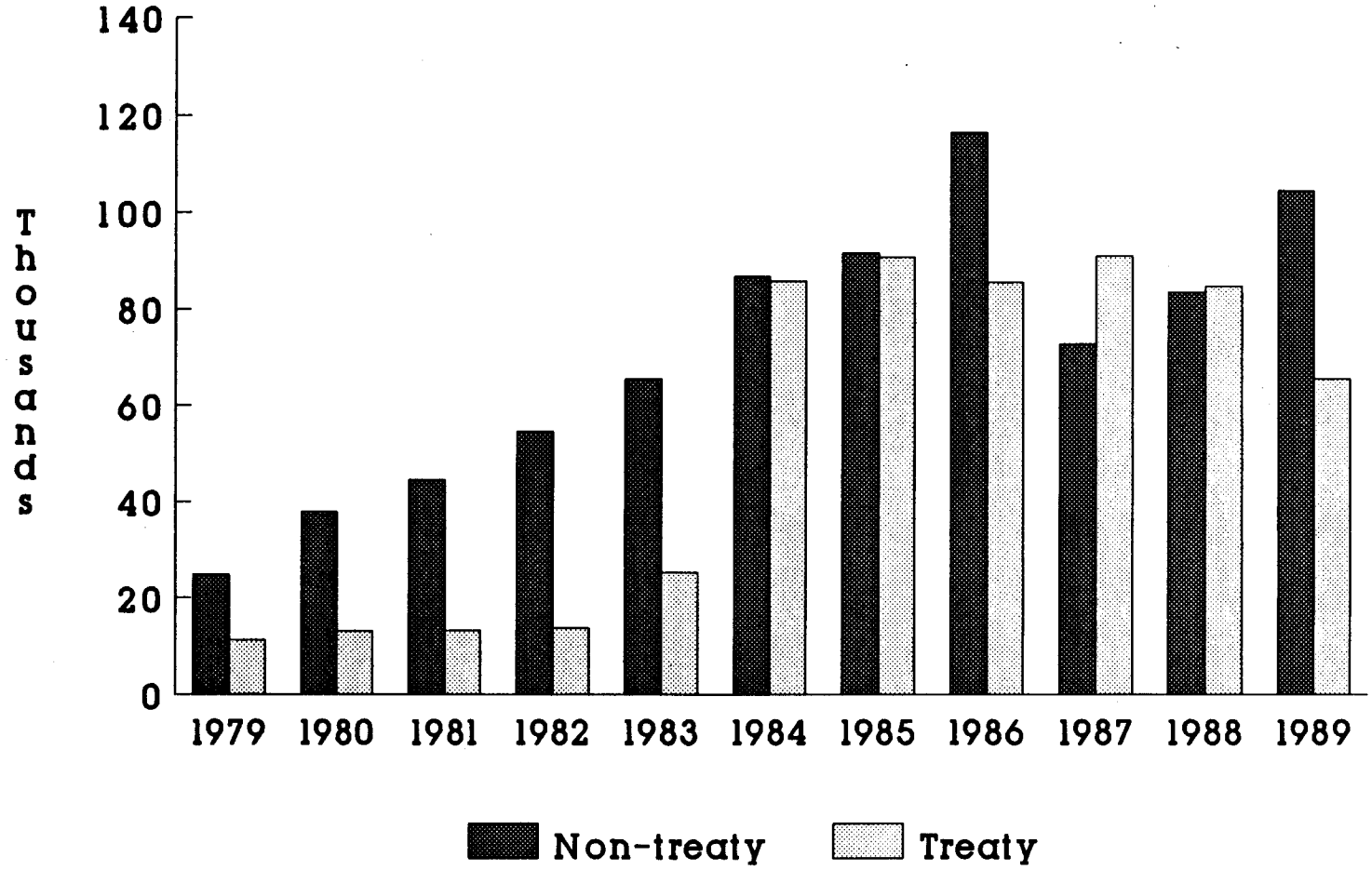


Figure 15. Upriver summer steelhead catch summary by run year for the Columbia River and its tributaries, 1979-1990. Catch is identified by treaty and non-treaty components. Year listed is the fall of the run year. The 1989-90 non-treaty catch information is preliminary.

Steelhead hatchery production supports Idaho's anadromous fish harvest management program. Record harvests have occurred over the last 5 years (Figure 16). Hatchery smolt capacity increased with the addition of Magic Valley Steelhead Hatchery in 1985. Spawning escapement goals generally have been met but daily and season bag limits have often been reduced to ensure that egg needs were met (Table 15). Minimum length restrictions have been in place since 1988 to protect B-run broodstock returning to the East Fork Salmon River in an attempt to provide sufficient numbers of eggs to establish this run. Smolt-to-adult survival back to hatchery racks have generally ranged from 0.2 to 1.4 percent for A-run fish and 0.1 to 0.7 percent for B-run fish for recent adult return years. These survival percentages include fishery exploitation rates in Idaho.

Unfortunately, success of artificial production programs and hatchery fish harvest programs have focused attention away from natural production trends. Seeding levels of steelhead in most natural production areas remain low, particularly for B-run steelhead (Table 16, Figure 17).

Naturally occurring steelhead are identified as a Species of Special Concern, Category 1, by the Department. The Department defines a species of special concern as native species which are either low in number, limited in distribution, or have suffered significant populations reductions due to habitat losses. Category 1 designates species which meet one or more of the criteria above and for which Idaho presently contains a significant portion of their range.

Estimated numbers of naturally produced steelhead crossing Bonneville and Lower Granite dams have decreased (Table 17), even though these fish are no longer legally harvested in the Snake River Basin. The production potential for naturally-produced steelhead in Idaho is enormous, with many miles of suitable habitat available (Tables 18 and 19).

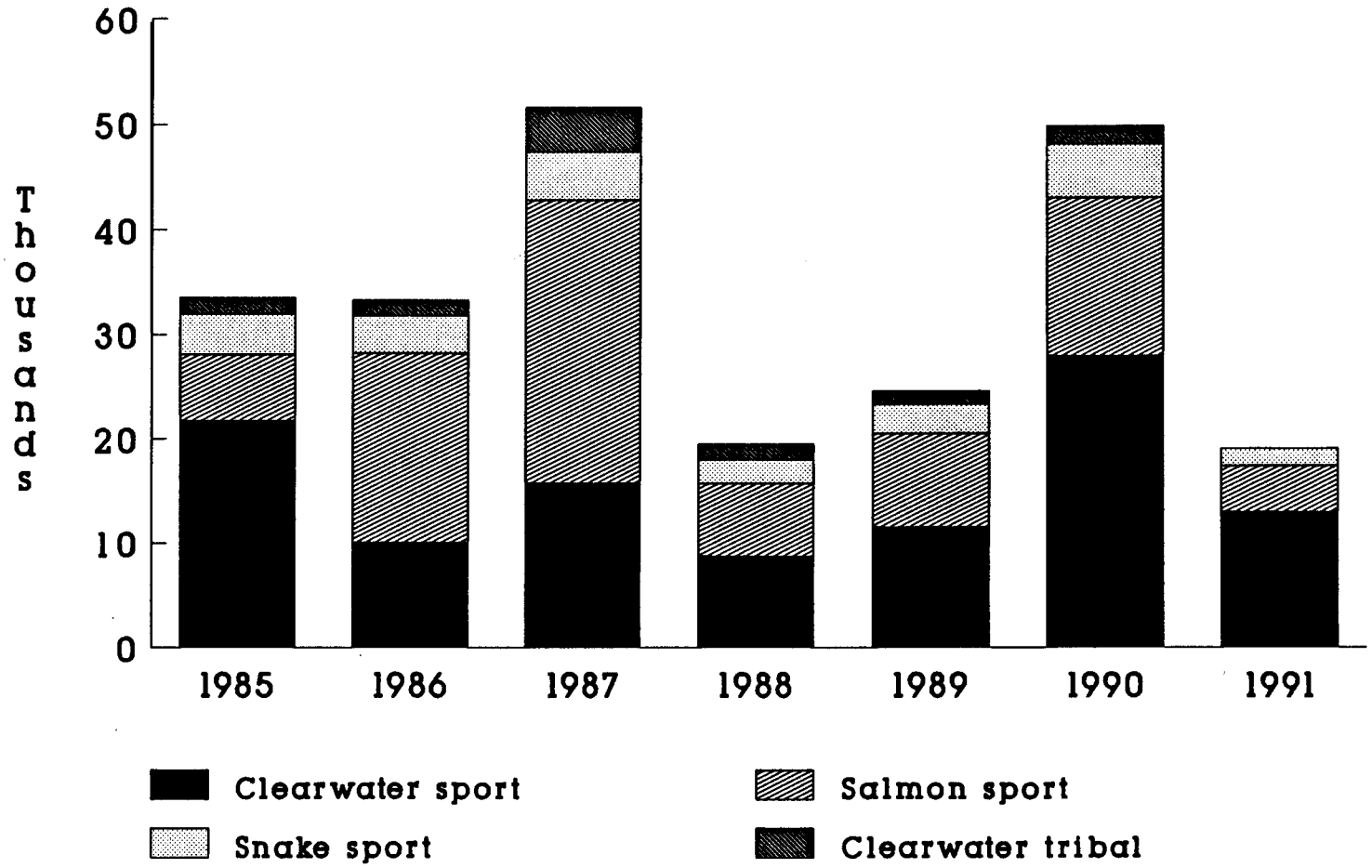


Figure 16. Estimated Idaho sport and Nez Perce tribal Clearwater steelhead harvest by fish run year, 1984-1991. Year listed is the spring of the run year. Data not available for Nez Perce tribal Clearwater steelhead harvest during the 1990-1991 run year. Data is not available for Salmon River tribal steelhead harvest. (Fish run year is calculated from June 1 to May 31).

Table 15. Summary of steelhead hatchery facilities in Idaho aggregated by A-run and B-run programs, including approximate adult spawning needs and average adult returns.

Funded by	Year of initial operation	Facility	Design smolt capacity[a] (millions)	Adults needed to to spawn[b]	Average adult Return[c]
		B-run program		2,249	6,216
COE/FWS[d]	1969	Dworshak/ Kooskia NFH[e]	2.3	992	5,929
LSRCP[f]	1985	Magic Valley	1.5	1,257	287[g]
LSRCP	1992	Clearwater Anadromous	1.5	0'	IN[h]
		A-run program		2,009	7,250
IPCo[i]	1964	Niagara Springs	1.8	1,113	5,923[j]
LSRCP	1983	Hagerman NFH	1.5	803	1,327[k]
LSRCP	1985	Magic Valley	0.5	217	1,327[k]

[a]Does not include presmolt rearing potential.
[b]Because of hatchery interrelationships, spawner needs and returns were aggregated by A- or B-run program. Numbers were derived from averaged stock and survival information collected during subbasin planning. Numbers do not include a natural production component for release above hatchery weirs.
[c]Average 1980-90 return for years of operation. Rack is footnoted for facilities without direct adult return.
[d]COE/FWS - Corps of Engineers/U.S. Fish and Wildlife Service.
[e]NFH - National Fish Hatchery.
[f]LSRCP - Lower Snake River Compensation Plan.
[g]East Fork Salmon River Adult Trap.
[h]Adult need to be determined. Adults will be collected at Dworshak NFH or other locations.
[i]IPCo - Idaho Power Company.
[j]Pahsimeroi and Oxbow hatchery racks.
[k]Sawtooth Hatchery weir.

Table 16. Mean percent of estimated carrying capacities in IDFG monitoring sections for steelhead parr from 1985 through 1989.

Location/Description	Production Class	Run	Percent of Estimated Carrying Capacity
Selway River	Wild	B	13
Middle Fork Salmon	Wild	B	11
South Fork Salmon	Wild	B	13
Salmon Canyon tribs. (Bargamin, Sheep, Chamberlain, & Horse creeks)	Wild	A	53
Snake, lower Clearwater, lower Salmon tribs.[a]	Wild	A	98
Lochsa	Natural	B	34
South. Fk. Clearwater	Natural	B	40
Lolo Creek	Natural	B	31
Lower & Little Salmon, East Fork Salmon[b]	Natural	A	38
Upper Salmon River	Natural	A	11
Pahsimeroi, Lemhi, North Fork	Natural	A	47
Snake and Little Salmon tribs.[c]	Natural	A	67

[a]Includes Sheep, Wolf, Big Canyon and Whitebird creeks, and Rapid River.
[b]Includes A-run streams with A- and B-run or B-run supplementation histories, including Little Salmon River, Hazard and Slate creeks, and East Fork Salmon River.
[c]Includes Captain John, Granite, and Boulder creeks.

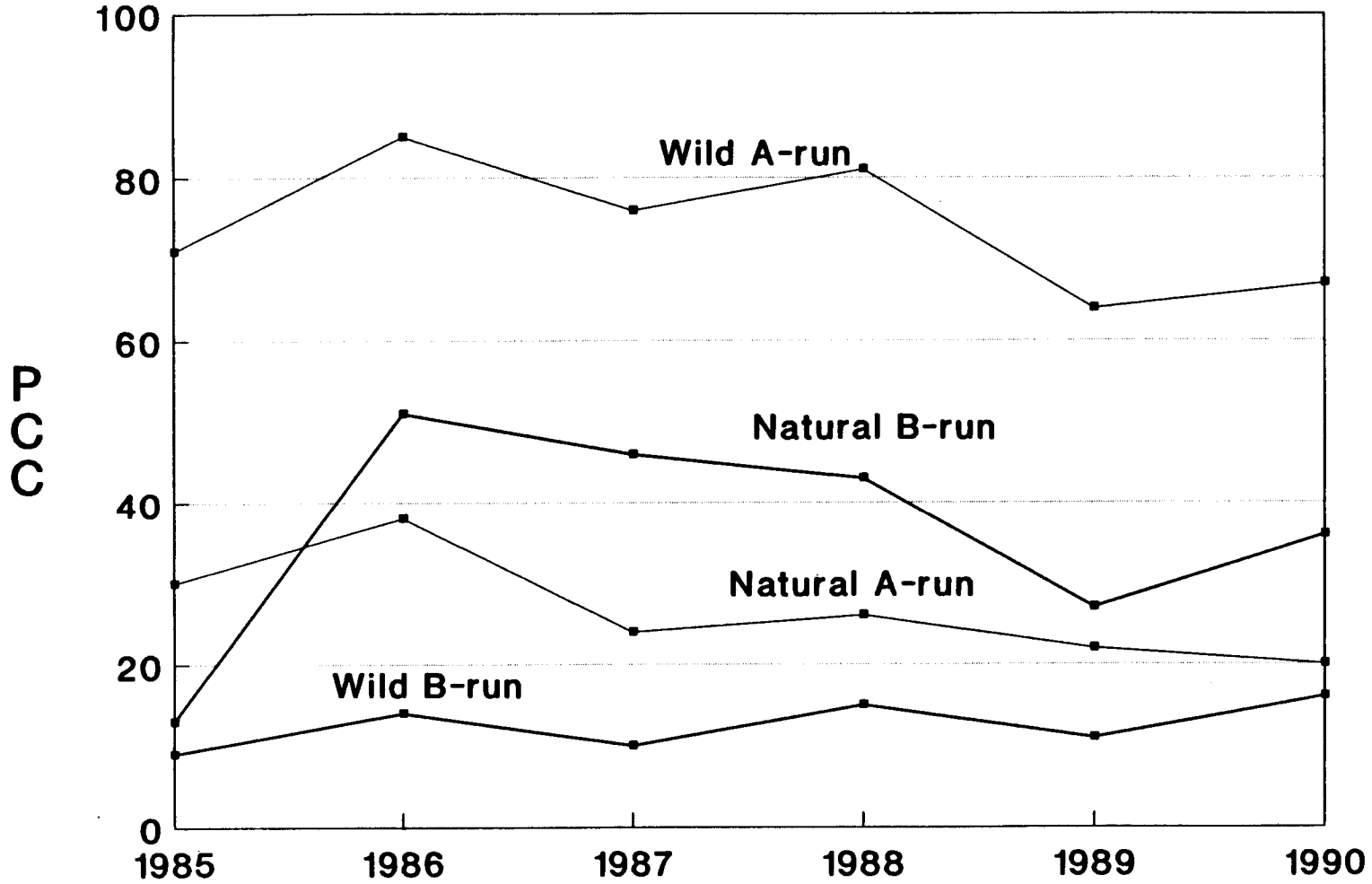


Figure 17. Mean annual percent of estimated carrying capacity (PCC) of four classes of steelhead parr (ages 1+ and 2+) in Idaho, 1985-1990 (B. Rich, Idaho Department of Fish and Game, unpublished).

Table 17. Estimates of wild/natural A-run and B-run steelhead crossing Bonneville and Lower Granite dams, 1985-1991.

Year	Wild/Natural A-run	Wild/Natural B-run[a]	Hatchery A-run	Hatchery B-run[a]	Wild/natural percent of total run
			Bonneville Dam		
1984-85	46,600	22,100	142,200	103,600	22
1985-86	49,500	19,199	201,200	72,500	20
1986-87	56,800	15,300	219,600	84,600	19
1987-88	104,200	23,800	118,600	54,500	43
1988-89	68,900	17,400	120,000	70,900	31
1989-90	53,500	20,200	117,300	95,400	26
1990-91	24,700	14,855	69,400	72,516	22
			Lower Granite Dam		
1984-85	17,681	6,819	79,900[b]		23
1985-86	17,826	8,874	89,600		23
1986-87	19,984	6,516	103,500		20
1987-88	19,623	6,777	44,900		37
1988-89	13,351	5,149	61,400		23
1989-90	13,189	8,287	109,800		16
1990-91	2,506	5,297	49,081		13

[a]All B-run fish are Idaho origin.

[b]For Lower Granite Dam, hatchery counts are an aggregate of A-run and B-run fish. Criteria for separating hatchery A- and B-run fish has not been established.

Table 18. Estimated potential smolt capacity and amount of habitat by quality of Salmon River steelhead production area. (Smolt capacity was derived from the Presence/Absence database, Northwest Power Planning Council 1990).

Salmon River Steelhead Potential Smolt Capacity = 2,950,661

	Habitat Quality				
	Excellent	Good	Fair'	Poor[a]	Total
Miles (%)	1,793 (44)	1,133 **(28)**	836(21)	311 (7)	4,073
Acres (%)	3,436 (34)	3.296 (33)	3.171(32)	111 (1)	10.014

[a]Ratings of fair and poor habitat quality reflect natural physical features such as high gradient as well as man-caused or other degradation.

Table 19. Estimated potential smolt capacity and amount of habitat by quality of Clearwater River steelhead production area. (Smolt capacity was derived from the Presence/Absence database, Northwest Power Planning Council 1990).

Clearwater River Steelhead Potential Smolt Capacity = 1,730,532

	Habitat Quality				
	Excellent	Good	Fair[a]	Poor'	Total
Miles (%)	1,004 (43)	483 (21)	406(17)	**431**(19)	2,324
Acres (%)	2.214 (23)	2.197 (23)	2.408(26)	2.623(28)	9.442

[a]Ratings of fair and poor habitat quality reflect natural physical features such as high gradient as well as man-caused or other degradation.

PART II. ANADROMOUS FISH PROGRAM GOALS, POLICIES, AND STRATEGIES

Long-Range Anadromous Fish Program Goals

The basic goal of anadromous fish management in Idaho is to provide the maximum amount of fishing opportunity consistent with meeting spawning escapements, preserving genetic resources of naturally sustained populations and utilizing available natural habitat. Long-range goals identified in this 1992-1996 plan have not substantially changed from the previous plan. The following goals remain, around which the anadromous fish program is built. However, information presented in the status section indicates that full achievement of these goals is not likely during this planning period.

The Department's "Fisheries Management Plan, 1991-1995" sets forth statewide fishery management goals to: 1) Increase sport fishing opportunity in Idaho, 2) Provide a diversity of angling opportunities of types desired by the public, 3) Fully utilize fish habitat capabilities by increasing populations of suitable fish species to carrying capacity of the habitat, 4) Maintain catch rates (fish/hour) at or above the present level, and 5) Maintain or restore wild native populations of game fish in suitable waters.

Compatible with the statewide goals, long-range goals specific to the anadromous fish program are as follows:

1. Maintain genetic diversity and integrity of both naturally-produced populations and artificially-produced fish used for natural production enhancement. Maintain natural production and productivity of wild and natural anadromous fish populations, where natural production potential is significant.

2. Secure adequate flow and passage conditions to increase smolt and adult survival of salmon and steelhead through the federally operated public hydroelectric system on the Snake and Columbia Rivers.

   Survival should support: annual harvest seasons; productive, self-sustaining populations of naturally producing fish; and hatchery escapement goals.

3. Rebuild wild and natural populations of anadromous fish to levels which optimally utilize the production potential of accessible and potentially accessible habitat.

   Both the fishery managers and the public have expressed a desire to develop tributary

adult escapement goals for natural production. Quantification of potential smolt production capacity of Idaho's salmon and steelhead habitat is continuing through research and monitoring activities. Feasibility of fish access and quality are primary factors in assessing potentially accessible habitat. An interim production goal of 70 percent of estimated carrying capacity will be used to estimate wild and natural adult escapement needs. Adult escapement goals will be redefined as rebuilding occurs and more is learned about stock-recruit relationships. Information from density dependent survival relationships indicate that managing populations at 100 percent of carrying capacity is not optimal for both harvest and production management. Future production goals will attempt to achieve balance between production and harvest needs.

Adult escapements necessary to achieve the 70 percent goal are identified in Tables 20 through 24. These estimates are based on information generated through development of the subbasin plans during Integrated System Plan development for the Northwest Power Planning Council's Fish and Wildlife Program (CBFWA 1991). Continuation of adult and parr monitoring and survival research will enable managers to refine escapement needs. If carrying capacity changes from the current estimates, then the production potential will also change, according to whether carrying capacity is increased or decreased.

4. Achieve full mitigation for losses of anadromous fish caused by development of the hydroelectric dam system on the Snake and Columbia rivers through a combination of production and survival improvements.

5. Restore sport and treaty fisheries for salmon and steelhead.

Through the next five years, the Department anticipates further definition of areas for sport and treaty fisheries. Because of survival uncertainties, specific numerical harvest goals for the next five years have not been developed. However, for the Northwest Power Planning Council's subbasin planning effort, public advisory groups and Idaho tribes were asked to develop short- and long-term utilization objectives for salmon and steelhead harvest. These are identified in Appendix A and will be refined as more information is developed regarding survival and production potential. This information as well as historical harvest information will be used to continue development of harvest objectives.

Table 20. Proposed adult steelhead escapement necessary to achieve production at 70 percent of estimated carrying capacity, including natural production areas above weirs.

Stock	Drainage	Parr Capacity[a]	70 % Parr	70% Smolt	Egg deposition at 1.5% egg-smolt survival	Spawners Females	Spawners Total	Lower Granite Dam escapement	Smolt to adult survival needed
B-run:	Wild								
	Selway	1,453,51	1,017,460	508,730	33,915,327	5,015	7,508	7,700	1.51%
	MFSR	2,130,12	1,491,088	745,544	49,702,940	7,594	9,773	10,023	1.34%
	SFSR	889,040	622,328	311,164	20,744,267	3,204	5,071	5,201	1.67%
B-run:	Natural								
	S. Fk. Cl.	441,960	309,372	154,686	10,312,400	1,525	2,283	2,341	1.51%
	Lochsa	965,310	675,717	337,859	22,523,900	3,330	4,986	5,114	1.51%
	Main/N. Fk. Cl.	214,106	149,874	74,937	4,995,807	739	1,106	1,134	1.51%
	Middle Fk. Cl.	121,232	84,862	42,431	2,828,747	418	626	642	1.51%
	E. Fk. Salmon (above weir)	84,804	59,363	29,681	1,978,760	346	547	561	1.89%
Total B-run		6,300,092	4,410,064	2,205,032	147,002,148	22,171	31,900	32,716	1.48%
A-run:	Wild								
	Snake tribs.	32,452	22,716	11,358	757,213	147	257	263	2.31%
	Clearwater tribs. (includes lower, Middle, South	264,942	185,459	92,730	6,181,980	1,197	2,097	2,150	2.32%
	Whitebird Cr.	35,430	24,801	12,401	826,700	160	280	288	2.32%
	on Canyon tribs.	249,344	124,672	8,311,473	1,616	2,838	2,911	2.33%	
	Rapid River (above weir)	45,068	31,548	15,774	1,051,587	204	357	366	2.32%
Arun:	Natural								
	Captain John Cr.	7,064	4,945	2,472	164,827	32	56	57	2.31%
	Lower Salmon	154,464	108,125	54,062	3,604,160	698	1,223	1,255	2.32%
	Little Salmon (exclude above weir)	192,440	134,708	67,354	4,490,267	870	1,524	1,563	2.32%
	Lemhi	196,266	137,386	68,693	4,579,540	887	1,554	1,594	2.32%
	Pahsimeroi	59,854	41,898	20,949	1,396,593	271	474	486	2.32%
	Yankee Fork	117,322	82,125	41,063	2,737,513	530	929	953	2.32%
	Upper Salmon (MFSR upstream to Sawtooth and East Fork	712,510	356,255	23,750,347	4,602	8,061	8,268	2.32%	
	Headwaters	246,918	172,843	86,421	5,761,420	1,116	1,955	2,006	2.32%
Total A-run		2,726,338	1,883,608	941,804	63,613,620	12,330	21,605	22,160	2.35%
Total Idaho Steelhead		9,026,430	6,293,672	3,146,836	210,615,768	34,501	53,505	54,846	1.74%

[a] Subbasin smolt capacity x 2. [b] Includes lower Clearwater tributaries and Maggie, Cottonwood, Three Mile, and Butcher creeks.

Table 21. Proposed adult chinook escapement necessary to achieve production at 70 percent of estimated carrying capacity, including natural production areas above weirs.

Stock Drainage	Parr Capacity[a]	70 % Parr	70% Smolt	Egg deposition at 6.0% egg-smolt survival	Spawners Females	Spawners Total	Lower Granite Dam Escapement[b]	Smolt to adult survival needed
Spring Chinook: Wild								
Lower Salmon	287,052	200,936	100,468	1,674,470	437	867	982	0.98%
Canyon	623,537	436,476	218,238	3,637,298	568	1,102	1,281	0.59%
MFSR	3,190,022	1,595,011	26,583,515	4,343	7,905	8,480	0.53%	
Snake tribs.	11,107	7,775	3,888	64,792	17	34	38	0.98%
Spring Chinook: Natural								
Little Salmon	403,193	282,235	141,117	2,351,958	614	1,217	1,379	0.98%
Lemhi	863,176	604,223	302,111	5,035,191	1,048	2,122	2,297	0.76%
Yankee Fork	509,795	356,856	178,428	2,973,803	538	1,295	1,477	0.83%
Upper Salmon (MFSR upstream to weirs)	939,806	469,903	7,831,719	1,416	3,392	3,853	0.82%	
Headwaters[c] (above Sawtooth and East Fork weirs)	1,172,321	820,625	410,312	6,838,539	1,237	2,979	3,398	0.83%
Main/N.Fk. Clrwtr.	330,161	231,113	115,556	1,925,938	503	997	1,129	0.98%
Middle Fk. Clrwtr.	150,732	105,512	52,756	879,270	243	392	433	0.82%
South Fk. Clrwtr.	793,738	555,616	277,808	4,630,136	1,208	2,396	2,714	0.98%
Lochsa	1,243,428	870,400	435,200	7,253,330	1,893	3,754	4,252	0.98%
Selway	2,179,626	1,525,738	762,869	12,714,485	3,318	6,581	7,453	0.98%
Total Spring Chinook	14,467,620	10,127,333	5,063,665	84,394,444	17,383	35,033	39,166	0.77%
Summer Chinook: Wild								
Secesh	839,506	587,654	293,827	4,897,116	1,374	2,429	2,654	0.90%
MFSR	569,072	398,351	199,175	3,319,589	547	1,082	1,225	0.61%
Upper Salmon. (MFSR upstream to weirs)	1,123,118	786,183	393,091	6,551,524	1,022	1,860	2,056	0.52%
Summer Chinook: Natural								
Rapid River		84,079	42,039	700,658	141	406	497	1.18%
South Fk. Salmon	2,518,513	1,762,959	881,480	14,691,327	3,994	9,241	10,771	1.22%
Pahsimeroi	309,144	216,401	108,200	1,803,340	362	1,046	1,279	1.18%
Total Summer Chinook	5,479,466	3,835,627	1,917,812	31,963,554	7,440	16,064	18,482	0.96%
Total Chinook	19,947,086	13,962.960	6,981,477	116,357,998	24,823	51,097	57,648	0.83%

[a]Subbasin smolt capacity x 1.2.
[b]includes jacks.
[c]Includes natural production area upstream of Busterback Ranch irrigation diversions.

Table 22. Proposed adult steelhead escapement necessary to achieve production at 70 percent of estimated carrying capacity above hatchery weirs.

Race	Weir	Parr Capacity[a]	70 % Parr	70% Smolt	Egg deposition at 6.0% egg-smolt survival	Spawners Females	Spawners Total	lower Granite Dam escapement	Smolt to adult survival needed
A-run Steelhead									
	Sawtooth	162,114	113,480	56,740	3,782,660	733	1,284	1,317	2.32%
	Pahsimeroi	59,854	41,898	20,949	1,396,593	271	474	486	2.32%
B-run Steelhead									
	East Fork	84,804	59,363	29,681	1,978,760	346	547	561	1.89%
	Kooskia	28,802	20,161	10,081	672,047	99	149	153	1.52%
	Red River	47,256	33,079	16,540	1,102,640	163	244	250	1.51%
	Crooked River	44,326	31,028	15,514	1,034,273	153	229	235	1.51%
	Powell	307,144	215,001	107,500	7,166,693	1,060	1,586	1,637	1.52%
Total Steelhead Above Weirs		743.300	514.010	257.005	17.133.666	2.825	4,513	4,639	1.81%

[a]Subbasin smolt capacity x 2.

Table 23. Proposed adult chinook escapement necessary to achieve production at 70 percent of estimated carrying capacity above hatchery weirs.

Race	Weir	Parr Capacity[a]	70 % Parr	70% Smolt	Egg deposition at 6.0% egg-smolt survival	Spawners Females	Spawners Total	Lower Granite Dam Escapement[b]	Smolt to adult survival needed
Spring Chinook									
	Sawtooth	365,573	255,901	127,950	2,132,508	386	929	1,059	0.83%
	Sawtooth[c]	855,569	598,898	299,449	4,990,818	903	2,174	2,480	0.83%
	East Fork	374,515	262,161	131,080	2,184,672	395	952	1,085	0.83%
	Kooskia	52,754	36,928	18,464	307,734	85	137	151	0.82%
	Crooked River	102,608	71,826	35,913	598,549	156	310	351	0.98%
	Red River	108,683	76,078	38,039	633,983	165	328	372	0.98%
	Powell	631,194	441,836	220,918	3,681,965	961	1,906	2,158	0.98%
Total Spring Chinook Above Weirs		2,490,896	1,743,628	871,813	14,530,229	3,051	6,736	7,656	0.88%
Summer Chinook									
	Pahsimeroi	309,144	216,401	108,200	1,803,340	362	1,046	1,279	1.18%
	South Fk. Salmon	188,444	131,911	65,956	1,099,259	299	691	806	1.22%
Total Summer Chinook Above Weirs		497,588	348,312	174,156	2.902.599	661	1,737	2,085	1.20%

[a]Subbasin smolt capacity x 1.2.

[b]Includes jacks.

[c]Includes natural production area upstream of Salmon River and Alturas Lake Creek irrigation diversions.

Table 24. Proposed adult sockeye escapement necessary to achieve production at 70 percent of estimated carrying capacity for historical lake habitat.

	Smolt Capacity	70 % Smolt Capacity	Egg deposition at 7.0% egg-smolt survival	Spawners		Lower Granite Dam escapement	Smolt to adult survival needed
				Females	Total		
South Fork Salmon							
Warm Lake	282,310	197,617	2,823,100	882	1,764	1,810	0.91%
Upper Salmon River							
Alturas Lake	364,060	254,842	3,640,600	1,138	2,275	2,334	0.91%
Pettit Lake	161,320	112,924	1,613,200	504	1,008	1,034	0.91%
Redfish Lake	664,900	465,430	6,649,000	2,078	4,156	4,262	0.91%
Stanley Lake	79,570	55,699	795,700	249	497	510	0.91%
Yellowbelly Lake	75,210	52,647	752,100	235	470	482	0.91%
Total	1.627.370	1.139.159	16.273.700	5.085	10.171	10.432	0.91%

In the interim, the Department will maximize opportunity to fish for and harvest hatchery produced fish, contingent upon maintaining long-term hatchery production and productivity, and minimizing impacts to naturally spawning populations. Short-term determination of annual sport fishing opportunities will be based on the best available scientific information and will be accomplished by the IDFG Commission using the procedure outlined in Appendix B.

6. Integrate and coordinate Idaho anadromous fish management with the remainder of the Columbia River Basin to ensure achievement of Idaho escapement goals.

The management of anadromous fish resources during the 1992-1996 period will consider recent status, trends, and probable responses during the coming five years. As identified in the previous section, salmon and steelhead resources did not increase as expected at the start of the previous five year management period. Status of naturally producing populations and some hatchery stocks is tenuous. Substantial and sustained drought, 1987 through 1990, has impacted stocks and this, combined with poor juvenile outmigration conditions, has limited production and adult returns even further. Rebuilding of natural and wild populations is not likely nor will many hatchery produced chinook runs likely offer significant harvestable surpluses in the next five years. These conditions do not offer fish managers the opportunity for implementing aggressive rebuilding programs requiring increased adult returns to Idaho. To the contrary, a conservative approach for harvest and production actions is required. The two major reasons such an approach is necessary are survival constraints and related genetic considerations.

Survival Constraints

Three major mortality factors have worked contrary to the production and harvest objectives of the Department. These factors are 1) smolt mortality between rearing areas and Lower Granite Reservoir, 2) hydroelectric system smolt and adult migration mortality, and 3) harvest in ocean and Columbia River fisheries. These factors work in addition to a high and variable natural mortality during ocean rearing. A conceptual description of mortality of smolts produced in Idaho identifies the magnitude of each (Figure 18). While salmon and steelhead are impacted differently by individual mortality factors, all stocks are limited primarily by hydroelectric system operations. Hatchery production itself places these fish at a survival disadvantage, in part because of increased susceptibility to disease. Columbia River and ocean harvest impacts vary from slight for spring and summer chinook to severe for fall chinook and wild B-run steelhead. All human-caused sources of mortality can be reduced. Because anadromous fish life cycles span four or more years, control of major mortality factors within the next five year period would not significantly increase adult abundance in the same period. Yet,

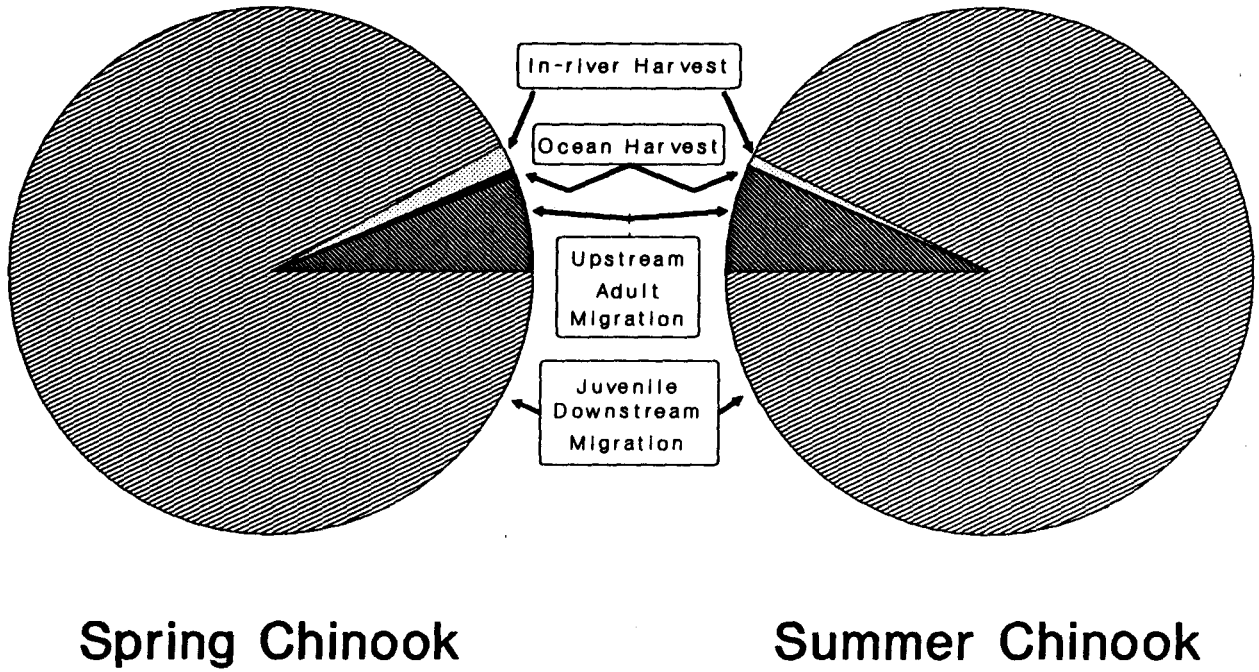


Figure 18. Magnitude of human-induced mortalities for Idaho wild and natural chinook.

mortality reduction now is a crucial necessity to bring about subsequent increased abundance of salmon and steelhead for future harvest and production opportunities.

Genetic Considerations

The Department has maintained wild fish production areas and preservation programs because a broad genetic resource is needed to ensure long-term survival of artificially and naturally produced fish. Evolutionary adaptations of wild fish to maximize population survival in the local environment have been acquired over long time periods. If lost, long time periods will once again be required for introduced populations to successfully adapt to the local environment, if at all. Over the last decade, wild fish did not rebuild while hatchery production increased. As a result, an imbalance of wild and hatchery spawners has occurred. Excessive hatchery spawners may pose significant risks to wild fish population maintenance and for accomplishing short- and long-term genetic management strategies and objectives. Fisheries geneticists, managers, and user groups have elevated concerns about salmon and steelhead genetics and the potential for management practices to degrade long-term stock productivity by changing heritable traits. Genetic uncertainties question whether the viability of hatchery populations can be sustained without infusions of new genetic material which incorporates evolutionary history of wild fish, and warn against the alteration of the genetic composition of native fish by hatchery fish introgression.

Policies and Principles

Bureau of Fisheries

The following fisheries policies are from the "IDFG Policy Plan, 1990-2005". The principles listed with each policy are specific to anadromous fish management to help clarify and implement the statewide fisheries policies. The Department has also developed a number of guiding principles in order to accomplish the Department's mission to protect fish and wildlife resources and to provide for their use by the public which are stated in the "IDFG Fisheries Management Plan, 1991-95".

Policy 1. Idaho waters will be managed to provide optimum sport fishery benefits.

Principles:

– Natural, wild and hatchery stocks will be managed to provide long-term fishery benefits at optimal levels of production.

– Known stock harvest opportunities for hatchery salmon and steelhead will be developed.

- A diversity of consumptive and non-consumptive fishing opportunities will be provided in traditional fishing locations.

- Directed harvest on underescaped wild and natural salmon and steelhead populations will be prohibited. Fisheries will be regulated to meet spawning escapement objectives.

- Current, established hatchery operations will be managed primarily to provide fish for harvest and secondarily to provide fish for supplementation programs. Hatchery produced salmon and steelhead smolts for harvest and sustaining general hatchery production will be marked prior to release.

- Fishing opportunity on hatchery stocks will be constrained to the extent necessary to maintain hatchery production at or above 80 percent of hatchery design smolt capacity.

– Anadromous fisheries will be emphasized in the Clearwater River, Salmon River and Snake River below Hells Canyon Dam.

Salmon and steelhead will be managed for both tribal and non-tribal fisheries in Idaho.

– Future development of Idaho Snake River fall chinook and sockeye artificial propagation and harvest will be compatible with genetic and natural production preservation guidelines.

– Juvenile anadromous fish will be protected from harvest in trout fisheries as necessary to achieve program goals.

– Harvest of salmon and steelhead in Idaho for commercial purposes will not be allowed.

- Viewing and educational opportunities in hatchery and natural settings will be developed.

– Efforts to modify Columbia River and ocean harvest processes will continue in order to ensure that harvestable components of Idaho fish runs are passed through to Idaho fisheries.

- Memoranda of Understanding will be proposed with the Shoshone-Bannock Tribes and the Nez Perce Tribe which will define the procedure for cooperative management of anadromous fish runs.

Policy 2. Wild native populations of resident and anadromous fish species receive priority consideration in management decisions.

Principles:
- The genetic integrity of wild stocks will be maintained.

- Wild salmon and steelhead populations will be rebuilt by improving survival of existing populations.

– Wild fish populations and areas designated for wild anadromous fish management will not be stocked with salmon or steelhead.

– Smolt release sites and strategies for hatchery fish will be selected to minimize risk of straying and spawning with wild fish.

Policy 3. Management decisions will emphasize maintenance of self-sustaining populations of fish.

Principles:
- All natural and wild management stocks will be rebuilt to levels providing spawning escapement for optimum production and harvest.

- Spawning escapement goals for wild and naturally managed stocks will describe the best utilization of the production potential of spawning and rearing habitat.

- Maintaining genetic integrity and fitness of naturally reproducing fish will have priority in all areas managed for natural production.

– Harvest strategies that endanger long-term viability of a population or that pose a risk to meeting natural production objectives will be opposed.

Policy 4. The Department will oppose any activity that results in significant loss or degradation of habitat capable of supporting self-sustaining fish populations.

Principles:

– The Department will promote the protection of fish habitat in Idaho from degradation.

–Spawning and rearing habitat degraded by past activities should be restored.

- Natural production habitat should be protected consistent with stream classification and Protected Areas criteria.

– The anadromous fish program will seek full compensation for natural production lost as a result of construction and operation of hydroelectric facilities, water quality degradation and water quantity loss.

–The Department will not support habitat restoration in lieu of habitat protection.

– The Department will oppose degradation of habitat quality or quantity that poses a risk to meeting natural production objectives of management plans.

- The Department will oppose use of Northwest Power Planning Council Fish and Wildlife Program funding for new habitat projects on federal lands except where benefits are exceptional and reasonable efforts to obtain appropriate funding through Congress have failed.

- The Department pledges to assist the federal land management agencies in requesting appropriate funding to carry out their stewardship responsibilities in an appropriate manner.

Policy 5. Factors affecting downstream survival will receive priority attention in anadromous fish management.

Principles:

- Improved survival of smolts during outmigration by decreasing travel time through the federal hydroelectric system will be pursued as a critical priority for maintaining and rebuilding Idaho's salmon and steelhead stocks and runs.

- Juvenile fish transportation of spring and summer chinook and sockeye salmon will not substitute for water velocity improvements for achieving travel time standards.

- Fish transportation will be used as an interim juvenile passage tool until hydroelectric system operational changes improving juvenile travel time are implemented. Fish transportation decisions to collect or bypass chinook will be based upon the prognosis for favorable in-river migration conditions.

- Efforts will be made to ensure that Northwest regional management plans are complimentary to Idaho's anadromous fish plan.

Policy 6. Hatchery-reared fish will be stocked to establish or reestablish depleted fish populations, and to provide angling opportunity to the general public.

Principles:

- Hatchery production programs will be managed to minimize adverse effects on wild and natural anadromous fish populations.

– The Department supports supplementing specific populations using a conservation hatchery concept and evaluating results through adaptive management while research results are being assembled.

– Hatchery production of fish for harvest will be managed to maintain hatchery productivity, produce the greatest percentage of returning adults, and maximize return to the Idaho angler.

- Hatchery production for rebuilding natural production will be managed so that hatchery fish remain genetically and behaviorally compatible with the natural populations to the greatest extent possible.

-
- Population supplementation for rebuilding will utilize natural rearing habitat to produce smolts and subsequent adults. Adults that return will be for spawning, production of future generations, and rebuilding populations sustained by natural reproduction to harvestable levels.

- Population supplementation for harvest augmentation will utilize natural rearing habitat to produce smolts and subsequent adults. Adults that return will be used for harvest.

- Eggs or carcasses of adult salmon or steelhead returning to anadromous fish hatcheries will not be sold.

– Rearing of anadromous salmon or steelhead for commercial purposes in private hatcheries outside of Department control will not be allowed. Anadromous fish such as coho released into lakes and reservoirs where they are not intended to migrate to the ocean are exempt from this principle.

Policy 7. The Department will strive to maintain the genetic integrity of wild native stocks of resident fish and naturally managed anadromous fish when using hatchery supplementation.

Principles:
–Wild, native stocks will not be supplemented.

– Hatchery fish used for supplementation will be representatives of stock endemic to the drainage to be supplemented or, as second priority, of stock from adjacent and environmentally similar drainages.

– Maintaining adequate escapement of natural spawning fish adjacent to hatchery brood collection weirs will be given priority in hatchery management decisions so that the genetic fitness of natural populations needed to support long-term natural and hatchery productivity are sustained.

Policy 8. Non-native species of fish will be introduced only in waters where they are not expected to adversely impact stocks of wild native fish.

Principles:
– Reintroduction of non-native coho or sockeye will only be undertaken if feasibility studies indicate that significant potential impacts on existing species and stocks of fish will not occur.

– Introduction of exotic non-anadromous fish species will be undertaken if feasibility studies indicate that significant impacts on existing species and stocks of fish will not occur.

Policy 9. Department funds will not be used to manage waters closed to public fishing access, except where such closures are part of a Department-approved management program.

Principles:
– The Department will work cooperatively with sportsmen and landowners to assure continued access to fishing waters.

- Public access to salmon and steelhead fishing areas will be secured where necessary by lease, purchase, easement, or cooperative agreements.

Bureau of Program Coordination and Resource Planning

The Bureau of Program Coordination and Resource Planning is responsible for reviewing projects and land management activities that affect Idaho's fish and wildlife, coordinating fish and wildlife information resources, pursuing mitigation for damaged resources, and developing long-range planning documents. Bureau staff coordinate reviews of hydropower licensing proposals, Environmental Impact Statements and Assessments, Forest Plans, and mining proposals, as well as provide technical support for antidegradation programs and land management advisory committees. Because of the complementary role this Bureau plays in the management of anadromous fish, Program Coordination and Resource Planning policies relating to fisheries have been included.

1. The Department will provide timely reviews of projects that affect Idaho's fish and wildlife resources, based solely on potential effects on those resources and their recreational use, and will suggest means of eliminating or reducing adverse impacts.

2. The Department will attempt to maintain effective channels of communication with others concerned with managing Idaho's land and water resources, to ensure that fish and wildlife resources are considered in planning activities.

3. The Department will support and participate in efforts to eliminate non-point sources of pollution to Idaho waters, restore water quality where needed and protect or restore beneficial uses.

4. The Department will work with developers and the Federal Energy Regulatory Commission to ensure that hydroelectric development on Idaho waters will have benign impacts to aquatic resources.

5. The Department will strive to ensure that adequate flows remain in Idaho streams to protect aquatic and riparian resources and provide fish- and wildlife-oriented recreation.

6. The Department will oppose hydroelectric development on rivers designated as "protected" by the Northwest Power Planning Council unless the project has a benign impact on fish and wildlife resources and provides an exceptional benefit to fish and wildlife (Appendix C.)

7. The Department will support and participate in efforts to develop a State Protected River System and the inclusion of important fish and wildlife habitats in that system.

8. The Department will develop cooperative agreements for the management and enforcement of road closure areas involving both public and private lands.

Five Year Management Strategies

The following anadromous fish management strategies will guide the program through the next five years. Strategies for wild, natural, and hatchery fish management attempt to mesh the long-term goals outlined above with the biological reality of low run sizes in the near term.

Low run sizes and the genetic uncertainties associated with rebuilding populations using hatchery fish make many of the aggressive harvest and production programs anticipated by the Department's 1985-1990 Anadromous Fish Management Plan difficult to achieve in the 1992-1996 period. Inadequate numbers of adults appropriate for wild and natural broodstock needs make rapid rebuilding during the next five years unlikely. Management during the next five years will focus on maximizing wild and natural production opportunity while producing fishery opportunity with hatchery propagation. This will include increasing public awareness of anadromous fish production issues including migration survival problems and habitat needs, maintaining natural production and genetic resources, maintaining a secure wild fish management program, and minimizing hatchery and natural fish interactions.

The strategies and management actions for this planning period are conservation-oriented because of low fish abundance. However, they create a strategic opportunity to position the anadromous fish management program to capitalize on anticipated survival improvements and make rapid progress in achieving long-range goals for fishing and production balance early in the next planning period. The Department is optimistic that Endangered Species Act activities and growing regional awareness of Snake River anadromous fish jeopardy will result in a better future. Major changes in mainstem federal hydroelectric operations and regional harvest management processes will occur by the end of this planning period. These changes will favor Idaho salmon and steelhead. By the end of this five year period a consistent management position should be achieved that will enable fisheries managers of the Department to respond to whatever future condition exists for Idaho's salmon and steelhead.

Fish Management Strategies and Definitions

Idaho's anadromous fish management encompasses two types of production, natural and hatchery, and three classes of fish based on definition of production and broodstock history: wild, natural, and hatchery fish. Natural production recruits and sustains populations by spawning and rearing in the natural habitat with no human intervention, regardless of the parentage of the spawners. Artificial production recruits and sustains fish populations in a controlled artificial spawning and rearing environment, generally a hatchery.

Wild fish are native fish which have no history of hatchery or nonnative fish outplanting or supplementation, or a limited amount unlikely to have had genetic impact. Wild fish sustain themselves as an interbreeding, isolated unit through natural production. Their genetic make-up is assumed to be similar to or evolved from ancestral broodstock by natural selection.

Natural fish also result from natural spawning, but are either not of native broodstock, or have had opportunity to breed with introduced hatchery fish. Genetic material may be different from native broodstock because of these factors.

Hatchery fish are sustained by some degree of artificial production, generally for several generations. They are released and return as adults for spawning and subsequent artificial production of their progeny. Genetic material is likely different from native and natural broodstock of the production area because of the influences of artificial rearing on genetic selection. Or, behavior may be different due to adaptation to the hatchery environment.

Fish managers also use these classifications to define management styles. In most cases, production, fish classification, and management style will be consistent, although meeting management objectives may mean using an alternate management style. For production classification, Idaho's spring, summer, and fall chinook, sockeye and steelhead are managed according to one or more management strategies: wild fish management, hatchery fish management, and natural fish management. These are not new management approaches, but have been used historically and have evolved with changing needs for intensified management. The definition of fish management strategies that follow are updated to support the overall strategy for production and harvest programs for 1992-1996.

Wild Fish Management Strategy-Idaho has the greatest production potential for wild salmon and steelhead in the Columbia Basin. The Department's program has consistently advocated wild fish management. Table 25 identifies areas where wild fish

Table 25. Salmon and steelhead populations classified for wild fish management in the Salmon, Clearwater and Snake subbasins, 1985-1990.

Drainage	Species and race	Wild fish management 1992-1996	Reason for change
Lower Salmon (to French Cr.)	Spring Chinook	no	Nez Perce Tribe Hatchery, Slate Creek[a]
Rapid River	Steelhead	yes	
(Little Salmon)	Summer Chinook	yes	
Salmon Canyon	Spring Chinook	yes	
	Steelhead	yes	
South Fork Salmon	Steelhead	yes	
Secesh River	Summer Chinook	yes	
Middle Fk. Salmon	Spring Chinook	yes	
	Summer Chinook	yes	
	Steelhead	yes	
Upper Salmon (mainstem, lower E. Fk, lower Valley Cr.)	Summer Chinook	yes	
Selway	Spring Chinook	no	Restoration supplementation actions possible[b]
Selway	Steelhead	yes	
Snake R. tribs (exclude major basins and Captain John Cr.)	Steelhead	yes	
Snake R. tribs (exclude major basins)	Spring Chinook	yes	
Snake R. main-stem above Grande Ronde	Fall Chinook	yes	

[a]A rearing pond facility funded under the NPPC Fish and Wildlife Program will be constructed during this period.

[b]The Department has agreed to consider experimental, evaluated supplementation actions for Selway spring and/or summer chinook. The Nez Perce Tribe has developed proposals for introducing summer chinook and enhancing spring chinook in the Selway.

management will be maintained. Wild fish management will emphasize genetic conservation to preserve fitness of those populations. The Department will implement actions and regulations to achieve production and harvest objectives for wild fish so that life history and genetic resources of those fish is not altered directly. Stocking of anadromous fish into wild fish populations or into their production streams will not occur. Release strategies of hatchery produced fish will minimize residualism of those fish as juveniles and straying as adults. Production, research, and harvest programs will be designed to avoid reduction of genetic diversity and integrity of wild populations. Population abundance will be increased by improving survival of juveniles and adults with priority on those major mortality factors related to juvenile and adult migration through the hydroelectric system and regional fisheries. Use of wild anadromous fish may be considered for captive broodstock programs. Donor stocks capable of providing gametes without jeopardizing their status are scarce, but some may be available for experimentation and evaluation.

Hatchery Fish Management Strategy-Idaho's anadromous fish stocks possess unique genetic material enabling them to sustain the long rigorous journey to the ocean as juveniles and back to Idaho as adults. It is imperative that the genetic resources for long migrations contained in wild stocks be preserved. Hatchery stocks often differ from the original parent stock. Differences in allele frequency are thought to be a result of natural selection for the hatchery environment, genetic drift due to the use of progeny from small numbers of parents used to establish original hatchery populations, or of inbreeding and intensive selection, resulting in reduced viability and genetic diversity. Management of hatcheries has focused on providing large numbers of smolts to enable sufficient adult returns to perpetuate hatchery production, produce fish for supplementation, and provide harvest opportunity. Most of Idaho's anadromous fish hatcheries were built as mitigation for lost production. Mitigation goals are identified in Appendix D. Given the important role hatcheries have and will continue to play in Idaho's anadromous fish program, the Department has reassessed objectives of its salmon and steelhead hatcheries. Updated objectives are as follows:

1.Produce fish that maintain optimum survival to adults through disease control, fish culture practices, and release strategies.

2.Provide fish at various life stages that can be utilized for harvest, supplementation, reintroduction and research purposes. Emphasis for marked general production fish will be harvest.

3.Develop hatchery practices that can be used with wild or natural brood stock progeny that will minimize the domestication of those progeny and be suitable for returning them to the natural rearing habitat.

4.Develop genetic guidelines for broodstock selection at anadromous fish traps and spawning sites to maximize genetic diversity and prevent loss of genetic

material. In addition, utilize technology to identify hatchery stocks in order to improve genetic management, thus preventing artificial changes in allele frequencies. The Department is establishing procedures to be used when anadromous fish stocks are collected and used for Idaho management programs (Appendix D).

5. Mark hatchery smolts prior to release to avoid mixed stock harvest conflict and to maximize harvest and natural production management options.

Hatchery programs will be managed to maintain hatchery productivity and produce the greatest adult return rates. Broodstock for harvest-oriented programs will be managed for specific traits, primarily productivity and maximized returns to target fisheries (timing distribution**,** catchability, and disease resistance).

Uncertainties exist as to how to maintain stock productivity over the long term. Major considerations are broodstock and fish health management. At present most facilities utilize one male spawned with one female to optimize opportunity for genetic variation. Broodstock are utilized from the entire run across time. A non-selection standard is maintained to preclude selection for or against any particular characteristic, except prevalence of transmissible diseases. Relative to fish health, the Idaho Augmented Fish Health Monitoring Project, funded by Bonneville Power Administration, was designed to upgrade and standardize fish health monitoring procedures used by anadromous fish producers. Its purpose was to collect and evaluate fish health information, and determine if fish health could be effectively used in mitigation programs (Hauck 1990). Slated to conclude in fiscal year 1991, this Columbia Basin project currently includes seven Idaho facilities. Fish health diagnostic and monitoring services will be continued through the Department's Eagle Fish Health Laboratory. A new facility, constructed with funds from the Lower Snake Compensation Program and the Department, was completed in 1991.

Emphasis will be placed on developing marking techniques to visually identify hatchery fish. Marking is needed for harvest opportunity as well as to refine operations of weirs and brood selection procedures to achieve the related natural management objectives. Continued research and management studies producing solutions and reduction of mortality of hatchery smolts during migration will be critical to the success all hatchery programs.

Some hatcheries will be managed specifically to provide the best supplementation product for evaluation of natural production benefits. During the next five years, conservation hatchery strategies and guidelines will be developed and assessed. Natural brood will be taken from existing populations in tributaries where adult escapement is sufficient. Progeny will be handled as near naturally as possible to minimize influence of artificial spawning and rearing habitat. Measures of success will be external to the hatchery and related to fitness in the natural environment - how well do the fish return to spawn and produce progeny that also survive to produce offspring.

Natural Fish Management Strategy-Similar to wild fish, actions and regulations will be implemented to achieve production and fishery objectives for natural fish so that the existing life history and genetic resources of those fish is not altered directly by management. Supplementation of natural stocks with hatchery fish has not yielded desired results and rebuilding. Poor contribution of supplemented populations is likely caused by the same low smolt-to-adult survival as wild fish. While this survival bottleneck exists, rebuilding through supplementation or other production mechanism is unlikely. Improved survival conditions will allow productive natural stocks suited to their environment to rebuild; those unsuited to the environment will not, and supplementation may be used as a management tool. Until survival conditions improve, no method of testing suitability exists. Therefore, supplementation of natural stocks during 1992-1996 will be conservative. Use of natural anadromous fish may be considered for captive broodstock programs. Donor stocks capable of providing gametes without jeopardizing their status are scarce, but some may be available for experimentation and evaluation.

Supplementation of existing natural populations with hatchery fish to increase abundance will be limited to regionally coordinated and Department approved studies. This is a significant departure from the standard supplementation practice of the past. Emphasis will be directed at improving natural fish management practices above hatchery weirs. Techniques to identify natural fish are needed to direct the appropriate changes.

Habitat Strategies-Discussion of natural production and wild and natural fish management must also address habitat. Idaho's habitat protection and improvement program involves a broad spectrum of land and water management entities. The majority of the watershed system of the Salmon, Clearwater and Snake river subbasins is administered by the federal government. A variety of land and water management regulations and programs exist which can affect the quality of riparian habitat and water quality for salmon and steelhead production.

The priority for the Department's habitat program is to obtain suitable mainstem Snake and Columbia river hydroelectric project velocity conditions for juvenile salmon and steelhead migration. Reduced migration mortality is a prerequisite for success of habitat restoration activities in Idaho spawning and rearing streams. Improving spawning and rearing habitat quality or quantity is unlikely to significantly increase juvenile production as long as survival remains bottlenecked during migration and returns of wild and natural adults remain low. Some exceptions exist, such as the South Fork Salmon River. There, fine sediment limits egg-to-smolt survival. Improving habitat quality would likely result in some increased production from existing adult returns.

While it is felt that habitat quality and quantity are not limiting overall anadromous fish production in Idaho, it is in the best interest of the resource to protect the valuable habitat currently available in the event that downstream passage problems are sufficiently corrected to provide adequate escapement. In terms of anadromous fish habitat

enhancement, the Department's priority of attention, based on potential for benefits, is:

1) Improving and stabilizing juvenile migration habitat conditions (water volumes/velocity) and adult migration habitat, and subsequent survival;

2) Completing screening of irrigation diversions and securing perpetual minimum instream flows for migration and rearing;

3) Supporting implementation and enforcement of existing state and federal water quality standards and regulations;

4) Restoring critical habitat that limits early life history survival (egg-parr) of existing wild and natural populations.

Because the majority of anadromous fish habitat is on federal lands, the Department recognizes the need to work with federal land managers to establish habitat objectives supportive of the Department's fish production objectives. The Department will participate with the U.S. Forest Service (USFS) to establish common management objectives for anadromous fish production capability in Forest watersheds and to develop "Desired Future Conditions" of riparian and aquatic habitats necessary to meet those objectives (USFS 1991). The Department will also work with the USFS and other land management agencies (Bureau of Land Management, Idaho Department of Lands), water management agencies (Bureau of Reclamation, Corps of Engineers, Department of Water Resources), private landowners, and regulatory agencies (Idaho Department of Health and Welfare, Environmental Protection Agency, Federal Energy Regulatory Commission) to maintain or improve existing fish production habitat and water quality. As stated in the policies and guidelines, the Department will oppose land use activities that degrade the potential for habitat to support self-sustaining populations.

Due to increased demands on Fisheries Bureau and Regional Fishery Management personnel, and because of the importance of habitat protection, the Department has established regional habitat coordinators. The 1989 Idaho Legislature created antidegradation legislation and established two positions for the Department to address this issue. These new positions and some internal reorganization have helped to address immediate habitat concerns, particularly antidegradation and the development of coordinated statewide habitat protection activities. In addition, the 1990 Idaho Legislature did approve three new habitat coordinator positions for assignment in the regions.

Regional habitat coordinators will allow for increased advocacy of good quality habitat and provide greater public awareness of fish habitat needs with education on how to prevent or minimize fish habitat degradation problems. Additionally, they should develop and implement effective programs to correct past problems.

Opportunities for Management Progress

Although the general population status of salmon and wild/natural steelhead is depressed, some specific opportunities exist to enhance salmon and steelhead abundance. The opportunities that follow are identified at present as being likely; others may evolve during the planning period. The Department will continue to identify opportunities and implement them as possible.

Solving the Poor Survival Problem-Without improved survival of Idaho salmon and steelhead, future expectations for improved stock status are not bright. Further stock decline over the short term can be expected and long-term productivity reduction may occur. Increased efforts focussed on achieving improved survival of Snake River salmon and steelhead will be an important management activity. The anadromous fish program's priorities will be directed at hydroelectric system operational and water management changes, Columbia River and ocean harvest management adjustments and hatchery productivity improvements. While the first two of these adjustments require substantial coordination and participation throughout the Columbia Basin, the third can be addressed more directly by Idaho fish and hatchery managers.

The following are specific items that have been identified to address hatchery productivity improvements: 1) Continue to research marking procedures for chinook which will not significantly lower survival; 2) Continue to address and budget fish hatchery facility modifications. Priority actions will include a) fish health improvements such as disease free water supplies, b) fish stock management improvements such as individual incubation and isolation facilities, c) rearing modifications for supplementation fish such as shade structures or variable velocity, and d) evaluation of release sites, time, and fish size to minimize interaction with natural and wild fish and maximize adult returns; 3) Develop and continue existing research on various anadromous fish rearing density studies, including BKD segregation efforts, and include additional research on fish transportation techniques and procedures. Incorporate rearing and transport densities found to maximize adult return rates into standard hatchery practices; 4) Promote more interaction with resident fish programs, exercising proper management procedures, to include fish stocking, imported egg management, inter-hatchery transfers of products and equipment, implementation of fish health policies, and development and use of common hatchery databases.

Survival improvement is critical in order to achieve production potential of salmon and steelhead returning to Idaho's natural production areas and hatcheries. Improved survival must occur before aggressive production and harvest management programs and opportunities can be realized in the future.

Harvest Opportunity-In addition to conserving and restoring natural production of chinook salmon, there is an obvious need to provide fisheries for recreational and ceremonial and subsistence needs in Idaho. Long-range goals include resolution of

downstream survival constraints and rebuilding natural salmon runs to provide harvest opportunities on fish surplus to escapement needs. In the interim, and in areas blocked from natural production, hatchery programs will continue to be relied upon to provide harvest opportunities.

In light of this realistic demand for fisheries, harvest programs should be maintained or implemented. These programs need to be implemented conservatively with low risk to wild and natural populations while concurrently, rebuilding occurs.

Release of marked hatchery steelhead will continue to be managed to distribute returning fish in time and space so that all local areas have opportunities for harvest and so that anglers can spread to as much area as possible. It will be important to continue evaluation of both on-site and off-site releases to determine if objectives are being met, and to retain flexibility to make adjustments.

Chinook smolts and presmolts released for the Spring, 1992, outmigration from Sawtooth, South Fork Salmon River, Crooked River, Red River, and Powell weirs, and in Eldorado and Papoose creeks were ventral fin clipped to identify them as hatchery-produced salmon. Visual identification of hatchery-produced salmon is necessary to minimize harvest impacts to naturally produced salmon and hatchery-produced salmon released for supplementation purposes. When adult returns from these releases are projected to adequately meet hatchery and weir return needs, harvest opportunity for marked hatchery fish is anticipated. As juvenile and adult survival through the hydrosystem increases, harvest opportunity for anglers will be developed in the North Fork Clearwater River, South Fork Clearwater River downstream from the confluence of American and Red rivers, and in the mainstem and Middle Fork Clearwater upstream to Powell. In the Salmon River, areas will include the mainstem, downstream from Sawtooth weir, South Fork Salmon River downstream from the weir, and Little Salmon River. Currently, low survival rates and lack of marked hatchery salmon preclude harvest opportunity in most areas until 1994, when all returning hatchery salmon will be marked. However, harvest opportunity will occur when hatchery needs are projected to be met, within the principles identified in "Policy #1".

Hatchery operations have included production of salmon and steelhead juveniles in excess of needs for hatchery smolt releases which have been used for population supplementation to enhance natural production. To date, supplementation of natural production with hatchery production has not resulted in self-sustaining natural populations. In some cases, it appears that indiscriminate outplanting of juveniles has reduced total adult returns and impacted productivity potential. Current supplementation research and genetics guidelines recommend curtailing unevaluated supplementation because of the genetic risks posed to depressed natural populations and the uncertainty of benefits for producing more adult fish, given the current excessive rate of mortality. The expectation for vastly improved survival of hatchery production during this plan period is not optimistic. Until uncertainties regarding supplementation are resolved, the

emphasis for hatcheries will be on production of fish to provide fishing opportunity.

Supplementation and harvest augmentation will become discrete programs. This modification will be most evident in the Clearwater drainage. Terminal broodstock collection at Red River and Powell satellite facilities, will be primarily for supplementation research. Broodstock to support smolt production for harvest is expected to mainly come from the Dworshak NFH and Kooskia NFH rack returns. Thus, off-site smolt releases, such as from the Clearwater Anadromous Fish Hatchery, will generally provide fishing opportunity, rather than focus on providing adults for natural population supplementation and brood stock development.

Investigation into the use of non-lethal fishing methods for chinook will be implemented, to determine if fishing opportunity, in years when surplus for harvest does not exist, could be provided in specific areas. Definition of target fishing areas and development of methods to minimize impacts on naturally produced fish in mixed stock fisheries will also be important to provide future opportunities for treaty and non-treaty anglers.

Steelhead Broodstock Development-Wild steelhead parr in some of the Salmon River Canyon tributaries and Fish Creek in the Lochsa drainage have been at high levels of abundance. These populations can provide opportunity to trap spawners to produce juveniles for upper Salmon and upper Clearwater river introduction. The upper Salmon River is a major potential production area, but introduced Snake River steelhead stock has not reestablished self-sustaining populations. The Salmon River native stock may be better suited for Stanley Basin production conditions to meet the objective of establishing a productive, naturally sustained, steelhead population. There is also concern regarding suitability of Dworshak NFH broodstock for supplementing natural populations. Extensive supplementation in the South Fork Clearwater has not yet provided tangible increases in natural production.

Public Involvement-Sustained low wild and natural stock abundance and variable hatchery stock abundance has created a difficult public satisfaction climate. Mitigation programs and hatchery construction raised expectations for abundant fish runs. Implementation of mainstem hydroelectric system turbine screening and bypass, and barge transportation further elevated expectations. Idaho sport and tribal fishermen are becoming very impatient with continued restrictions on wild and natural steelhead, and all chinook fishing. Annual boom and bust harvest seasons and bag limit regulations for hatchery runs are frustrating. The overall result is low user satisfaction.

Correcting these problems will be facilitated by informing the public. Implementation of public information and involvement activities will be essential to bring about many of the necessary hydroelectric and water management changes and harvest management adjustments. Since resolution of these problems will influence a broad cross-section of people in Idaho and the western U.S., they must have a clear understanding of the problem and opportunities for solutions. Public support of the solutions and tradeoffs

necessary by other water users and fisheries will be critical, since public demand will most likely be the primary factor in achieving improved conditions for Idaho salmon and steelhead survival, rebuilding, and future vitality. Anadromous fish program objectives will not be met without public support.

Understanding the needs and perceptions of Idaho's public relative to anadromous fish is the key to implementing programs suited to their needs. In addition to public informational and involvement activities, a variety of surveys will be investigated for identifying values and perceptions pertaining to salmon and steelhead. These could include on-site opinion surveys of anglers, as well as written or telephone opinion surveys to add to the knowledge accumulated during the Angler Opinion Survey, conducted by the Department in 1987. Results would provide guidance for future program direction and for developing and distributing useful information during the current and future plan periods. Funding for these programs will also need to be developed.

Coordination-Salmon and steelhead produced in Idaho pass through the jurisdiction of some 20 agencies including Indian tribes, other states, -and fishery management councils and commissions. Even within Idaho, the Department of Fish and Game only has authority to produce, manage, and regulate the fish and fisheries. The success of this plan depends on many other authorities being informed and protective of the needs of anadromous fish. Implementation of the plan and realization of improved salmon and steelhead runs will require coordinated and cooperative efforts by all. The Department recognizes that an Idaho anadromous salmon and steelhead management plan will not succeed unless it is well coordinated within the entire Columbia River Basin and tied into ocean harvest management as well.

Fish habitat and water quality is managed by other state, federal and private land owners. Water quantity is controlled by water management agencies, hydropower producers, and irrigators. Coordination with water management agencies for the purpose of improving flow and spill conditions for migrating salmon and steelhead will be accomplished through the office of the Governor, the Columbia Basin Fish and Wildlife Authority (CBFWA), and the Fish Passage Center. Coordination dealing with water management that affects spawning and rearing habitats will be accomplished by the Department dealing directly with the appropriate water management entity.

The Department is a member of the Columbia Basin Fish and Wildlife Authority which provides Columbia River coordination primarily for production and research issues. As an example, subbasin and system planning, mandated by the Northwest Power Planning Council (NPPC) to provide a framework for future amendments to their Fish and Wildlife Program was implemented through the CBFWA. The Department also participates in NPPC forums related to their Fish and Wildlife Program developed as a result of the Northwest Power Act of 1980.

Harvest Management Framework-Because of the complexity of the harvest management framework in the Columbia Basin outside of the state of Idaho and the high level of coordination that is required, only a brief summary is presented. Much of this information is derived from the Integrated System Plan (CBFWA 1991).

A hierarchy of management authorities control the fisheries affecting Columbia River fish runs. First, the United States-Canada Pacific Salmon Treaty and its various annexes control the interception of Columbia River salmon stocks in Canadian and Alaskan ocean fisheries and, conversely, the interception of Canadian salmon stocks in United States waters. The Pacific Fishery Management Council (PFMC) has management authority over salmon harvest in U.S. territorial ocean waters, south of the Canadian border. Because few steelhead are caught in marine fisheries, they have not been included in these negotiations. The Columbia River Fish Management Plan (CRFMP), developed by the parties to the United States vs. Oregon court case and approved by the federal District Court regulates the conduct of the various commercial fisheries in the Columbia River mainstem. Although Idaho is not a signatory party to the CRFMP, it is recognized by the Ninth District Court as a party to the agreement and participates in the Technical Advisory Committee (TAC) and the Policy Committee. The Columbia River Compact authorizes non-treaty and treaty Indian commercial fisheries in the interstate section of the Columbia River mainstem. Decisions follow the provisions of the CRFMP and an annual Ocean and Inriver Agreement, an outgrowth of the CRFMP and the PFMC management processes. The Ocean and Inriver Agreement apportions the harvestable Columbia River fish among the ocean fisheries and the fisheries in the Columbia itself. Idaho is not recognized as a management entity in the CRFMP and has not been provided signatory opportunity in the Ocean and Inriver Agreement in recent years. Only Oregon and Washington are voting members of the Columbia River Compact. Idaho has been unsuccessful in its attempts to enter into Compact membership, but does provide testimony at Compact hearings.

Indian Tribes with Treaty Rights-Because of the Nez Perce and Shoshone-Bannock tribes' rights and responsibilities regarding the anadromous fish resources of Idaho, the Department recognizes the importance of cooperatively developing and implementing anadromous fish research and management programs. Objectives identified in this plan will need tribal support to be successful. The tribes will continue to be extended opportunity for input into management decisions which apply to tribal fisheries.

The 1855 and 1863 treaties with the Nez Perce Tribe and the 1868 Fort Bridger Treaty with the Shoshone-Bannock Tribes and more recent court cases clearly establish that these tribes have a reserved right to harvest salmon and steelhead in their traditional ceremonial and subsistence fisheries. Court rulings state that the ceremonial and subsistence fisheries of the Shoshone-Bannock and Nez Perce Tribes have a priority right over sport fisheries. Opportunity to harvest surplus will be shared by treaty and non-treaty fishers. Court decisions have not clearly defined the number of fish required to fulfill ceremonial and subsistence needs.

The tribes are responsible for regulating tribal members on reservation and off-reservation fisheries. This right includes the responsibility to control tribal fishing to meet the conservation needs of the resource.

The numbers of fish which may be taken by tribal fisheries to satisfy ceremonial and subsistence fisheries should be determined to expedite conservation decisions for salmon inevitable with the Endangered Species Act and to promote rebuilding of fish populations. To facilitate this and other management discussions, the Department is proposing development of Memoranda of Agreements with each tribe to assure that harvest opportunity is afforded to all, and that respective management responsibilities and actions are conducted in the best interests of the state and tribes.

As stated previously through policy and program actions, over the next five years the Department will emphasize the importance of minimizing impacts to the productivity of wild and natural populations while striving to solve major survival impediments to production. Collectively, the state and the tribes will need to structure both hatchery production and harvest so that this can be accomplished. Goals of tribal and state programs must be integrated so that they are compatible and provide mutual benefits. For example, the interrelationship between the Clearwater Anadromous Fish Hatchery and the proposed Nez Perce Tribal Hatchery will need to be further developed. The Department anticipates that this will include the continued development of harvest and escapement objectives for natural and hatchery production as well as further definition of harvest and natural production areas. The Department also anticipates that the state and tribes will cooperatively explore methods to refine run size prediction and production and escapement estimates. Development of supplementation research will also continue cooperatively. To help meet these objectives, the Department will encourage the tribes to continue or to implement these research and management actions:

1) Continue to limit or curtail fisheries on naturally spawning populations of salmon and steelhead until harvestable surpluses are apparent and manage harvestable surpluses among tribal fishers.

2) Implement differentiation of hatchery and natural chinook within tribal programs and develop compatible weir management guidelines which incorporate genetic management.

3) Continue to expand redd counts into areas of tribal emphasis, which are not covered by the IDFG program, to provide additional management information.

4) Continue to incorporate and expand natural production assessment such as parr monitoring into tribal management programs.

5) Implement expanded and refined harvest programs for: management, monitoring and reporting, and data collection capabilities, including CWT recovery.

It is the shared responsibility of the state and the tribes to provide open lines of communication, share technical information, and develop strategies which streamline efforts and make efficient use of available funds for anadromous fish. A coordinated effort with mutual goals is essential to resolve survival issues within and beyond Idaho which currently limit the salmon and steelhead resources of vital importance to all Idaho peoples. Because coordination is so important, the Department has initiated proposals for harvest, natural, and hatchery production planning with the Idaho Tribes as early implementation amendments for fiscal year 1992 action within the Northwest Power Planning Council's Fish and Wildlife Program.

Access Program-Prior to 1987, there was no internal funding source dedicated specifically to development of access for salmon and steelhead fisheries. With the passing of Senate Bill No. 1288, a three dollar surcharge was affixed to salmon and steelhead permits to be used for the "acquisition, development, and maintenance of parking area, access sites, boat ramps and sanitation facilities in salmon and steelhead fishing areas, for management of and research and for technical assistance with litigation concerning steelhead and anadromous salmon originating in Idaho". These monies are often used in conjunction with funds provided by other agency or private entities, counties, cities, or boating access funds.

Major accomplishments in salmon and steelhead fishery access development include construction of the Deep Creek trail to provide access to the Hell's Canyon area, procurement of an access agreement for areas of the Little Salmon River for salmon fishing, construction of the Ellis Bridge, and purchase of property along the Clearwater River for steelhead fishery access and parking. Many of these projects were accomplished cooperatively with government and private entities such as the U.S. Forest Service, Bureau of Land Management, Idaho Power Company, and Idaho Steelhead and Salmon Unlimited. More detail regarding future plans and sites for access are identified in the Department's Fishing Access Work Plan for 1990-95, developed through the Federal Aid in Fish Restoration program (T. Parker, IDFG, personal communication).

Research Program-Idaho's research program for salmon and steelhead is management oriented to support critical juvenile migration decisions, evaluate and monitor stock status, evaluate hatchery production, and develop supplementation strategies. Research is supported by mitigation funding contracts directed at evaluating and crediting contributions of mitigation actions of various programs including the Columbia Basin Fish and Wildlife Program and the Lower Snake River Compensation Program (LSRCP). Therefore, research efforts focus primarily on harvest, spawning escapement, and smolt production. Funding for the fish and wildlife programs of the Northwest Power Planning Council authorized by the Northwest Power Act is a major funding source for Columbia Basin anadromous fish management and research activities.

These funds support competitive programs of 18 Indian tribes, four states, and three federal agencies. Funds are distributed to projects based on numerous criteria.
Steelhead are a lower priority species for funding support, relative to salmon. Similar priority is assessed for Pacific Salmon Treaty funding.

The following is a summary of research projects which were implemented or ongoing during the last five years. The Department supports continuation of the following programs because of the important management information that they provide. Research needs for the future are identified in part IV, following the Drainage Management Plans.

Coordinated Information System (CIS)-The purposes of this project are 1) to develop a set of technical methods which are needed to implement a System Monitoring and Evaluation Program (SMEP) as called for in the Northwest Power Planning Council Fish and Wildlife Program; and 2) to design an efficient system for exchanging data and information needed for planning, monitoring, and evaluation of anadromous fish protection, mitigation, and enhancement projects and actions pursuant to objectives of the Columbia River Fish and Wildlife Program. This is a Columbia Basin-wide project, with participation by fish management agencies and tribes. Project development began in 1990, with implementation in 1991. The CIS will serve as a framework for exchanging and integrating information needed to plan, monitor, and evaluate anadromous fish protection, mitigation, and enhancement projects. Specific products will include a natural production database, a hatchery production database, and an updated stock assessment study. The Department will be the lead agency for development of the natural production database.

Salmon Supplementation Studies-This project was initiated in late 1989. The purpose is to determine if hatchery fish can be used to increase natural salmon production without unacceptable loss in natural productivity. Research will be implemented to answer two basic questions - does supplementation work and which supplementation strategies work best. Results of previous supplementation activities have been limited by poor survival and adult returns of supplemented and non supplemented populations. Controlled research is planned to determine effects of various supplementation strategies, determine if supplementation reduces the overall productivity and fitness of the supplemented populations, and develop supplementation guidelines. The Salmon River study emphasis will address whether existing hatchery or natural stocks are more effective stocks to use as broodsources for supplementing naturally producing populations. Emphasis for the Clearwater will be supplementation techniques relating to life stage and time of release for restoration of natural production.

The general approach will consist of collection of data from treatment and control streams in the Salmon and Clearwater subbasins (Appendix E). Ten streams are proposed for treatment in the Clearwater drainage and six streams are proposed for treatment in the Salmon drainage. Supplementation fish will be reared at existing hatcheries and satellite ponds. Data collection will focus on measuring changes in

production and productivity. Monitoring and evaluation is planned for at least two generations of salmon, into the year 2000. However, the project is adaptive in its approach and will provide mid-point evaluation recommendations. Natural production areas above many of the hatchery weirs will become treatment streams and some existing artificial production facilities and weirs will be incorporated. Because this project integrates modification of existing hatchery rearing capacities and operations into the study design, a brief summary of the requirements for supplementation fish is provided in Table 26. Operational changes are expected to be complementary to hatchery objectives to increase productivity and survival of the hatchery product.

Potential Chinook and Steelhead Natural Smolt Production-Implemented in 1986, one objective of this project are to determine the number of returning chinook and steelhead adults necessary for optimal smolt production in natural habitat. Another primary objective is to develop Federal hydroelectric system mortality mitigation accounting and credit for increased smolt production resulting from fish production enhancement projects. Information from this research will be applied to streams statewide to develop escapement objectives and to determine success of habitat enhancement projects. The upper Salmon River and Crooked River on the South Fork Clearwater River are being intensively studied to meet the research objectives. Methods include trapping fall and spring downstream emigrants with scoop traps to estimate production and Passive Integrated Transponder (PIT) tagging juveniles to determine parr to smolt survival. Use of the PIT tags also allows collection of additional information regarding factors affecting smolt survival and growth which will assist the department with evaluating the effects of flow and passage conditions on smolt survival.

Idaho Habitat/Natural Production Monitoring (General Monitoring)-Project objectives are to: monitor BPA-funded habitat improvement projects in Idaho to determine natural production increases; develop a mitigation record for these habitat projects; and document status and trends of classes of wild and natural chinook and steelhead populations. A number of off-site mitigation projects, funded by the Columbia Basin Fish and Wildlife Program as "off-site mitigation" have been completed in Idaho since 1985. This project monitors annual densities of parr in 16 projects areas statewide and estimates any smolt production increases due to riparian revegetation, sediment reduction, barrier removal, off-channel developments, and instream structures. Annual monitoring in habitat project streams and in numerous other streams statewide documents the status and trends of wild and natural populations relative to mainstem smolt survival conditions and adult run sizes.

Table 26. Proposed supplementation fish requirements relative to available smolt rearing capacities and hatchery broodstock. Nez Perce Tribal Hatchery supplementation design is not included. Actual numbers will vary according to natural and hatchery adult broodstock availability.

Hatchery	Number of fish needed (thousands)	Percent of smolt rearing capacity	Supplementation fish hatchery broodstock requirement as percent of average number of fish spawned
CAFH[a]			
smolt	235	18	7 (DNFH/KNFH/RR[b] broodstock)
presmolt	530	0[c]	11[d](DNFH/KNFH/RR broodstock)
fry-parr	245	0	7 (DNFH/KNFH/RR broodstock)
McCall			
smolt	240	24	31 (McCall H. broodstock)
Pahsimeroi			
smolt	134	13	50 (Pahsimeroi H. brood.)
East Fork/Sawtooth			
smolt	203	7	100[e](East Fk. broodstock)
Sawtooth			
smolt	560	19	40 (Sawtooth H. broodstock)

[a]CAFH - Clearwater Anadromous Fish Hatchery.
[b]DNFH/KNFH/RR - Dworshak National Fish Hatchery, Kooskia National Fish Hatchery, Rapid River Hatchery
[c]Presmolt rearing will occur at CAFH satellite ponds.
[d]Hatchery broodstock for Crooked River pond only. Broodstock for Red River and Powell ponds will be developed from local spawners.
[e]Smolt release program will be converted to supplementation evaluation.

Evaluation of the Hatchery-Wild Composition of Idaho Salmon and Steelhead Harvest-Implemented in 1984, the objective of this project is to document returns of Lower Snake River Compensation Plan (LSRCP) produced salmon and steelhead adults to Lower Granite Dam. During creel surveys, information is collected on timing, straying, exploitation, harvest distribution and relative abundance for wild and hatchery stocks. Coded wire tags are retrieved from steelhead harvested by anglers and harvest contribution by month and river section is derived from tag recoveries. Aside from LSRCP documentation, this information has provided a valuable tool to aid state fishery managers with developing steelhead smolt stocking recommendations to shape the fishery. Estimates of total returns of LSRCP fish, including harvest, hatchery returns, and off-site escapement are also made.

The Department annually conducts a telephone survey to estimate steelhead catch, harvest, and fishing effort by major drainage. This information is used in conjunction with the results of the aforementioned project. Similar effort is undertaken to estimate chinook catch, harvest, and effort in years harvest occurs on LSRCP-produced chinook.

Smolt Condition and Timing of Arrival at Lower Granite Reservoir-This project has monitored the daily passage and condition of smolts during the spring outmigration at two migrant traps, one each on the Snake and Clearwater rivers, since 1983. Information is used by fishery managers and the Fish Passage Center to maximize survival of juvenile outmigrants during spring migration. Data on relative species composition, travel time, and hatchery vs. wild ratios is collected. By monitoring smolt passage at the head of the Lower Granite Reservoir and at Lower Granite Dam, migration rates under riverine and reservoir conditions can be compared under a variety of environmental conditions. This information is critical, particularly in average and low flow years. Knowledge of when most smolts have left the tributaries and entered mainstem migration areas which can be affected by releases of stored water (water budget) allows water budget managers to make the most timely use of the limited water budget. This project will continue to monitor relative abundance of salmon and steelhead smolts, establish timing and success of the outmigration, correlate travel time with river flows from index sites, and assist in estimating total smolt abundance and collection efficiency at Lower Granite Dam.

Fish Hatchery Evaluations-The focus of this project is documentation of the Lower Snake River Compensation Plan (LSRCP) hatchery programs and developing recommendations for improving survival to adults. This research was initiated in 1981. It provides an ongoing evaluation of major hatchery activities needed to produce quality smolts and meet adult return goals. Cause and effect relationships are researched and evaluated to provide hatcheries with recommendations on rearing and release schemes. In addition, this project documents and summarizes hatchery activities in relation to smolt production and adult returns.

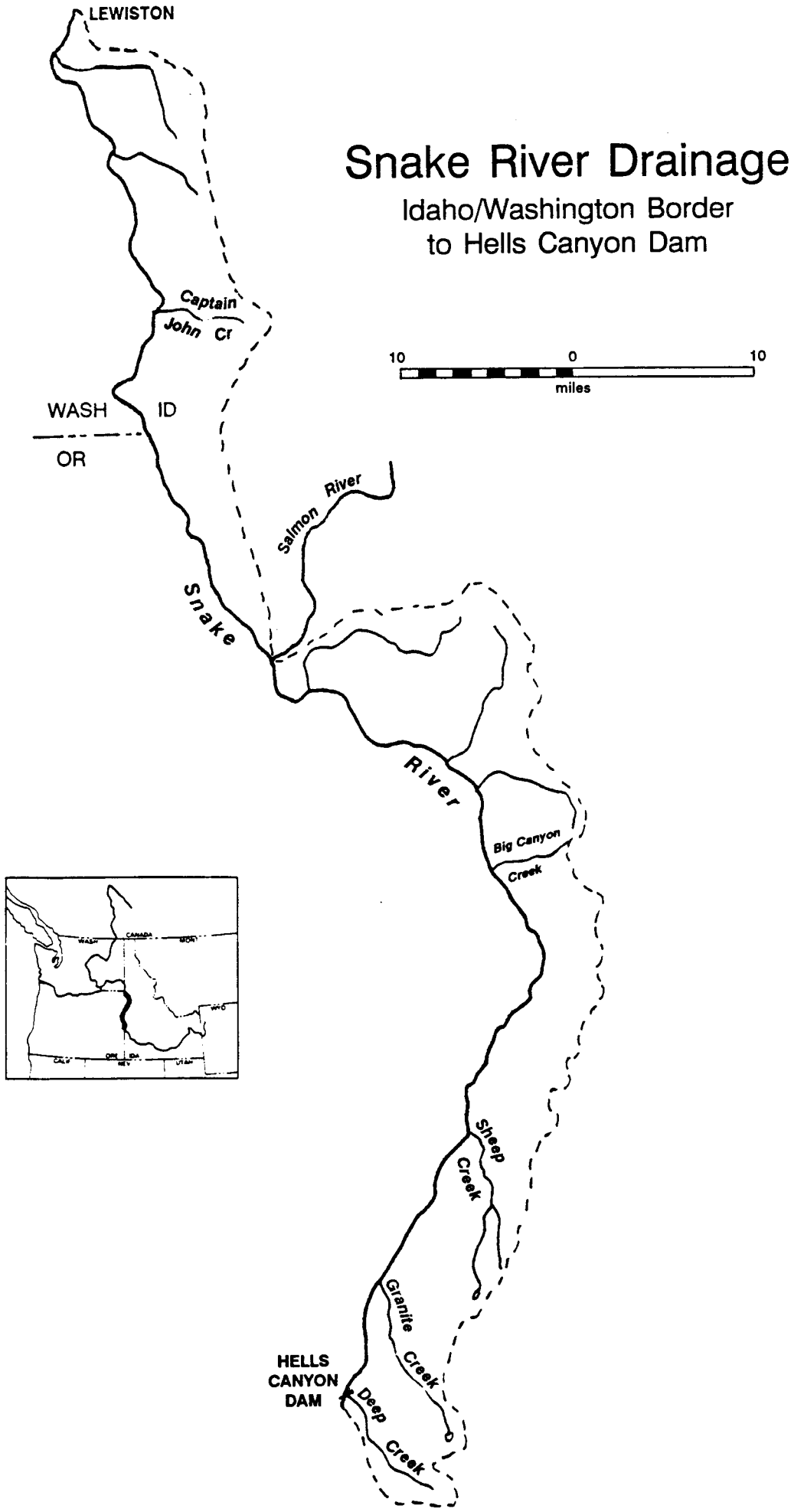
Coded Wire Tag Recovery-Chinook salmon and steelhead juveniles originating from LSRCP hatcheries constitute a significant portion of the adult returns to Idaho.

Comprehensive evaluation is required to properly manage the LSRCP program. This evaluation requires identification of individual fish groups that are harvested, returned to the hatchery, or otherwise collected. Coded wire tags (CWT) have been used in Idaho since the mid-1970s. They continue to be used for many studies to mass mark juvenile salmon and steelhead prior to release. Their purpose is to provide recovery data for LSRCP and other hatchery mitigation projects' research and harvest evaluation, and for Pacific Salmon Treaty evaluations of fishery interceptions and harvest rates. The Department mans a CWT laboratory which is responsible for CWT marking, removal, identification and recording CWT recoveries in Idaho. An added duty is stock identification by analysis and evaluation of hatchery-wild scale patterns for steelhead and chinook salmon.

PART III. DRAINAGE MANAGEMENT PLANS

This section addresses specific management direction for individual waters. Each drainage section consists of 2 parts and a map. A narrative overview describes physical characteristics of the drainage, fish production, fisheries, and management of the drainage in general terms. Objectives and programs lists fisheries objectives for the drainage, and management programs necessary to achieve them. Subbasin plans for the Salmon, Clearwater, and Snake drainages should be referred to for additional details regarding specific habitat, institutional considerations, and stock characteristics (Idaho Department of Fish and Game et al. 1990, Nez Perce Tribe of Idaho and Idaho Department of Fish and Game 1990, Washington Department of Fisheries et al. 1990).

Reference to Idaho Indian Tribe(s) in specific drainages does not supersede designated ceded or usual and accustomed fishing areas for the Tribes. References are made merely to facilitate planning and coordination where specific tribal interests are known.


LEWISTON
Snake River Drainage
Idaho/Washington Border
to Hells Canyon Dam
10
0
10
miles
Captain
John Cr
WASH
ID
OR
Salmon River
Snake
River
Big Canyon
Creek
Sheep
Creek
Granite
Creek
Deep
Creek
HELLS
CANYON
DAM

Snake River Drainage

Snake River, Mouth of Clearwater River to Hells Canyon Dam

Overview-The portion of the Snake River from the mouth of the Clearwater River at the Idaho-Washington border at Lewiston upstream to Hells Canyon Dam is 108 miles in length. From Hells Canyon Dam downstream to the Washington-Oregon border, the Snake River flows through Hells Canyon National Recreation Area, the deepest gorge in the United States. Forty miles of river from the Washington-Oregon border upstream to Big Canyon Creek is designated a "scenic" river under the Wild and Scenic Rivers System, and the remaining upper 32 miles is classified as "wild". Both the Idaho and Oregon sides of the river in the upper portions of the recreation area are bounded by wilderness. Legislation passed by Congress in 1989 prohibits the Federal Energy Regulatory Commission from issuing any licenses to develop new mainstem hydroelectric facilities in the Snake River. The lower portion of the river near Lewiston is impounded by Lower Granite Dam, 40 miles below Lewiston.

A critical problem in the Snake River has been inadequate flows needed to move downstream migrant salmon and steelhead through Lower Granite Reservoir during the April-July period. River flows are mainly controlled by Hells Canyon Dam and upstream storage.

The Snake River is a migration corridor for adult and juvenile anadromous fish moving to and from large tributaries such as the Salmon and Clearwater rivers, smaller tributaries, and Hells Canyon fish trap. Spring, summer and fall chinook, sockeye, and steelhead pass through this reach of the river. There is a small run of fall chinook that spawns in the mainstem of the Snake River above the mouth of the Salmon River. The genetic integrity of Snake River fall chinook appears to be in jeopardy because of low run sizes and substantial numbers of hatchery fall chinook released in the Umatilla River were documented crossing Lower Granite Dam in 1989 and 1990.

Recreational use of the river from Hells Canyon Dam downstream to Lewiston is very high. Access is limited primarily to boats but completion of the Deep creek trail by the U.S. Forest Service in cooperation with several agencies and private entities has provided needed trail access downstream from Hells Canyon Dam. Steelhead fishing is quite popular through the fall and winter months on the Snake from the Clearwater River to the Imnaha River. Harvest of hatchery steelhead by Idaho permit holders averaged 3,649 from Fall, 1985 through Spring, 1989. Except in 1989, there was also a spring chinook fishery targeting hatchery fish returning to the Hells Canyon Trap for the same period. Harvest of hatchery origin spring chinook in the Snake River by Idaho anglers is estimated to be less than 50 fish per year.

The small tributaries in this reach drain from high forested areas to arid bottomlands

before entering the river. Many streams have steep gradients and are accessible to steelhead only in the lower reaches, but all but the smallest have some potential to produce steelhead. Larger tributaries from the Imnaha River upstream to Hells Canyon Dam such as Granite and Sheep Creek are utilized for spawning and rearing by small numbers of spring chinook. No chinook salmon are produced in the small tributaries. Deep Creek has the potential to produce steelhead but has been impacted by copper mine effluent. For tributaries having wild A-run steelhead populations such as Wolf and Sheep creeks, parr densities averaged 98 percent of estimated carrying capacity for 1985-89. Supplemented A-run steelhead populations, such as in Captain John and Granite creeks had parr densities which averaged 67 percent of estimated carrying capacity for the same period. Chinook parr densities have been near zero.

There is an adult salmon and steelhead trap just below Hells Canyon Dam on the Oregon side of Hells Canyon Reservoir which collects broodstock for the Oxbow Hatchery. The hatchery and adult trap are owned by Idaho Power Company. Adult salmon trapped at Oxbow Hatchery are transferred to other hatcheries for spawning and rearing. Adult steelhead are spawned at Oxbow, and eggs are transferred to Niagara Springs Hatchery for smolt rearing, or reared to the fry stage at Oxbow Hatchery. Steelhead and spring chinook smolts or presmolts are released annually below Hells Canyon Dam to provide broodstock for the hatchery program and fish for harvest. Experimental rearing of fall chinook at Oxbow Hatchery occurred in 1989.

The critical issue regarding anadromous fish management in the Snake River will be maximizing survival of smolts migrating in the Snake River. Decreasing smolt travel time in the Snake River is key to improving smolt survival. Effects of flow improvement on other resources such as resident fish, will have to be evaluated. Fall chinook supplementation and management will also be a major issue. The mainstem Snake will continue to be managed to provide fisheries targeting hatchery steelhead and hatchery chinook.

Chinook and Steelhead Objectives and Programs. 1992-1996:

Objective: Improve juvenile fish migration survival to Lower Granite Dam.

Program: Establish long-term total dissolved gas monitoring stations below Hells Canyon Dam. Collect data on salmon and steelhead populations including mortality and gas bubble incidence during periods of high gas levels and correlate with adult returns. Coordinate all activities with Idaho Power Company.

Develop and implement methods to reduce smolt travel time in the Snake to maximize survival of migrating juvenile anadromous fish. Continue to develop smolt timing and relative abundance indices to aid control of water budget flow and water storage management.

Objective: Maximize harvest and fishing opportunity on hatchery produced salmon and steelhead contingent upon achieving hatchery escapement needs.

Program: Develop salmon and steelhead seasons that ensure hatchery escapement needs are met, minimize surplus fish into the hatchery, and maximize catch and harvest opportunity. Coordinate borderwaters management and harvest regulations with Washington, Oregon and respective Indian Tribes.

Continue to evaluate steelhead harvest by river section.

Continue to release hatchery chinook and hatchery steelhead smolts into the Snake River at Hells Canyon Dam. Coordinate numbers and use of smolts released at Hells Canyon Dam with Oregon, Idaho Power Company, and respective Indian Tribes. Release adequate number of spring chinook and steelhead smolts to provide adult returns capable of supporting fisheries and broodstock needs. Other production levels may be proposed to enhance smolt-to-adult survival. Smolt release numbers will be based on artificial rearing capacity, smolt-to-adult survival, harvest, and broodstock availability and needs.

When surplus is available, release adult steelhead from the Oxbow Trap into urban fishery areas.

Objective: Improve Oxbow Hatchery fish survival.

Program: Coordinate with Idaho Power Company to implement hatchery improvements to potentially include: 1) Upgrade water source to a disease free status by the use of well water or ozonation which includes degassing capability; 2) Research adult steelhead injections with Oxytetracycline to decrease prespawning mortality and reduce the vertical transmission of Flexibacter psychrophilus (a bacteria); 3) Incorporate a full spectrum fish disease sampling and egg culling or segregation program for steelhead to reduce the possibility of disease transmission to other rearing facilities.

Objective: Minimize harvest impacts to naturally produced salmon and steelhead.

Program: Continue to ad-clip hatchery steelhead prior to release and harvest only marked fish. Develop a visible mark for hatchery chinook and mark hatchery chinook prior to release for harvest identification.

Monitor chinook and steelhead seasons or test fisheries to allow

modification or closure when needed to protect naturally produced fish.

Objective: Maintain existing natural spawning populations of chinook and steelhead.

Program: Allow natural production to sustain existing populations of steelhead in minor tributaries. Limit outplanting of hatchery spring chinook into minor tributaries to support supplementation research.

Objective: Enhance natural production of fall chinook below Hells Canyon Dam.

Program: Document impacts of fluctuating water levels on fall chinook survival, spawning success, and ecology. Work with Idaho Power Company and federal regulatory agencies to manage flow from Hells Canyon Dam to enhance fall chinook survival.

Evaluate genetic compatibility of Lyons Ferry hatchery broodstock for use in subbasins above Lower Granite Dam.

Protect naturally spawning populations of Snake River fall chinook by not outplanting hatchery fall chinook into the mainstem Snake River above the city of Asotin, Washington.

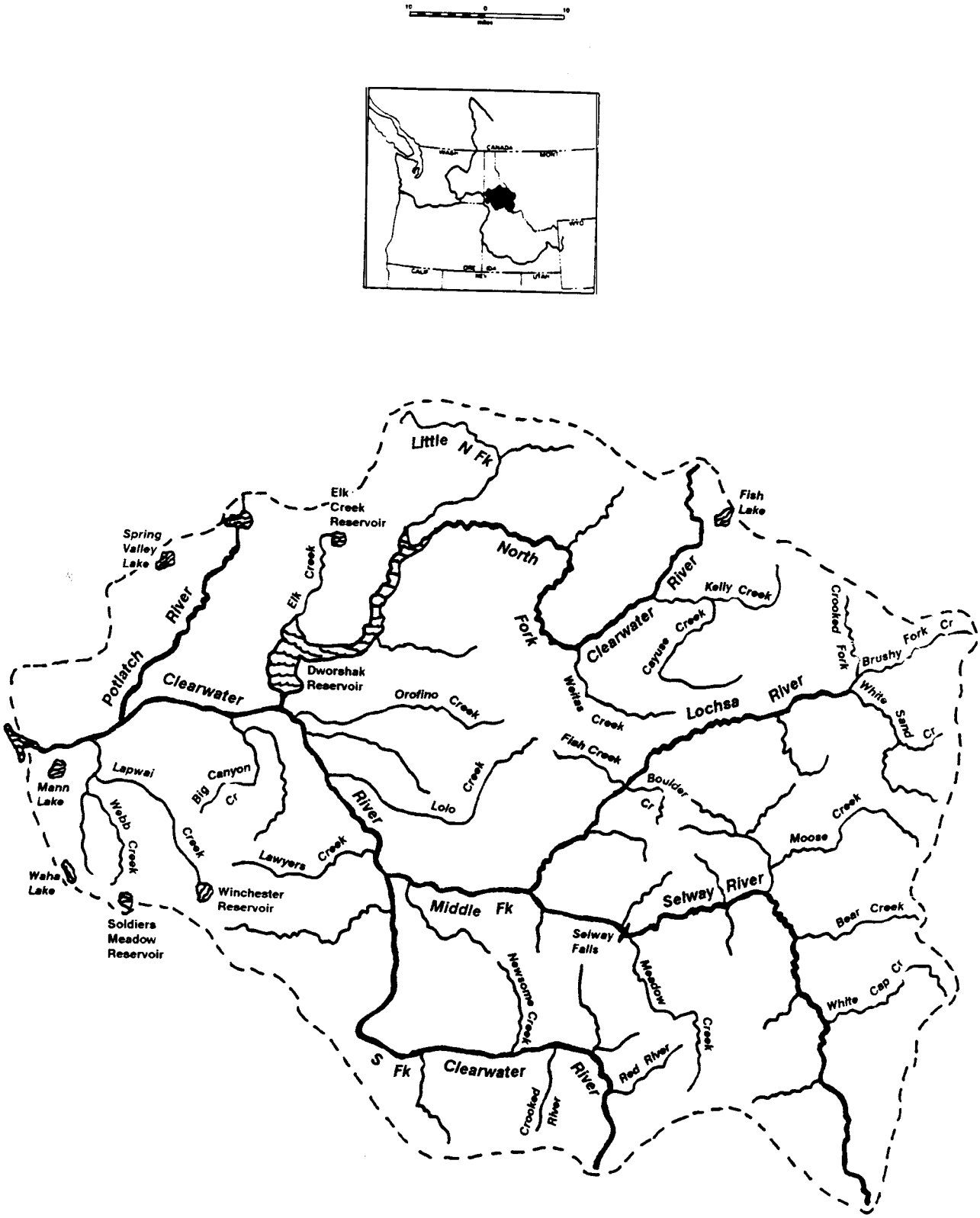
Do not outplant any unmarked hatchery anadromous fall chinook into the Snake River Basin above Lower Granite Dam and structure release strategies that minimize straying into mainstem Snake natural production area.

Participate with state and federal fishery agencies, Idaho Power Company, and tribes to develop short- and long-term natural and artificial production and harvest strategies for Snake River fall chinook considering proposals for fall chinook production in the Clearwater and Grande Ronde rivers and at Oxbow and Lyons Ferry hatcheries.

Objective: Develop methods to estimate levels of salmon and steelhead production and escapement.

Program: Continue parr density monitoring. Develop methods to estimate tributary salmon and steelhead adult escapement according to production component. Integrate salmon and steelhead data to refine current escapement goals in Tables 20 and 21, Section II.

Clearwater River Drainage



Clearwater River Drainage

The Clearwater River originates in the Bitterroot mountain range on the Idaho-Montana border and flows westerly across the state to Lewiston where it joins the Snake River. The river drains approximately 9,640 square miles and ranges in elevation from nearly 9,000 feet mean sea level (msl) to 725 feet msl. Mean annual discharge for the drainage between 1960 and 1980 measured 15,000 cubic feet per second (cfs) with a range of 500 to 177,000 cfs.

There are three major tributaries to the Clearwater River including the North Fork, the Middle Fork which originates at the confluence of the Lochsa and Selway Rivers, and the South Fork. The Nez Perce Indian Reservation makes up 13 percent of the drainage from approximately the South Fork Clearwater River to near Lewiston. Sixty-three miles of the main Clearwater are included in the Reservation and the entire drainage is part of Nez Perce ceded lands.

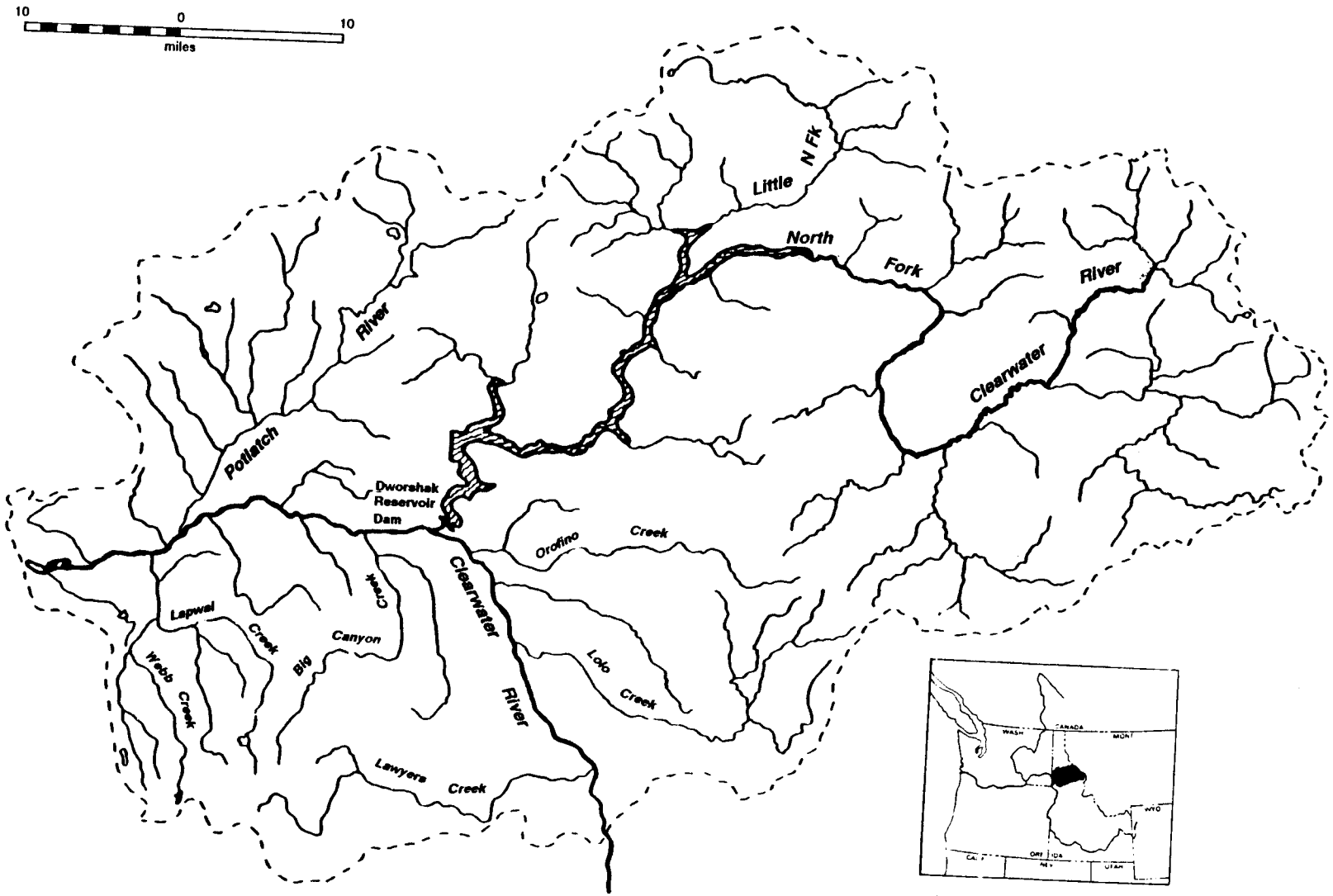
Chinook salmon runs were virtually eliminated from the entire Clearwater drainage, and steelhead were greatly reduced, when the Washington Water Power Dam was built at Lewiston in 1926. It was not until the 1950s that passage was improved enough to allow salmon to freely cross the dam. Then, in 1961, the fishways were modified at Lewiston Dam and an extensive program commenced in the 1960s to reintroduce chinook to the Clearwater drainage. Adult returns ranged from 9 in 1950 to 3,500 in 1972. The dam was removed in 1973.

In the early 1970's, Dworshak Dam on the North Fork Clearwater River was completed. One of the most productive salmon and steelhead streams in the State was impounded and eliminated from anadromous fish production by the construction of this dam which stopped a population of wild B-run steelhead which commonly had fish ranging up to 20 pounds.

Lower Granite Dam, completed in 1975, culminated development of eight hydroelectric projects, extending slackwater from Bonneville Dam on the Lower Columbia River to Lewiston. Adult steelhead numbers in the Clearwater declined from a peak of 43,196 during the 1962-63 fish year to their lowest recorded level of 3,000 during the 1974-75 fish year. Fishing opportunity was limited to catch-and-release during the mid-1970s until steelhead numbers rebounded.

Clearwater River Drainage

Mouth to South Fork



Lower Clearwater River - Mouth to South Fork including the North Fork

Overview-The mainstem Clearwater River is a very important migration corridor for both adult and juvenile salmon and steelhead and an important overwintering area for steelhead adults. This portion of the main river has a limited amount of rearing for salmon and steelhead. It is not important as a spawning habitat for steelhead or spring chinook. Fall chinook do spawn in the lower Clearwater River, but large numbers of fall chinook are not produced. The amount of potential spawning and rearing habitat for this race of fish has been quantified by the Nez Perce Tribe.

Dworshak National Fish Hatchery (DNFH) was constructed and completed in 1971 to mitigate for the loss of anadromous fish production in the North Fork due to the construction of Dworshak Dam. The original mitigation was limited to steelhead because Lewiston Dam had previously blocked access for chinook to the North Fork. Following construction of the dam, the North Fork has been exclusively devoted to artificial production with DNFH and the Clearwater Anadromous Fish Hatchery (CAFH) being located in the lower one mile of this stream. The lower North Fork still provides limited rearing of juvenile salmon and steelhead.

Steelhead fishing is very popular on the mainstem Clearwater River. Dworshak National Fish Hatchery began adding significant numbers of hatchery steelhead to the Clearwater by the late 1970s. Angler days range up to 125,000 for both the spring and fall season and steelhead catch rates average about 20 hours per fish. Harvest of hatchery steelhead, for the mainstem Clearwater and North Fork combined, averaged 14,157 annually from Fall 1985 through Spring 1990. The Nez Perce Tribe also targets returning hatchery steelhead, but at lesser numbers. Current management strategy calls for a diversity of fishing regulations to optimize fishing opportunity. The early portion of the season prior to October 15 is managed as a catch-and-release fishery. Also, the reach between Orofino and Kooskia is regulated as a "no motors" water. Wild steelhead migrating through the Clearwater River corridor have been protected from harvest since 1986 when adipose fin clipping of all hatchery steelhead smolts was initiated.

Dworshak National Fish Hatchery began rearing chinook in the early 1980s as part of the Lower Snake River Compensation Plan. A chinook sport fishing season was offered in 1990 for the first time since 1978. A limited fishery in the North Fork and the mainstem Clearwater from Peck to Orofino occurred. Harvest was directed at surplus chinook returning to Dworshak Hatchery and 369 fish were harvested by non-treaty fishers. The Nez Perce Tribe holds a hatchery rack fishery on spring chinook returning to DNFH and Kooskia National Fish Hatchery (KNFH). Tribal harvest of hatchery spring chinook was 637 fish in 1990.

Tributary streams in this reach are generally characterized by low summer flows with most of the runoff occurring in the spring months. Some tributaries, such as Lawyers Canyon Creek, have habitat that produces steelhead, but low summer flows and high

stream temperatures in the summer limit natural production. Steelhead utilize the streams for spawning and rearing, but as flows decrease in late summer, parr move to and from the tributaries to the Clearwater River. Most of the tributaries of the lower Clearwater are too warm for spring chinook production. High sediment loads, poor streambank cover, high water temperatures, and lack of instream cover resulting from activities such as logging and clearing of headwater areas for grain farming has occurred in several tributaries. There are efforts in some tributaries to improve spawning and rearing habitat which have been severely degraded.

Many of the tributaries support wild/natural A-run steelhead. In the lower Clearwater River, as well as Snake River and lower Salmon River tributaries, where wild A-run populations exist in better habitats, parr monitoring indicated that steelhead parr averaged 98 percent of estimated carrying capacity for 1985-1990. This data includes parr estimates from Big Canyon Creek. However, the poor, wild A-run steelhead return of 1990-91 will affect these high parr densities.

Lolo Creek is the largest of the tributaries in this portion of the river and has the greatest natural production potential. Spring chinook parr averaged 21 percent of estimated carrying capacity in monitoring transects, for 1985-89. Yet, in C-type channels which are more conducive to chinook production, parr numbers averaged 51 percent of estimated carrying capacity. Naturally produced B-run steelhead parr averaged 31 percent of estimated carrying capacity.

Outplanting with hatchery spring chinook and B-run steelhead has occurred in Lolo Creek. This drainage is targeted for development of a rearing pond for spring chinook presmolt production as part of the Nez Perce Tribal Hatchery. Plans for this facility are currently in development. Fish habitat in the drainage has suffered from agriculture, logging, grazing and road construction. The Clearwater National Forest has enhanced habitat through barrier removal and instream structure to create diversity. Because of the effort for fish habitat improvement in the Lolo Creek drainage, the Forest Service has reduced the timber cut into the future to allow recovery.

The mainstem and North Fork Clearwater River are viewed as the two major potential chinook fishery opportunities in next 5 years to target hatchery fish. Other main features of the anadromous fish program for this section include attempts to maintain current natural and wild populations for eventual rebuilding as survival constraints are lifted, research aimed at restoration of chinook populations, and completion of facilities and operating plans for Clearwater Anadromous Fish Hatchery and the Nez Perce Tribal Hatchery.

Chinook and Steelhead Objectives and Programs. 1992-1996:

Objective: Maximize harvest and fishing opportunity on hatchery produced salmon and steelhead contingent upon achieving hatchery escapement needs.

Program: Continue to evaluate adult salmon and steelhead returns and harvest to develop seasons that ensure hatchery escapement needs are met, minimize surplus fish into the hatchery, and maximize catch and harvest opportunity. Structure non-treaty chinook harvest seasons to ensure anglers opportunity to harvest hatchery fish surplus to hatchery escapement needs.

Continue releases of hatchery steelhead and spring chinook smolts for harvest augmentation. Adjust smolt releases to achieve 30 hours per steelhead or better and 60-80 percent exploitation, when possible. Coordinate smolt releases with the Nez Perce Tribe.

Release adequate numbers of salmon and steelhead smolts to provide adult returns capable of producing 1.4 million spring chinook smolts and 2.3 million steelhead smolts at Dworshak National Fish Hatchery (DNFH). Other production levels may be proposed to enhance smolt-to-adult survival. Smolt release numbers will be based on capacity, smolt-to-adult survival rates, harvest, and broodstock availability and needs.

Trap additional chinook adults as needed at DNFH to account for broodstock needs for Crooked River satellite facility, production at CAFH, and fry-parr and smolt production for supplementation evaluation. Establish adult steelhead hatchery escapement needs for on-site production and outplants.

Develop Memorandum of Agreement with the Nez Perce Tribe regarding treaty and non-treaty fisheries. Develop a harvest plan with the tribe which identifies harvest objectives, defines harvest triggers and quotas, identifies treaty and non-treaty fishing areas, and establishes monitoring programs.

Work with Nez Perce Tribe to improve harvest monitoring techniques to achieve accurate Clearwater River harvest estimates. Continue to conduct harvest creel surveys and develop in-season harvest estimates in cooperation with tribal harvest managers to ensure that hatchery escapement goals are met. Work with tribal biologists to develop accurate run predictors.

Work with Nez Perce Tribe to achieve improved accounting of coded wire

tags in the tribal harvest. Evaluate total return and efficiency relative to sport and tribal harvest objectives and hatchery brood requirements.

Continue fish health research to improve hatchery fish survival. Continue Hatchery Evaluation Program under LSRCP funding to assess rearing and release strategies to improve survival.

Objective: Complete development of an operating and production plan for Clearwater Anadromous Fish Hatchery (CAFH).

Program: Complete development of facilities and production plan for CAFH. Develop a hatchery plan that will minimize chance of introducing infectious diseases from the Clearwater River or DNFH to the CAFH. Coordinate production plan with the Nez Perce Tribe. Incorporate broodstock needs into DNFH weir management. Incorporate supplementation evaluation fish needs (quantity and quality) into hatchery operations. Produce presmolts capable of surviving and overwintering in the natural environment. Develop hatchery management techniques that will reduce or avoid competition between hatchery fish and natural fish. Develop hatchery management techniques that will ensure separation of fish stocks in the hatchery and reduce domestication of progeny from natural broodstock.

Objective: Maintain a diversity of fishing opportunities.

Program: Continue with a nonconsumptive adult steelhead fishery in the mainstem Clearwater prior to October 15. Retain "no-motors" regulation between Orofino and the mouth of the South Fork Clearwater.

Objective: Minimize harvest impacts to naturally produced salmon and steelhead.

Program: Continue to ad-clip hatchery steelhead prior to release and harvest only marked fish. Mark hatchery chinook when having marked hatchery fish may increase harvest opportunity or facilitate broodstock management.

Experiment to assess mortality associated with catch and release fishing for chinook. Conduct research to assess timing of hatchery and natural chinook adult returns. Develop harvest strategies which minimize impact on naturally produced fish and monitor chinook and steelhead seasons or test fisheries to allow modification or closure when naturally produced fish are in the catch. Work with the Nez Perce Tribe to minimize harvest

impacts on naturally produced fish through harvest agreements and monitoring.

Evaluate harvest rates of wild/natural juvenile steelhead in selected Clearwater tributaries to determine if protection is warranted. Implement regulation change if needed.

Objective: Maintain genetic integrity and diversity of wild, native steelhead.

Program: Cooperatively with the Nez Perce Tribe, identify tributaries with wild A-run steelhead populations. Do not outplant hatchery steelhead into these areas. Allow natural production to sustain existing wild populations. Do not outplant any steelhead into the Selway; retain this drainage strictly for natural production of wild B-run steelhead.

Manage hatchery supplemented Clearwater River anadromous fish stocks so that straying into wild steelhead production tributaries and the Selway River is minimized.

Objective: Maintain existing natural spawning populations of chinook and steelhead.

Program: Allow natural production to sustain existing natural populations to preserve genetic integrity. Limit outplanting hatchery fish to support supplementation evaluation, Nez Perce Tribal Hatchery development in Lolo and Eldorado creeks, and areas devoid of natural salmon and steelhead production.

Support and provide technical assistance to the Nez Perce Tribe for development of their hatchery and natural production program.

Maintain adult salmon and wild and naturally-produced steelhead harvest closures in the tributaries to maximize natural production of steelhead and salmon.

Work with the Nez Perce Tribe to develop hatchery fish release programs that preserve and protect genetic resources of naturally spawning chinook and steelhead populations.

Objective: Maintain and improve habitat quality of fish production areas.

Program: Continue working with land management agencies, private landowners,

and the Tribes to inform, educate, and assist with land management planning to protect fish habitat and water quality and quantity. Provide fisheries input regarding permitting and monitoring of land use activities affecting fish habitat. Emphasize riparian habitat and stream channel protection, flow, and containment of sediment production areas.

Continue to work with the Clearwater National Forest to improve fish habitat in Lolo Creek with reductions in timber harvest and riparian enhancement. Work with the Soil Conservation Service and farmers to lessen erosion. Encourage local communities to seek "adopt a stream" programs. Cooperate with the public and agencies to clean up stream bank access during salmon and steelhead seasons.

Objective: Increase fishing access for boaters and bank fishermen.

Program: As opportunities allow, acquire additional fishing access sites.

Objective: Support anadromous fish objectives with Dworshak Reservoir flows.

Program: Work with Corps of Engineers to provide flows from Dworshak Reservoir to maximize survival of migrating anadromous fish and evaluate effects on resident fisheries and ecology.

Continue with the Corps of Engineers/IDFG flow agreement of 1300 cfs plus inflow into Dworshak Reservoir from 1 October to 15 November for steelhead fishing. Work with the Corps and BPA to secure flow agreements beyond November 15 to improve winter and spring steelhead fishing.

Objective: Develop methods to estimate levels of salmon and steelhead production and escapement.

Program: Continue parr density monitoring. Encourage the Nez Perce Tribe to continue monitoring natural production in Lolo and Eldorado creeks for hatchery development.

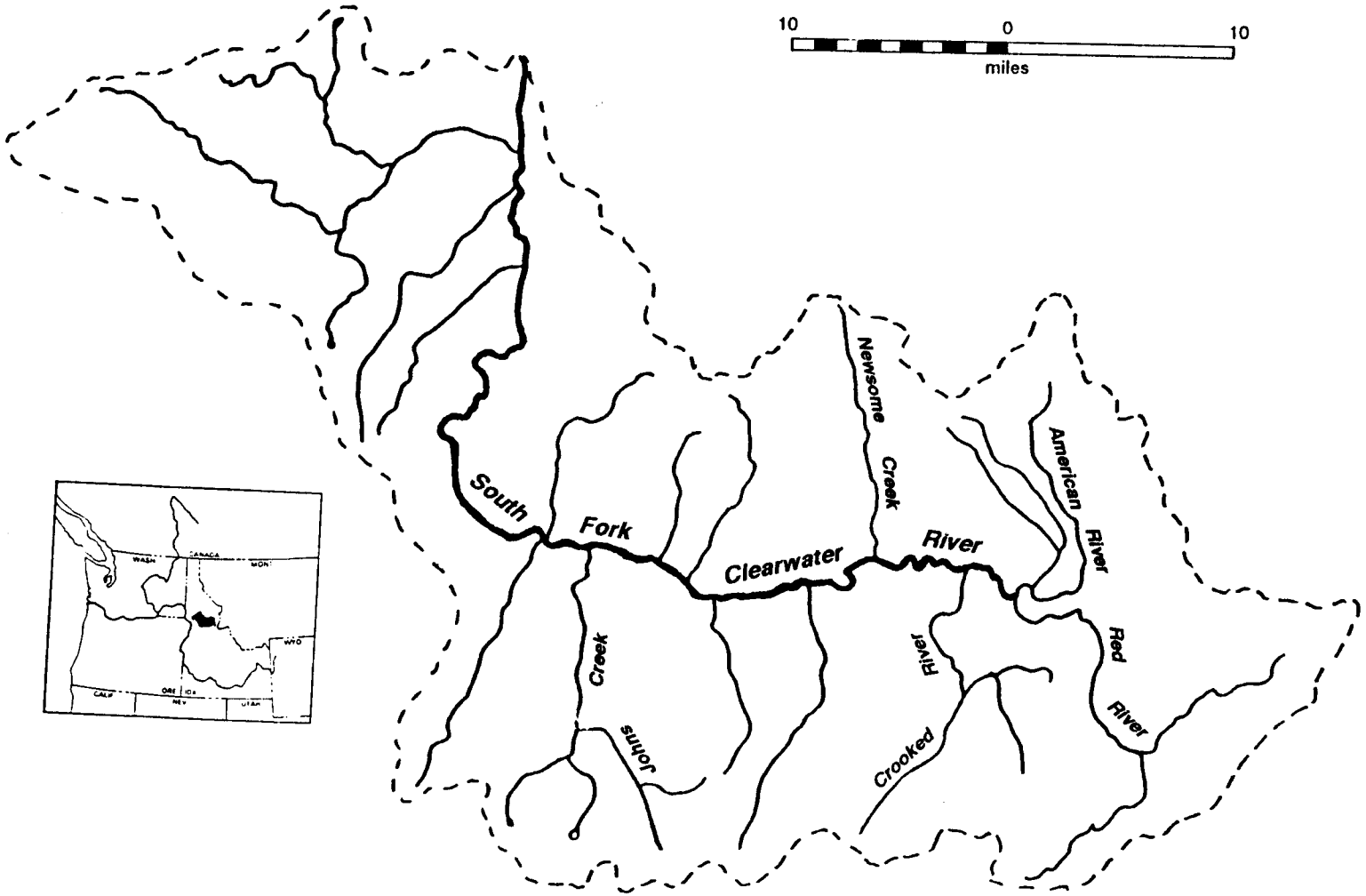
Develop methods to estimate tributary salmon and steelhead adult escapement according to production component. Integrate data to refine current escapement goals in Tables 20 and 21, Section II, in cooperation with the Nez Perce Tribe.

Continue to collect adult steelhead size and run timing information to better define stock characteristics.

Objective: Improve Dworshak National Fish Hatchery (DNFH) fish survival.

Program: Coordinate with DNFH to conduct research and implement necessary changes to increase fish survival, as needed.

South Fork Clearwater River Drainage



South Fork Clearwater River

Overview-The South Fork of the Clearwater supported chinook and steelhead prior to the late 1920s when the drainage was blocked by a hydroelectric project. A 33-foot high diversion dam was built near Harpster that stopped all upstream fish migration. Between 1935 and 1949, steelhead were able to pass the project via a wooden fishway. At this time chinook were not in the drainage because Lewiston Dam had already blocked access to the Clearwater River. In 1949, high flows destroyed the fishway. It was not until 1963 that the dam was completely removed and full passage was restored.

Eleven miles of the South Fork are included in the Nez Perce Indian Reservation. The small alpine areas located in the headwaters of Johns and Tenmile creeks, and Crooked River are protected under wilderness designation as part of the Gospel-Hump wilderness. Riparian vegetation has been extensively modified along the lower 30 miles of the mainstem and tributaries in the lower drainage. High summer temperatures associated with low streamflow limits fish production in the lower South Fork.

Historically, gold dredge and placer mining were the major land uses in the upper South Fork and fish habitat has been negatively impacted by historical mining activities. Recreational and commercial mining activities continue. Road construction, agriculture, and silviculture have also contributed to siltation of fish habitat. In addition, overgrazing in this drainage has contributed to loss of riparian habitat and decreased fish production potential. However, substantial potential for salmon and steelhead production remains in the drainage. Tributaries, like Ten Mile Creek and Johns Creek, have high quality stream habitat and the Department will continue to support land management directives to protect and preserve remaining high quality habitat in the South Fork drainage.

The Nez Perce Forest and Bureau of Land Management have done extensive habitat restoration work in selected tributaries in the drainage. They have concentrated on instream structure and riparian restoration but fish response has varied. A major variable has been poor juvenile migration survival through the Snake and Columbia rivers. American and Red rivers and Ten Mile Creek have large areas of low gradient C-channel stream habitat which historically were excellent chinook habitat. Much of the remaining drainage is higher gradient B-channel stream habitat that supports steelhead.

Both chinook and steelhead were reintroduced into the drainage beginning in the early 1960s. Up to 50 percent of Dworshak National Fish Hatchery's (DNFH) steelhead production has been released into the South Fork since 1981. The intent of the program was to redistribute adults between Orofino and Kooskia in the mainstem Clearwater and into the South Fork for increased fishing opportunity. Also the program was intended to enhance natural production by allowing hatchery adults to spawn in the wild.

Few fish enter the South Fork until spring when the South Fork's discharge begins to increase. By the mid-1980s, spring fishing had substantially improved in the South Fork.

The annual average number of steelhead harvested from Fall 1985 through Spring 1990 was 433 fish. Reintroduction efforts have been considered successful in the South Fork for providing a fishery in the river as well as enhancing fishing and harvest opportunity between Orofino and Kooskia in the mainstem Clearwater. However, whether releasing DNFH steelhead in the South Fork is increasing natural production remains questionable. From the long history of steelhead outplants in this drainage, it can only be concluded that hatchery smolt releases do return adults that satisfy harvest and fry production can be substantial after spawning. There are responses in steelhead parr the following year but the occurrence of sustained natural production in the absence of continued outplanting is undocumented. Because of extensive, sustained, outplanting of hatchery fish, parr densities in monitored transects are somewhat higher than other parts of the Clearwater drainage. Steelhead parr densities averaged 40 percent of estimated carrying capacity for 1985-89.

Spring chinook parr densities also averaged 40 percent of estimated carrying capacity for 1985-89. Spring chinook juvenile densities have also been influenced by substantial outplanting of hatchery fish. Sustained natural production due to this practice has not been measured. The South Fork drainage supports several facilities for chinook enhancement and more are planned. Red River Pond was constructed in 1977 to release fall presmolts. An adult trap was added to the pond in 1985. Substantial improvements were made to the facility in 1988 and 1990. A similar facility was completed in the spring of 1990 on Crooked River. Both facilities are associated with the Lower Snake Compensation Program's Clearwater Anadromous Fish Hatchery (CAFH), currently under construction. The Nez Perce Tribe is developing plans for ponds to rear spring chinook presmolts in Mill and Newsome creeks. The Tribe is also investigating production of fall chinook.

Crooked River is also one of two study sites for the Department's Intensive Smolt Monitoring Project, which tags and traps juvenile migrants to establish production and survival information. With the Crooked River weir fully operable in 1991, data will become available to establish a stock recruitment relationship and provide information on sustained natural production. The Department may be initiating chinook supplementation research in several South Fork tributaries in 1991.

Major management issues for the South Fork will be completion and integration of the plans for production at CAFH and Nez Perce Tribal Hatchery facilities. Broodstock availability and survival rates will be major factors affecting hatchery and natural production. Development of harvest management plans are needed to accompany increased hatchery production as is identification and protection of natural production components. Coupled with improved mainstem survival, stock identification will likely allow selected harvest opportunity in the near-term. The implementation of supplementation research to determine techniques to restore natural production will also be a major activity.

Chinook and Steelhead Objectives and Programs. 1992-1996:

Objective: Maintain existing natural spawning populations of chinook and steelhead.

Program: Maintain adult salmon and wild and naturally-produced steelhead harvest closures in the South Fork tributaries to maximize natural production of steelhead and salmon until surplus is available.

Work with the Nez Perce Tribe to develop fish release programs that preserve genetic resources of naturally spawning chinook and steelhead.

Implement chinook supplementation evaluation activities, proposed in Red, Crooked and American rivers, and Newsome and Meadow creeks, including Johns Creek as a control. Coordinate with Nez Perce Tribe supplementation activities. For supplementation evaluation, rear approximately 80,000 presmolts at Red River pond using Red River broodstock. Rear approximately 400,000 presmolts at Crooked River using Dworshak/Kooskia National Fish Hatchery complex (DNFH/KNFH) broodstock or Rapid River broodstock. Develop marks to differentiate natural, supplementation and harvest augmentation fish in treatment streams.

Modify weir management to utilize natural production areas. Refine long-term escapement goals for adult fish to be released upstream of the Crooked River and Red River weirs for natural production. Proposed goals are identified in Tables 22 and 23, Section H.

During this planning period, release 2/3 of the spring chinook returning to Red River above the weir for natural production and retain the remainder for supplementation brood stock. Release up to 45 pairs of natural spawners into Crooked River and Relief Creek (Crooked R. tributary) to research seeding levels and optimal smolt production. Augment Crooked River research broodstock needs with hatchery adults, if necessary. Release varying levels of steelhead, up to 500 pair, into Crooked River to research seeding levels and optimal smolt production. Release all naturally produced steelhead above the weir and augment with hatchery steelhead to meet Crooked River research needs.

Over the long-term, as marked chinook return, release known naturally produced spring chinook above the weirs up to proposed escapement goals identified in Table 23, and incorporate supplementation broodstock needs into weir management. Release natural steelhead above the weirs up to the goals identified in

Table 22. As the escapement goals for natural production above the weirs are met, begin incorporating naturally produced chinook and steelhead into hatchery production.

Incorporate rearing practices at satellite ponds that provide fish capable of surviving to the ocean and will not compete significantly with naturally produced fish. Maintain the genetic integrity of natural populations and minimize domestication caused by hatchery rearing practices.

Evaluate sustained benefits to natural production from outplanting steelhead in the South Fork by discontinuing Dworshak National Fish Hatchery (DNFH) steelhead releases into Newsome Creek and monitor evidence of sustained production by subsequent parr and redd enumeration.

Provide technical assistance to Nez Perce Tribe for their development of rearing ponds and release strategies for spring chinook in Meadow and Newsome creeks. Continue discussions to resolve natural production and harvest issues regarding Nez Perce Tribe proposal for fall chinook artificial production in the Clearwater drainage.

Objective: Maximize harvest and fishing opportunity on hatchery produced salmon and steelhead.

Program: Structure non-treaty chinook harvest seasons to ensure anglers an opportunity to harvest marked surplus hatchery fish. Continue to provide steelhead fishing opportunity in the South Fork up to the confluence of American and Red Rivers.

Continue to release marked hatchery steelhead smolts and begin marking hatchery spring chinook smolts from DNFH/KNFH complex for harvest augmentation. Implement smolt releases from Clearwater Anadromous Fish Hatchery for harvest augmentation. Smolt release numbers will be based on capacity, smolt-to-adult survival rates, harvest, and broodstock needs and availability. Utilize satellite ponds for chinook smolt acclimation. Adjust smolt releases to achieve at least 30 hours per adult steelhead harvested and 60-80 percent exploitation, when possible. Coordinate smolt releases with the Nez Perce Tribe.

Trap additional chinook adults at DNFH to provide for broodstock needs for Crooked River satellite facility.

Investigate feasibility of rearing harvest augmentation chinook presmolts

in addition to supplementation fish at Red River pond when smolt production capacity at CAFH is reached. Pond presmolt production for harvest augmentation would be a second priority.

Release marked surplus hatchery spring chinook juveniles into American River. Release surplus hatchery spring chinook adults into Crooked River, per research needs, and American River.

Develop Memorandum of Agreement with the Nez Perce Tribe regarding treaty and non-treaty fisheries. With the tribe, develop **a** harvest plan which identifies harvest objectives, defines harvest triggers and quotas, identifies treaty and non-treaty fishing areas, and establishes monitoring programs.

Work with Nez Perce Tribe to develop accurate harvest monitoring techniques. Continue to conduct steelhead harvest surveys. Work with tribal biologists to develop accurate run predictors.

Objective: Minimize harvest impacts to naturally produced salmon and steelhead.

Program: Continue to ad-clip hatchery steelhead prior to release and harvest only marked fish. Mark hatchery chinook prior to release when having marked hatchery fish may increase harvest opportunity or facilitate broodstock management. Adjust marking schedule to minimize fish health problems.

Experiment to assess mortality associated with catch and release fishing for chinook. Conduct research to assess timing of hatchery and natural chinook adult returns. Develop harvest strategies which minimize impact on naturally produced fish and monitor chinook and steelhead seasons or test fisheries to allow modification or closure when naturally produced fish are in the catch. Work with the Nez Perce Tribe to minimize harvest impacts on naturally produced fish through harvest agreements and monitoring.

Evaluate harvest rates of wild/natural juvenile steelhead in selected Clearwater tributaries to determine if protection is warranted. Implement regulation change if needed.

Objective: Increase fishing access.

Program: Acquire additional sites along the South Fork for anglers access. Work with the Nez Perce National Forest within the forest boundary to provide

garbage and toilet facilities.

Objective: Maintain and improve habitat quality of fish production areas.

Program: Continue working with land management agencies, private landowners, and the Tribes to inform, educate, and assist with land management planning to protect fish habitat and water quality and quantity. Provide fisheries input regarding permitting and monitoring of land use activities affecting fish habitat. Emphasize riparian and stream channel protection, flow, and containment of sediment production areas.

Work with the Nez Perce National Forest to enhance newly acquired McComas Meadows. Encourage implementation of grazing management plans which do not impact fish production and survival. Encourage local communities to seek "adopt a stream" programs. Cooperate with the public and agencies to clean up stream bank access during salmon and steelhead seasons.

Objective: Develop methods to estimate levels of salmon and steelhead production and escapement.

Program: Continue parr density monitoring and chinook redd count activities. If streams conducive to steelhead redd counts are identified, develop standardized program. Continue to refine counting techniques including comparing aerial and ground counts, standardizing multiple redd enumeration and establishing timing for making peak counts.

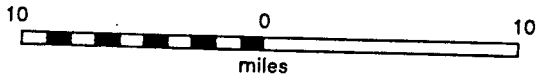
Develop methods to estimate tributary salmon and steelhead adult escapement according to production component. Integrate data to refine current escapement goals in Tables 20 and 21, Section II.

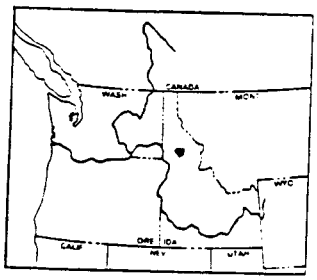
Continue to collect adult steelhead size and run timing information to better define stock characteristics.

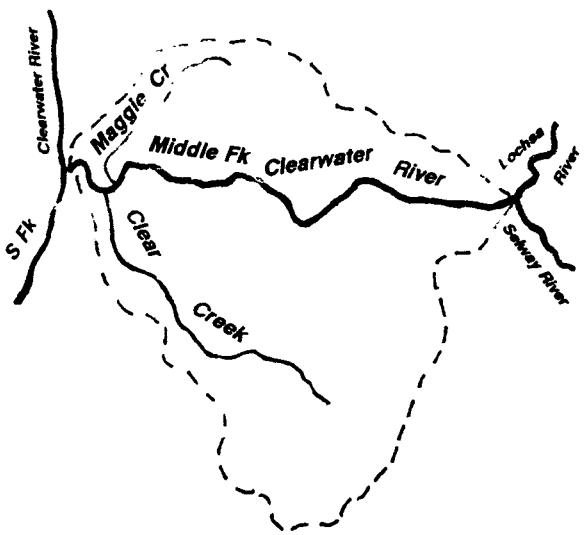
Objective: Develop upper Clearwater "strain" of steelhead for use in Clearwater Anadromous Fish Hatchery.

Program: Continue to monitor naturally produced juvenile steelhead densities above the Powell weir. When densities maintain at least 50 percent of potential parr carrying capacity, trap a portion of the run for use in Clearwater Hatchery for release into selected South Fork tributary such as Crooked River and discontinue use of DNFH broodstock. Use alternative mark to identify returning fish for broodstock.

Middle Fork Clearwater River Drainage







Middle Fork Clearwater River

Overview-The Middle Fork of the Clearwater originates at the confluence of the Lochsa and Selway rivers and joins the South Fork to form the mainstem Clearwater. It is classified as recreational under the Wild and Scenic Rivers Act. Water quality in the drainage improves upstream of the mouth of the South Fork Clearwater.

The Middle Fork is important migratory and rearing habitat for chinook and steelhead. Clear Creek and Maggie Creek are the only significant natural production tributaries. Clear Creek is the largest tributary in the Middle Fork. Much of the Clear Creek drainage has been impacted from logging, road building, and grazing. Water temperatures in the lower reaches become quite warm during the summer. A cooperative effort between local landowners, U.S.Forest Service, Soil Conservation Service, and the State Division of Environmental Quality is presently underway to reestablish riparian vegetation for reducing water temperature and sediment.

Kooskia National Fish Hatchery (KNFH) is located at the mouth of Clear Creek. It was constructed in the late 1960s to enhance spring chinook returns to the Clearwater. The hatchery maintains an electric weir at the mouth of Clear Creek to intercept adult chinook and steelhead. Some adults of both species escape upstream of the weir, but natural production levels are low. Adult fish are transported to Dworshak National Fish Hatchery (DNFH) for spawning.

During the 1980s when DNFH was plagued with an Infectious Hematopoietic Necrosis (IHN) virus, KNFH served as a backup for steelhead early rearing. Steelhead smolts have been released annually into Clear Creek from Dworshak broodstock to provide harvest opportunity. From Fall 1985 through Spring 1990, an annual average of 249 steelhead were harvested in the Middle Fork upstream to the mouth of Clear Creek. Fishing from motorized watercraft is prohibited from the Clearwater River Bridge at Orofino upstream to the mouth of Clear Creek.

Management emphasis will be to continue harvest opportunity for hatchery steelhead and develop strategies for harvesting surplus hatchery chinook adults. Differentiation between hatchery and naturally produced chinook will be a key component of chinook management in this drainage. With continued habitat improvement, there will be more emphasis on increasing natural production in Clear Creek above the hatchery weir.

Chinook and Steelhead Objectives and Programs. 1992-1996:

Objective: Maximize harvest and fishing opportunity on hatchery produced salmon and steelhead contingent upon achieving hatchery escapement needs.

Program: Continue to evaluate adult salmon and steelhead returns and harvest to develop seasons that ensure hatchery escapement needs are met, minimize

surplus fish into the hatchery, and maximize catch and harvest opportunity. Structure non-treaty chinook harvest seasons to ensure anglers an opportunity to harvest hatchery fish surplus to hatchery escapement needs. Continue harvest opportunity for hatchery steelhead up to near the mouth of Clear Creek.

Continue to release hatchery steelhead and spring chinook smolts for harvest augmentation. Adjust smolt releases to achieve at least 30 hours per adult steelhead harvested and 60-80 percent exploitation, when possible. Coordinate smolt releases with the Nez Perce Tribe.

Release adequate numbers of chinook smolts to provide adult returns capable of producing 0.8 million chinook smolts at KNFH. Other production levels may be proposed to enhance smolt-to-adult survival. Smolt release numbers will be based on capacity, smolt-to-adult survival rates, harvest, and broodstock availability and needs.

Develop Memorandum of Agreement with the Nez Perce Tribe regarding treaty and non-treaty fisheries. With the tribe, develop a harvest plan which identifies harvest objectives, defines harvest triggers and quotas, identifies treaty and non-treaty fishing areas, and establishes monitoring programs.

Work with Nez Perce Tribe to develop accurate harvest monitoring techniques. Continue to conduct harvest creel surveys and develop in-season harvest estimates in cooperation with tribal harvest managers to ensure that hatchery escapement goals are met.

Work with tribal biologists to develop accurate run predictors and to achieve improved accounting of coded wire tags in harvested chinook. Evaluate total return and efficiency relative to sport and tribal chinook harvest objectives and hatchery brood requirements.

Continue fish health research to improve hatchery fish survival.

Objective: Minimize harvest impacts to naturally produced salmon and steelhead.

Program: Continue to ad-clip hatchery steelhead prior to release and harvest only marked fish. Mark chinook as necessary to meet production and harvest objectives.

Experiment to assess mortality associated with catch and release fishing for salmon. Conduct research to assess timing of hatchery and natural

adult chinook returns. Develop harvest strategies for surplus hatchery fish which minimize impact on naturally produced fish and monitor chinook and steelhead seasons or test fisheries to allow modification or closure when naturally produced fish are in the catch. Work with the Nez Perce Tribe to minimize harvest impacts on naturally produced fish through harvest agreements and monitoring.

Objective: Increase fishing access.

Program: Provide improved access for boats with installation of launching ramps at key locations.

Objective: Maintain existing natural spawning populations of chinook and steelhead.

Program: Allow natural production to sustain existing natural populations to preserve genetic integrity. Limit outplanting hatchery fish to areas devoid of natural salmon and steelhead production. Monitor to evaluate returns from outplanting.

Maintain adult salmon and wild and naturally-produced steelhead harvest closures in the tributaries to maximize natural production of steelhead and salmon. Close steelhead fishing seasons when ad-clipped steelhead are no longer represented in the catch.

Implement chinook supplementation evaluation. Mark differently than general production fish and release on-site at KNFH. Annual release numbers to be based on 50:50 balance of hatchery and natural fish spawning or rearing in the natural environment. Release returning adult supplementation and natural chinook above the weir for natural production in Clear Creek if habitat can support natural production.

Modify KNFH weir management to utilize natural production areas. Develop guidelines to release chinook and steelhead adults above hatchery weirs for natural production. Refine long-term escapement goals for fish to be released upstream of the weir on Clear Creek for natural production. Proposed goals are identified in Tables 22 and 23, Section II.

Objective: Maintain and improve habitat quality of fish production areas.

Program: Continue working with land management agencies, private landowners, and the Tribes to inform, educate, and assist with land management planning to protect fish habitat and water quality and quantity. Provide fisheries input regarding permitting and monitoring of land use activities affecting fish habitat. Emphasize riparian habitat and stream channel protection, flow, and containment of sediment production areas.

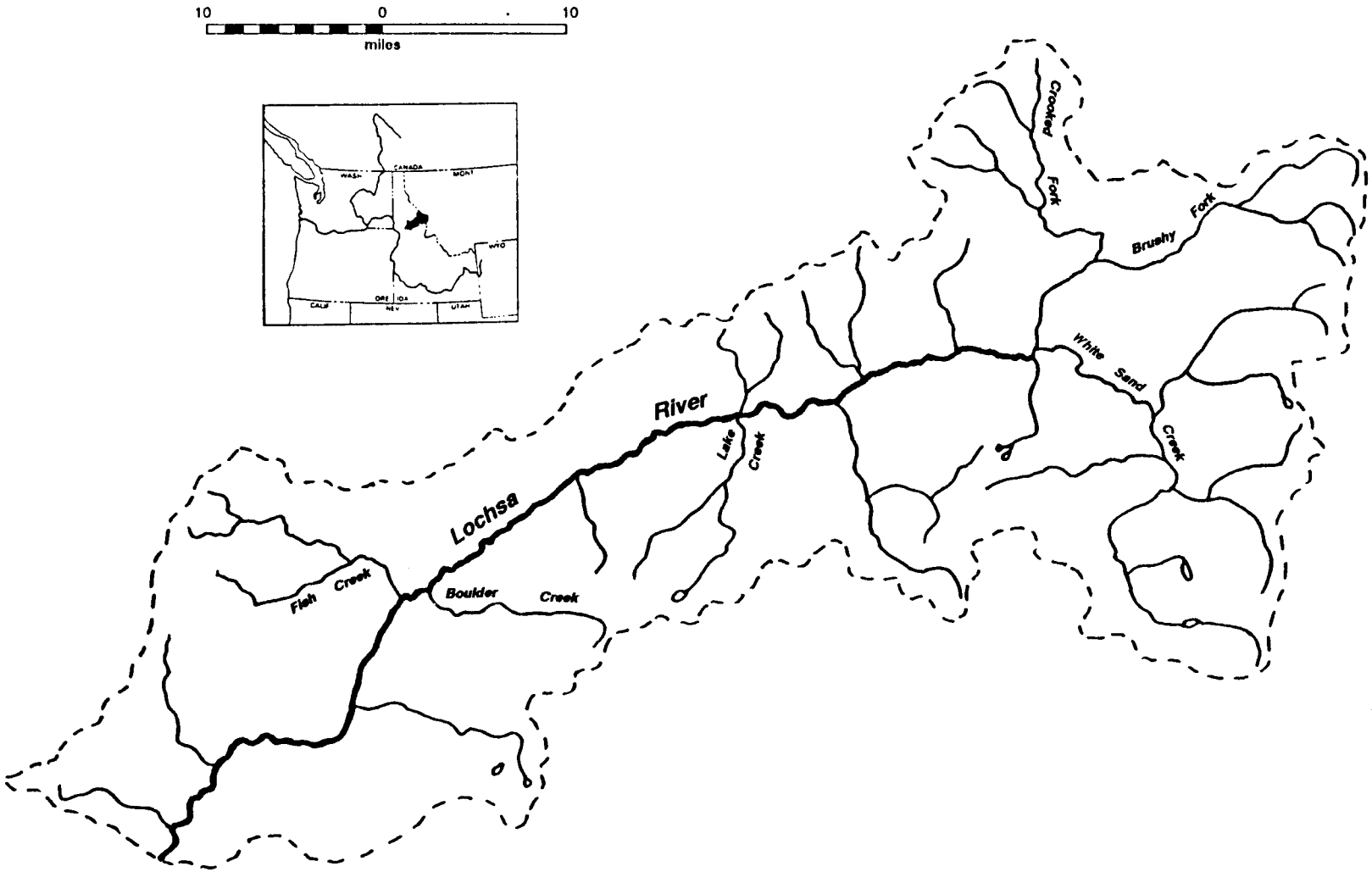
Encourage local communities to seek "adopt a stream" programs. Cooperate with the public and agencies to clean up stream bank access during salmon and steelhead seasons.

Objective: Develop methods to estimate levels of salmon and steelhead production and escapement.

Program: Encourage the Nez Perce Tribe to monitor chinook and steelhead natural production in Clear Creek. Develop methods to estimate tributary salmon and steelhead adult escapement according to production component. Integrate data to refine current escapement goals in Tables 20 and 21, Section II, in cooperation with the Nez Perce Tribe.

Continue to collect adult steelhead size and run timing information to better define stock characteristics.

Lochsa River Drainage



Lochsa River

Overview-The Lochsa River drainage contains excellent salmon and steelhead habitat. Most of the streams that drain from the south originate in the Selway-Bitteroot Wilderness and are in pristine condition. Many of the north side tributaries have suffered habitat degradation from road construction and logging. Large tracts of roadless ground are found in the Fish, Post Office, Pete King, and White Sand Creek drainages.

Fish Creek is considered one of the best steelhead production streams in the entire Clearwater drainage and maintains production levels of natural B-run steelhead near carrying capacity, despite low seeding in many other streams of the Lochsa drainage. Average steelhead parr densities for the Lochsa drainage, 1985-89, were 34 percent of estimated carrying capacity.

Most of the natural chinook production presently occurs in the Crooked Fork drainage. The Clearwater National Forest has improved passage in this drainage by barrier modification. However, natural spring chinook parr densities are very low, and the habitat is extremely underseeded. Average spring chinook parr densities were 8 percent of estimated carrying capacity for 1985-89.

Chinook supplementation began in the early 1970s in the Lochsa drainage. Fry, primarily from Rapid River broodstock, have been released into the major tributaries, while White Sand Creek has received most of the released smolts. However, there has been little evaluation to document any sustained natural production as a result of supplementation activities. This will be one of the questions addressed by chinook supplementation research, which is scheduled to take place in several Lochsa tributaries.

In 1989, a collection facility for adult chinook and a rearing pond for fall presmolts were constructed at Powell. This is a satellite facility for the Lower Snake River Compensation Program's Clearwater Anadromous Fish Hatchery (CAFH). To date, almost all adult chinook trapped at the weir have been passed upstream for natural production. Fingerlings stocked into the pond for final rearing have come from Dworshak National Fish Hatchery (DNFH) broodstock.

The naturally produced run of chinook returning to Powell appears to have later run timing than other Clearwater River spring chinook stocks. Because of low numbers of natural chinook, and survival and genetic concerns, there will be an emphasis to differentiate naturally produced chinook from pond reared chinook. This will be done so that naturally produced chinook can be released into the production area above the weir to rebuild this population, rather than used for harvest and hatchery broodstock.
Between 1973 and 1982 approximately 6.7 million steelhead fry from Dworshak National Fish Hatchery were released into the major Lochsa tributaries. The only smolts stocked

into the drainage were released in 1973 in the mainstem Lochsa but between 1974 and 1981 nearly 1400 adult steelhead were released in the mainstem Lochsa River, Post Office and Squaw creeks.

Steelhead supplementation in the Lochsa ceased in 1983. Concern arose about releasing DNFH steelhead which were carrying high titers of Infectious Hematopoietic Necrosis (IHN) virus. Also, concerns about genetic introgression of hatchery broodstock was a factor in establishing a policy not to further supplement the Lochsa with DNFH steelhead. This policy will continue through this planning period while an effort is made to develop an indigenous broodstock by trapping adult steelhead returning to Fish Creek for use in steelhead supplementation research and evaluation.

There is potential for harvest of hatchery chinook, either as contribution to a lower Clearwater mainstem harvest or as a terminal harvest. Smolt-to-adult survival improvement will be necessary to provide a harvestable surplus of hatchery fish. Techniques to minimize impact to natural production and to differentiate hatchery and natural stocks must also be implemented. Because of the importance of the Lochsa's natural chinook and steelhead stocks, and the potential for natural production, there is no expectation of harvest of naturally produced steelhead or chinook during the next five years. Efforts directed at rebuilding these populations, primarily through survival improvement, will be emphasized.

Chinook and Steelhead Objectives and Programs. 1992-1996:

Objective: Maintain existing natural spawning populations of chinook and steelhead.

Program: Allow natural production to sustain existing natural populations to preserve genetic integrity. Limit outplanting hatchery chinook to support supplementation research and areas devoid of natural salmon and steelhead production. Monitor to evaluate sustained returns from outplanting. Do not outplant any DNFH steelhead in the Lochsa during this planning period and designate Clear Creek as the uppermost Middle Fork tributary for outplanting DNFH steelhead.

Implement chinook supplementation evaluation activities proposed for Squaw, Crooked Fork, White Sands, Big Flat, Papoose, and Pete King creeks, including Brushy Fork Creek as a control. Rear approximately 50,000 spring chinook presmolts at Powell pond using upper Lochsa broodstock. Develop marks to differentiate natural, supplementation, harvest augmentation fish in treatment streams.

Maintain adult salmon and wild and naturally-produced steelhead harvest closures in Lochsa tributaries to maximize natural production of steelhead and salmon until surplus is available.

Work with the Nez Perce Tribe to develop fish release programs that preserve genetic resources of naturally spawning chinook and steelhead. Refine long-term escapement goals for adult fish to be released upstream of the Powell weir for natural production. Proposed goal for spring chinook is identified in Table 23, Section II.

During this planning period, release at least 2/3 of the spring chinook returning to the Powell weir above the weir for natural production and retain the remainder for supplementation broodstock.

Over the long-term, as marked chinook return, release known naturally produced spring chinook above the weir up to proposed escapement goal identified in Table 23 and incorporate supplementation broodstock needs into weir management. As spring chinook escapement for natural production above the weir is met, begin incorporating naturally produced chinook into hatchery production.

Incorporate rearing practices at satellite ponds that provide fish that are capable of surviving to the ocean and will not compete significantly with naturally produced fish. Maintain the genetic integrity of natural populations and minimize domestication caused by hatchery rearing practices.

Do not supplement Fish Creek drainage with either chinook or steelhead to evaluate natural production and potential for rebuilding.

Objective: Minimize harvest impacts to naturally produced salmon and steelhead.

Program: Experiment to assess mortality associated with catch and release fishing for chinook. Conduct research to assess timing of hatchery and natural chinook adult returns. Develop harvest strategies which minimize impact on naturally produced fish and monitor chinook and steelhead seasons or test fisheries to allow modification or closure when naturally produced fish are in the catch. Work with the Nez Perce Tribe to minimize harvest impacts on naturally produced fish through harvest agreements and monitoring.

Continue catch and release regulations in the mainstem Lochsa and Crooked Fork and White Sands creeks to protect natural steelhead juveniles as well as cutthroat. Evaluate harvest rates of wild/natural juvenile steelhead in selected tributaries to determine if additional

protection is warranted. Implement regulation changes if needed.

Objective: Maximize harvest and fishing opportunity on hatchery produced salmon and steelhead adults contingent upon achieving hatchery escapement needs.

Program: Evaluate adult hatchery chinook returns to develop seasons that ensure hatchery escapement needs are met, minimize surplus fish returning to the weir, and maximize catch and harvest opportunity. Structure non-treaty chinook harvest seasons to ensure anglers an opportunity to harvest hatchery fish surplus to hatchery escapement needs.

Continue to release hatchery spring chinook smolts for harvest augmentation. Mark hatchery chinook prior to release when having marked hatchery fish may increase harvest opportunity or facilitate broodstock management.

Implement marked spring chinook smolt releases from CAFH for harvest augmentation. Utilize satellite ponds for chinook smolt acclimation. Smolt release numbers will be based on capacity, smolt-to-adult survival rates, harvest, and broodstock needs and availability. Coordinate smolt releases with the Nez Perce Tribe.

Refine methodology to discriminate between natural and hatchery salmon stocks to allow differentiation for harvest and production management.

Investigate feasibility of rearing harvest augmentation presmolts in addition to supplementation fish at Powell pond when smolt production capacity at CAFH is reached. Pond presmolt production for harvest augmentation would be a second priority to production of supplementation evaluation fish.

Develop Memorandum of Agreement with the Nez Perce Tribe regarding treaty and non-treaty fisheries. With the tribe, develop **a** harvest plan which identifies harvest objectives, defines harvest triggers and quotas, identifies treaty and non-treaty fishing areas, and establishes monitoring programs.

Work with Nez Perce Tribe to develop chinook harvest monitoring techniques. If chinook seasons become feasible, develop in-season harvest estimates in cooperation with tribal harvest managers to ensure that hatchery and natural escapement goals are met when chinook seasons are held. Work with tribal biologists to develop accurate run predictors.

Objective: Maintain and improve habitat quality of fish production areas.

Program: Continue working with land management agencies, private landowners, and the Tribes to inform, educate, and assist with land management planning to protect fish habitat and water quality and quantity. Provide fisheries input regarding permitting and monitoring of land use activities affecting fish habitat. Emphasize riparian habitat and stream channel protection, flow, and containment of sediment production areas.

Support roadless status for the remaining Fish Creek-Hungry Creek watershed. Urge the Idaho Department of Transportation to correct fish passage barriers at culverts under U.S. Highway 12. Work with the Clearwater National Forest and Plum Creek Timber Company to minimize development impacts and control erosion at existing roads and logging areas.

Objective: Develop methods to estimate levels of salmon and steelhead production and escapement.

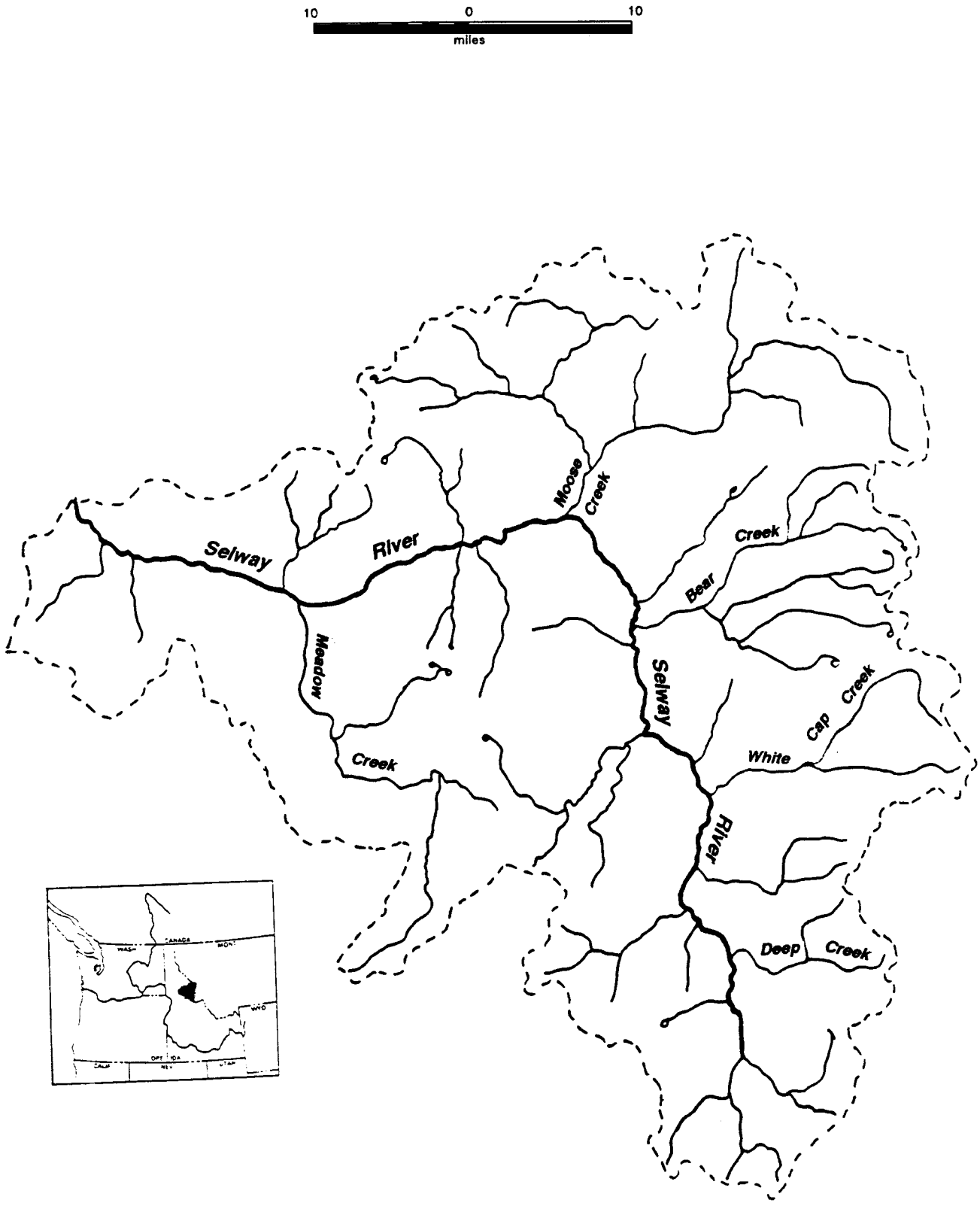
Program: Continue parr density monitoring and redd count activities. If streams conducive to steelhead redd counts are identified, develop standardized steelhead redd count program. Develop methods to estimate tributary salmon and steelhead adult escapement according to production component. Integrate data to refine current escapement goals in Tables 20 and 21, Section II.

Continue to collect adult steelhead size and run timing information to better define stock characteristics.

Objective: Develop upper Clearwater "strain" of steelhead for use in Clearwater Hatchery.

Program: Continue to evaluate feasibility of collecting steelhead at the Powell weir. Continue to monitor naturally produced juvenile steelhead densities above the Powell weir. When densities maintain at least 50 percent of potential parr carrying capacity, trap a portion of the run for use in Clearwater Hatchery for release into selected South Fork tributary such as Crooked River and discontinue use of Dworshak NFH broodstock. Use alternative mark with ad-clip to identify returning fish for broodstock.

Selway River Drainage



Selway River

Overview-The Selway River flows 99 miles from its headwaters to join with the Lochsa River to form the Middle Fork of the Clearwater. The Selway River is potentially one of the best natural production streams in the Columbia River Basin. Spawning and rearing habitat quality is generally excellent. About 24 percent of the drainage is classified as wilderness. The Wild and Scenic Rivers Act provides protection for habitat on the main Selway River and the Selway-Bitterroot Wilderness area provides protection for the major portion of the tributaries. However, Meadow Creek is a major tributary that is not protected by the wilderness area designation.

Chinook runs in the Clearwater drainage were impacted because of poor fish passage, primarily at the Lewiston Dam. However, Selway Falls, located 20 miles upstream from the mouth of the Selway River, was also a partial migration block to steelhead and chinook salmon until the Selway Falls fishway was completed in 1966. Much of the reintroduction of chinook to the Clearwater drainage, beginning in the 1960s, took place in the Selway drainage.

Between 1961 and 1979, over 45 million eggs from primarily spring, but also summer and fall chinook were placed in the Selway drainage. Originally, eggs from wild Salmon River stocks, including Middle Fork, South Fork, Lemhi, and upper Salmon, were merely placed in trenches in the upper Selway River, while eggs from adults from lower Columbia River stocks were placed in Bear Creek. Then, in the mid-1960s, three incubation channels were developed at Indian Creek, Running Creek, and Ditch Creek. The majority of eggs placed in Running and Ditch creeks from 1964-1979 came from adult spring chinook trapped at Bonneville Dam, while the majority placed in Indian Creek came from the Salmon River. Fall chinook, collected in the Columbia River, were planted in the lower Selway.

During the Clearwater Reintroduction Program, various life stages of chinook were outplanted into the Selway drainage. This practice ceased after 1979 until 1985 when about 1.5 million eggs from Rapid River stock were outplanted at Indian Creek. From 1985 until the present, the chinook population has been managed as a natural production area, without any further hatchery infusion. Although there appeared to be some initial success in reestablishing chinook production in the Selway with egg outplants, restoration efforts have been overwhelmed by poor migration survival. Currently, the spring chinook population is very underseeded, with parr densities averaging only 2 percent of estimated carrying capacity for the 1985-89 period. In C-channel habitat, which is more conducive to chinook production, the average has been slightly higher at 11 percent.

Spring steelhead fishing was popular from the late 1940s into the 1960s. During the spring, 1958, it was estimated that 2,000 steelhead were caught in the lower Selway River. Steelhead populations have not been supplemented in the Selway drainage and it is one of three drainages in Idaho that support wild B-run steelhead. As with spring

chinook, steelhead are also underseeded with parr densities averaging 13 percent of estimated carrying capacity for 1985-1989. Preservation of this wild, native gene pool is a priority and the Selway will continue to be managed for natural production of wild steelhead and for rebuilding this important population.

A major management concern of the Department is ensuring that Selway's high quality habitat is adequately seeded on a self-sustaining basis. This drainage has significant production potential and will be managed for rebuilding wild and naturally producing populations as the first priority. Any supplementation with hatchery fish must be done consistent with this objective. Because escapements of spring chinook and steelhead are very low, harvest opportunities are not anticipated until mainstem survival problems are solved.

Chinook and Steelhead Objectives and Programs. 1992-1996:

Objective: Maintain genetic integrity and diversity of wild, native steelhead.

Program: Allow natural production to sustain existing wild steelhead populations. Develop Selway River management plan with U.S. Forest Service and Nez Perce Tribe to support wild steelhead production goals.

Manage hatchery supplemented Clearwater River steelhead stocks so that straying into the Selway is minimized.

Pursue continuation of stock identification and monitoring.

Continue to work with other state and federal agencies to improve juvenile downstream and adult upstream passage to and from the Selway.

Objective: Maintain existing natural spawning populations of chinook.

Program: Identify self-sustaining tributary populations.

Maintain non-treaty adult salmon and steelhead harvest closures in the Selway to maximize natural production of steelhead and salmon.

Objective: Experiment with reestablishing self-sustaining populations of spring/summer chinook in the Selway drainage.

Program: Evaluate sustainability of existing natural production under current and improved survival rates. Identify vacant production habitat and populations not responding to survival improvements.

Develop experimental Selway River spring/summer chinook supplementation actions in cooperation with the Nez Perce Tribe and Idaho chinook supplementation technical committee. Focus on selected tributaries of the upper Selway above White Cap Creek to minimize genetic introgression into existing populations. Evaluate broodstock needs and identify potential broodstock sources and availability. Develop methods to monitor and evaluate production.

Develop Memorandum of Agreement with the Nez Perce Tribe regarding treaty and non-treaty fisheries. With the tribe, develop a harvest plan which identifies harvest objectives, defines harvest triggers and quotas, identifies treaty and non-treaty fishing areas, and establishes monitoring programs.

Objective: Minimize harvest impacts to naturally produced salmon and steelhead.

Program: Refine techniques, including potentially marking all hatchery chinook, to discriminate between natural and hatchery fish for harvest and production management.

Conduct research to assess timing of adult returns. Cooperatively with the Nez Perce Tribe, begin developing harvest management plans which minimize impact on naturally produced fish.

Regulate Idaho mainstem steelhead and salmon sport harvest to promote Selway River escapement. Encourage Nez Perce Tribe to implement ceremonial and subsistence harvest alternatives until naturally produced salmon and steelhead can sustain a harvestable surplus.

Continue general season catch and release regulations and closures regarding resident species for Selway River tributaries to protect juvenile steelhead. Evaluate if further protection is warranted for juvenile steelhead and implement regulation changes to accomplish this if needed.

Objective: Maintain and improve habitat quality of fish production areas.

Program: Continue working with land management agencies and the Tribes to inform, educate, and assist with land management planning to protect fish habitat and water quality and quantity. Provide fisheries input regarding permitting and monitoring of land use activities affecting fish habitat. Emphasize riparian and stream channel protection, flow, and containment of sediment production areas.

Work with the USFS and Nez Perce Tribe to identify passage problems and recommend corrective action.

Objective: Develop methods to estimate levels of salmon and steelhead production and escapement.

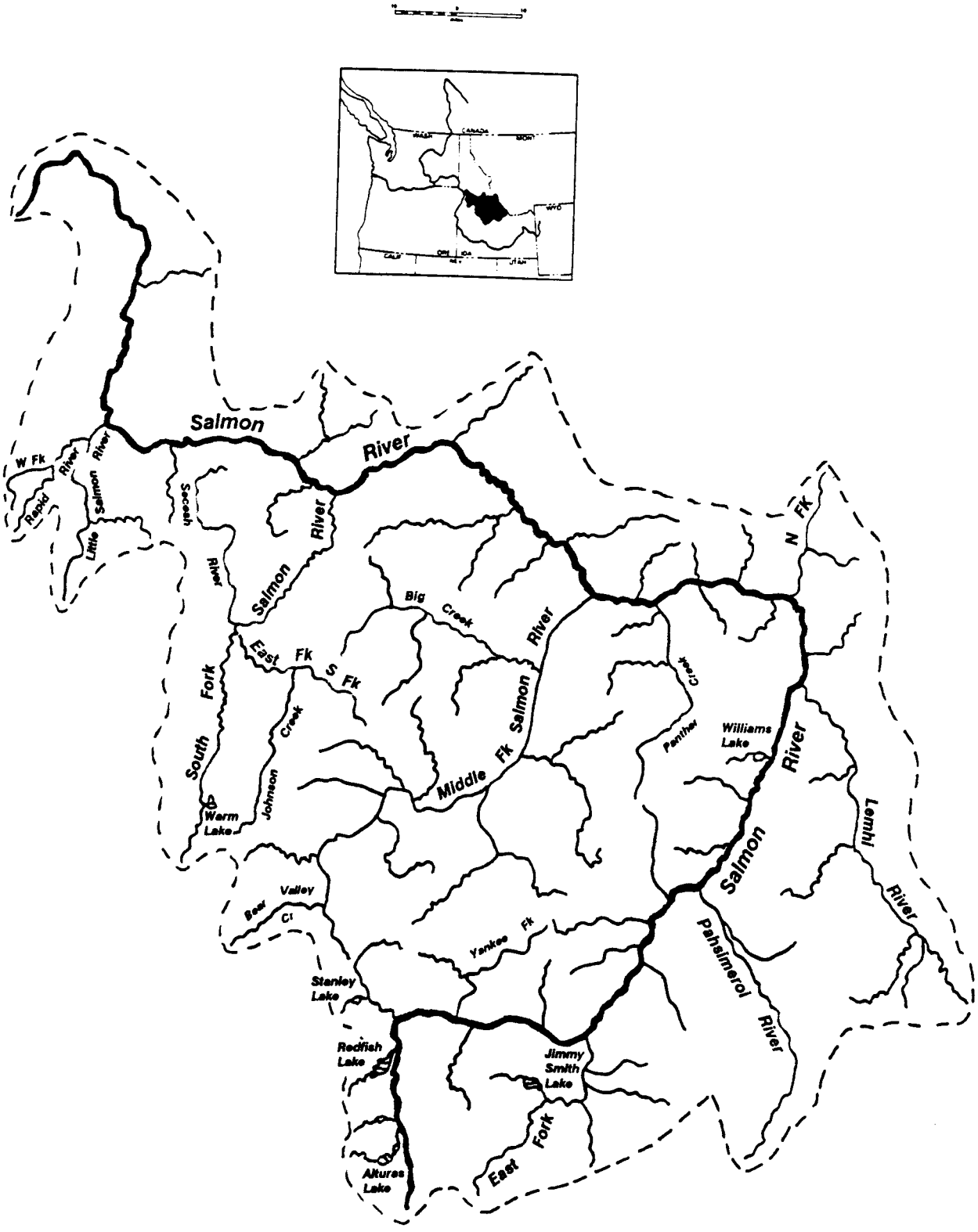
Program: Continue parr density monitoring and redd count activities. If streams conducive to steelhead redd counting are identified, develop standardized program. Encourage the Nez Perce Tribe to continue natural production monitoring in the Selway drainage.

Develop methods to estimate tributary salmon and steelhead adult escapement according to production component. Integrate data to refine current escapement goals in Tables 20 and 21, Section II.

Continue to collect adult steelhead size and run timing information to better define stock characteristics.

Evaluate development of a counting device in the Selway Falls fishway to enumerate salmon and steelhead adults.

Salmon River Drainage



Salmon River Drainage

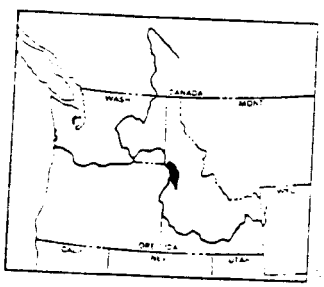
The Salmon River drainage includes 14,100 square miles and flows 410 miles from its headwaters in Blaine County in south central Idaho to its confluence with the Snake River in Idaho County in northern Idaho. There are no significant impoundments within the Salmon River drainage. The integrity of the drainage, including its diversity and recreation opportunity, is dependent on a free-flowing river. Legislation passed by Congress in 1989 prohibits the Federal Energy Regulatory Commission from issuing any licenses to develop new mainstem hydroelectric facilities in unprotected portions of the Salmon; this includes federally authorized projects.

Salmon River Drainage

Mouth to French Creek

10 0 10

miles



Eagle Creek

Snake River

White Bird Creek

Salmon River

Slate Creek

Little Salmon

Partridge Creek

French Creek

Lower Salmon River, Mouth to French Creek

Overview-This reach of the Salmon River flows for about 107 miles, much of it through a deep, rocky canyon. The river is characterized by a series of deep pools separated by rocky rapids.

The 53 mile section of the Salmon River from the mouth to Hammer Creek is under consideration for classification in the Wild and Scenic Rivers System. The Central Idaho Wilderness Act of 1980 prohibits mining activity from the mouth of the Salmon River to Hammer Creek. The Bureau of Land Management (BLM) has withdrawn from potential mineral development all public lands and minerals within 1/4 of the Salmon River from the mouth to French Creek. Access is limited to boat and foot traffic. This part of the river provides scenic, remote steelhead fishing opportunities, primarily in the fall and winter.

The Salmon River from its mouth upstream is accessible via Eagle Creek and Rocky Canyon Creek at river miles 13.4 and 39.1, respectively. From Hammer Creek to Whitebird Creek is accessible by a secondary road. Highway 95 parallels 30 miles of the river from Whitebird upstream to Riggins. From Riggins upstream to French Creek, the river is bounded by a secondary road.

This river section serves as a migration corridor and overwintering area. Hatchery and naturally produced adult salmon migrate through this river section from May through September. Hatchery and naturally produced adult steelhead migrate through the area from July through April. Juvenile salmon and steelhead are thought to overwinter in this area from October through March and migrate March through June.

Salmon and steelhead natural production takes place primarily in tributary streams. These streams are mostly high gradient with very unstable soils and many slide and fault areas. Logging and road building on these unstable lands has caused severe siltation and instability, notably in Slate and Partridge creeks. Known naturally reproducing populations of chinook salmon exist in Slate and Whitebird Creeks. (The Little Salmon River is discussed separately.) Occasionally, juvenile chinook are found in other tributaries. Steelhead are known to spawn and rear in at least sixteen tributaries in this reach.

Through the 1980s, both A-run and B-run hatchery steelhead have been stocked into this river section at the mouths of tributaries to stage returning adults for harvest. Most of the hatchery smolts have been released in the mainstem Salmon River near the mouths of Slate and Hammer creeks. The average annual steelhead harvest, from Fall 1985 through Spring 1990, from the mouth of the Salmon River to the Little Salmon River was 2,572 hatchery steelhead, or 17 percent of the Salmon River steelhead harvest. During the early 1970s, prior to current hatchery programs, this section of the river supported about 38 percent of the Salmon river steelhead harvest.

To assist with rebuilding, hatchery steelhead parr and fry have been released in several tributaries, particularly those with road access, including Slate, French, and Partridge creeks. Monitoring of parr densities of supplemented, A-run natural production steelhead populations indicate that some of the tributaries averaged 38 percent of estimated potential parr production for 1985-89. However, parr densities for B-type stream channels, which are more conducive to steelhead production, averaged 53 percent. For wild, A-run steelhead populations, which includes similar tributaries in the Snake and lower Clearwater rivers, parr densities averaged 98 percent of potential in monitored stream sections for 1985-89.

No chinook have been stocked into the lower Salmon section, other than the Little Salmon drainage, discussed in a separate section. Production results from wild chinook and perhaps strays from the Rapid River program. Habitat is underseeded and parr densities average less than 5 percent of potential production. Because of low runs in 1989 and 1990, no increase in production is expected in the near term.

The Nez Perce Tribe, under the auspices of the Northwest Power Planning Council's Fish and Wildlife Program, is developing plans for spring chinook rearing ponds and an adult trapping site in the Slate Creek drainage on USFS lands. Potential production would be 500,000 presmolts; natural production above the ponds would also be maintained. Hatchery construction is expected to begin within this planning period but harvest and natural production benefits are not expected in the next five years. Allocation of spring chinook adults for broodstock development and natural production, and development of harvest management plans will be major issues.

Natural production enhancement benefits resulting from outplanting hatchery salmon and steelhead into natural production areas have not been fully evaluated. Sustained levels of elevated natural production in natural production areas has not been documented and negative genetic and intraspecific interactions between outplanted and naturally produced fish may result. Management action in this river section during this 5-year period will emphasize maintaining existing naturally spawning stocks of salmon and steelhead without additional deterioration of existing genetic resources. Preserving good habitat quality and taking advantage of harvest opportunity on hatchery reared fish when that opportunity is available are also priorities. The mainstem Salmon will continue to be managed to maximize hatchery steelhead harvest. Plans and agreements will be developed for natural and hatchery production and harvest to complete the proposed Nez Perce Tribe rearing facility in Slate Creek. Management will be reevaluated once harvest and production plans for Slate Creek are developed and integrated with other programs. Harvest opportunities on naturally produced steelhead or salmon are unlikely until mainstem survival problems are solved.

Chinook and Steelhead Objectives and Programs. 1992-1996:

Objective: Maintain existing natural spawning populations of salmon and steelhead.

Program: Allow natural production to sustain existing natural populations to preserve genetic integrity. Limit outplanting hatchery fish to support supplementation evaluation and to areas devoid of natural salmon and steelhead production. Monitor program to evaluate returns from outplanting.

Determine if Partridge and French creeks support natural populations of steelhead. Supplement with steelhead fry from the nearest locally adapted population capable of providing broodstock if natural production is absent. Attempt to establish steelhead production if absent in suitable habitat.

Objective: Minimize harvest impacts to naturally produced salmon and steelhead.

Program: Continue to ad-clip hatchery steelhead prior to release and harvest only ad-clipped fish.

Maintain adult salmon and wild and naturally-produced steelhead harvest closures in the mainstem and tributaries to maximize natural production of steelhead and salmon. Close steelhead fishing seasons when ad-clipped steelhead are no longer represented in the catch.

Work with the Nez Perce Tribe to minimize harvest impacts on naturally produced fish through harvest agreement, monitoring, and development of natural production escapement and density goals.

Objective: Maximize harvest and fishing opportunity on hatchery produced steelhead contingent upon achieving hatchery escapement needs.

Program: Continue to evaluate adult return and steelhead harvest by river section to develop steelhead seasons that ensure hatchery escapement needs are met, minimize surplus fish into the hatchery, and maximize catch and harvest opportunity. Utilize hatchery smolt releases in the lower Salmon to provide fish to the available fishing area.

Develop A and B-run stocking recommendations for the lower Salmon by the end of this planning period which will meet anglers needs. Adjust smolt releases to achieve 30 hours per steelhead or better, when possible.

Objective: Maintain and improve habitat quality of tributary production areas.

Program: Continue working with land management agencies, private landowners and the Nez Perce Tribe to inform, educate, and assist with land

management planning to protect fish habitat and water quality and quantity. Provide fisheries input regarding permitting and monitoring of land use activities affecting fish habitat. Emphasize riparian and stream channel protection, flow, and containment of sediment production areas.

Support inclusion of the lower 53 mile reach of the Salmon River from the mouth to Hammer Creek into the Wild and Scenic Rivers System to ensure riparian and water quality protection. Support a mineral withdrawal along the Salmon River corridor between Hammer and French creeks to ensure riparian and water quality protection. Support completion of U. S. Forest Service barrier removal projects in Whitebird and Slate creeks. Encourage implementation of grazing management plans which eliminate negative grazing impacts to fish population productivity and survival.

Objective: Develop a cooperative management plan for the lower Salmon with the Nez Perce Tribe to integrate tribal and nontribal harvest objectives with future Nez Perce Tribe Slate Creek hatchery and natural production goals.

Program: Develop Memorandum of Agreement with the Nez Perce Tribe regarding treaty and non-treaty fisheries. With the tribe, develop a harvest plan which identifies harvest objectives, defines harvest triggers and quotas, identifies treaty and non-treaty fishing areas, and establishes monitoring programs.

Develop a sport harvest plan that would allow harvest of surplus hatchery spring chinook. Implement timing and identification research to provide data to structure harvest seasons to minimize impacts to natural chinook populations.

Support Nez Perce Tribal efforts to develop rearing ponds for spring chinook presmolts in Slate Creek. Provide technical assistance to Nez Perce Tribe to complete production and harvest plans for Slate Creek. Integrate sport harvest plan with Nez Perce hatchery and natural production goals.

Objective: Increase fishing access.

Program: Develop small outboard and float boat launch facilities where possible.

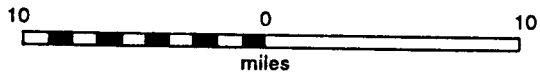
Objective: Develop methods to estimate levels of salmon and steelhead production and escapement.

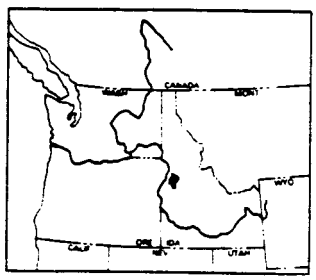
Program: Continue parr density monitoring and redd count activities. Develop methods to estimate tributary salmon and steelhead adult escapement according to production component. Integrate data to refine current escapement goals in Tables 20 and 21, Section II.

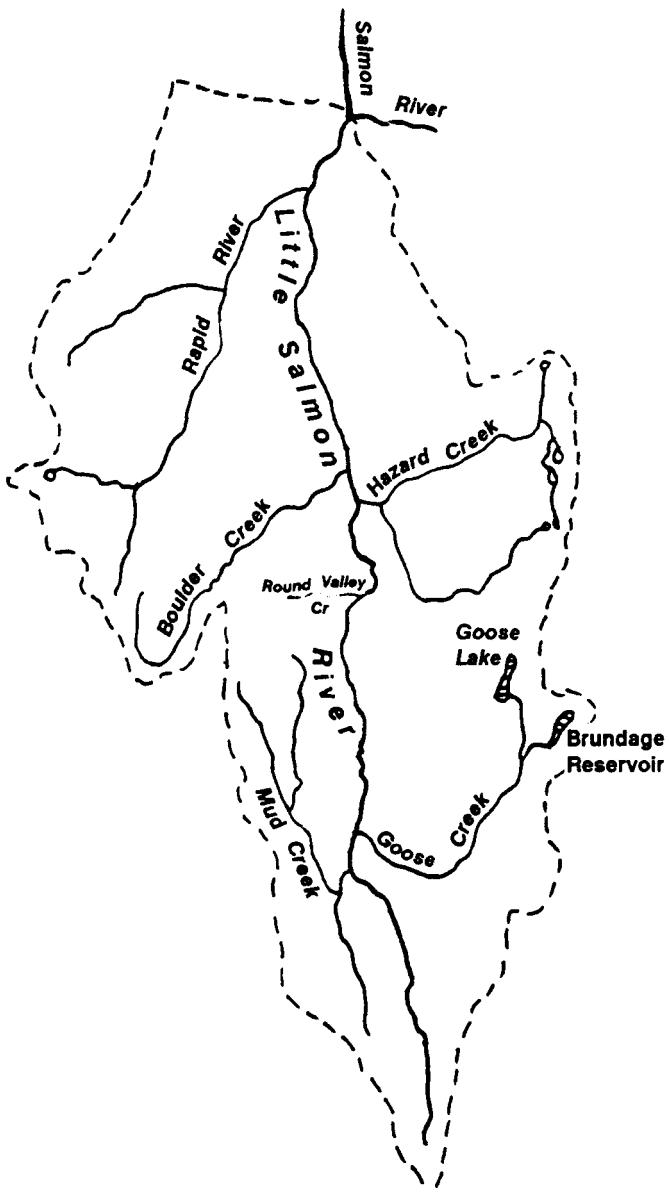
Continue to collect adult steelhead size and run timing information to better define stock characteristics.

Encourage the Nez Perce Tribe to collect Slate Creek spring chinook scales from carcasses to establish scale patterns for wild and hatchery chinook differentiation for future production management. Encourage the Nez Perce Tribe to establish spring chinook redd counts in Slate Creek to develop adult escapement trend.

Little Salmon River Drainage







Little Salmon River Drainage

Overview-The Little Salmon River enters the Salmon River 82 miles upstream from the Salmon-Snake River confluence. Approximately 50 stream miles of natural habitat are available for spawning and rearing. The upper end of Rapid River, the major tributary, is classified as wilderness. Passage barriers on the mainstem Little Salmon River at river mile 21, and on Hard Creek at river mile 0.5, limit access to some 81 additional miles of potentially suitable habitat which varies in quality. Irrigation and livestock use has impacted riparian areas and water quality in this drainage. The entire mainstem Little Salmon River is bounded by road.

Management of this drainage emphasizes hatchery production to provide fish for sport and treaty harvest as the first priority. Idaho Power Company's Rapid River Hatchery has the capacity to produce 3 million spring chinook salmon smolts annually, for release into Rapid River, the Little Salmon River, and the Snake River at Hells Canyon dam. Excess eggs have also been supplied for programs outside the Salmon drainage such as the Grande Ronde and Clearwater rivers. Sport fishing on Rapid River Hatchery chinook, primarily in the Little Salmon, has provided the only Idaho chinook sport fishing opportunities in the 1980s. Harvest by non-treaty anglers averaged 906 chinook from 1985 through 1990. The Rapid River fishery has also been very important to the Nez Perce Tribe who harvested an average of 1,892 fish from 1985 through 1990.

Hatchery steelhead smolts are produced at rearing facilities located outside the drainage. Little Salmon River steelhead smolt plants are designed to provide harvest opportunity in the Salmon River in the Riggins area. The Little Salmon River fishery is an important and popular opportunity to harvest these fish after they migrate out of the Salmon River. The Little Salmon River has been the only Salmon River tributary open for steelhead harvest. The average number of hatchery fish harvested in the Little Salmon River since this program was implemented in 1985 is 671.

Hatchery steelhead fry plants have been made in the mainstem Little Salmon, Hazard Creek and Boulder Creek to bolster natural production. Adults have returned from these plants, but their contribution to long-term natural production is unknown. Hatchery chinook fry plants have been made in Boulder Creek and in the mainstem Little Salmon.

There are wild steelhead and summer chinook salmon runs which ascend Rapid River above the hatchery. The wild steelhead run size averaged 87 fish, 1985-1990. These fish demonstrate different adult migration timing than the hatchery steelhead being released in the Little Salmon River. The wild steelhead generally arrive at Rapid River April through May. Parr densities of wild A-run steelhead streams, including Rapid River averaged 98 percent of estimated carrying capacity during 1985-89. Summer chinook have been separated from the hatchery-produced spring chinook based upon timing and fish condition when they arrive at the weir. No hatchery juvenile salmon or steelhead have been outplanted above the weir.

In the Little Salmon drainage, naturally produced steelhead populations influenced by hatchery outplants have exhibited moderately good seeding densities. Streams influenced by A-run and/or B-run steelhead outplants, including the Little Salmon and Hazard Creek, had average parr densities of 38 percent of estimated carrying capacity for 1985-89. However, B-type channel transects had average densities of 53 percent. Streams which had received A-run steelhead outplants, including Boulder Creek, had average parr densities of 67 percent of estimated carrying capacity for this same period. Chinook densities in the Little Salmon drainage were not nearly as high as steelhead. For 1985-89, chinook parr densities averaged only 11 percent of estimated carrying capacity; this includes spring and summer chinook production areas.

The passage barrier in the Little Salmon River at river mile 21 has been identified for removal. However, because of current emphasis on improving mainstem Snake and Columbia migrant survival rates, and the need to improve water and riparian quality, barrier removal will not be pursued until natural production area and juvenile densities begin limiting fish production.

The primary objectives of anadromous fish management during the next 5-year period in the Little Salmon River are to maximize angler salmon and steelhead harvest opportunity, provide adequate spring chinook escapement to Rapid River Hatchery, retain upper Rapid River above the hatchery weir as a wild production area, and preserve the genetic resources contained in the wild summer chinook and steelhead runs in Rapid River.

Chinook and Steelhead Objectives and Programs. 1992-1996:

Objective: Maximize harvest and fishing opportunity on hatchery produced salmon and steelhead contingent upon achieving hatchery escapement needs.

Program: Continue to evaluate adult salmon and steelhead returns and harvest to develop seasons that ensure hatchery escapement needs are met, minimize surplus fish into the hatchery, and maximize catch and harvest opportunity. Structure non-treaty chinook harvest seasons to ensure anglers an opportunity to harvest hatchery fish surplus to hatchery escapement needs.

Continue to release hatchery steelhead and spring chinook smolts for harvest augmentation. Continue to release spring chinook at the hatchery rack and the Little Salmon River to spread out harvest opportunity.

Continue releasing A- and B-run steelhead into the Little Salmon River through 1992. Provide coded wire tag (CWT) groups for both A- and B-run steelhead for 1991 and 1992 releases. Evaluate CWT adult returns in angler harvest through 1995 to determine benefits to harvest provided by A- and B-run steelhead in the lower Salmon and Little Salmon Rivers. Make management recommendations regarding steelhead stocking programs by the end of this planning period to develop a consistent program which meets angler's needs. Use an average catch rate goal of 30 hours per fish during March-April period.

Develop Memorandum of Agreement with the Nez Perce Tribe regarding treaty and non-treaty fisheries. With the tribe, develop a harvest plan which identifies harvest objectives, defines harvest triggers and quotas, identifies treaty and non-treaty fishing areas, and establishes monitoring programs.

Conduct chinook harvest creel surveys and develop in-season harvest estimates in cooperation with tribal harvest managers to ensure that hatchery escapement goals are met. Work with tribal biologists to develop accurate run predictors. Work with Nez Perce Tribe to improve harvest monitoring techniques to achieve accurate harvest estimates. Work with Nez Perce Tribe to achieve better accounting of coded wire tags in harvested chinook.

Evaluate total return and harvest efficiency relative to sport and tribal chinook harvest objectives and hatchery brood requirements.

Evaluate straying of returning Rapid River Hatchery chinook released in the Little Salmon River and determine whether an acclimation pond in Little Salmon to key adults back to upper Little Salmon for a fishery is needed. Potential sites: Boulder Creek, Stinky Springs area.

Evaluate potential for a rearing pond to increase artificial production for harvest augmentation. Potential sites: Boulder Creek, Stinky Springs area.

Release adequate numbers of salmon and steelhead smolts to provide adult returns capable of producing at least 2.5 million spring chinook smolts at Rapid River Hatchery. Other production levels may be proposed to enhance smolt-to-adult survival. Smolt release numbers will be based on capacity, smolt-to-adult survival rates, harvest, and broodstock availability and needs.

Share up to 2 million eggs surplus to smolt needs with Oregon Department of Fish and Wildlife for use at Lookingglass Hatchery and with hatcheries in the Clearwater drainage for smolt production.

Outplant spring chinook adults surplus to egg needs in the Little Salmon River, Panther Creek, and Yankee Fork to provide sport and tribal fishing opportunity. Continue to outplant hatchery chinook fry into Boulder Creek and marked hatchery steelhead fry into Hazard and Boulder creeks for harvest augmentation.

Objective: Improve Rapid River Hatchery fish survival.

Program: Coordinate with Idaho Power Company to implement hatchery improvements to potentially include: 1) Upgrade incubation water source to a disease free water source; 2) Evaluate potential for ozonation of fish rearing water to reduce the incidence of fish disease such as EIBS and BKD and 3) Construct a concrete fish holding and spawning facilities to reduce prespawning mortality.

Evaluate presmolt and smolt release strategies and return rates and evaluate rearing and truck loading densities to derive optimum adult return rates.

Incorporate a full spectrum disease sampling and egg culling or segregation program to reduce the possibility of disease transmission to other rearing facilities. Investigate culling eggs from high titer BKD adults. Evaluate benefits to adult return provided by erythromycin feeding. Monitor BKD levels of returning adults.

Objective: Maintain existing natural spawning populations of salmon and steelhead in Rapid River.

Program: Continue to ad-clip hatchery steelhead and harvest only marked fish. Evaluate need for acclimation ponds in the Little Salmon to minimize straying of hatchery steelhead into natural production areas. Release only wild steelhead above the Rapid River weir.

Continue summer chinook selection based on physical appearance and timing criteria for release above the Rapid River weir. Evaluate and refine methods to separate spring and summer chinook at the weir. Release summer chinook above the weir for natural production and retain spring chinook at Rapid River Hatchery for hatchery production.

Continue harvest season closures on Rapid River to protect summer chinook.

Objective: Develop a steelhead broodstock for the lower Salmon and Little Salmon River hatchery smolt release programs.

Program: Continue to monitor the wild steelhead run into Rapid River. When juvenile steelhead densities maintain at least 70 percent of estimated carrying capacity and there are sufficient numbers of adults to support collection for hatchery broodstock, implement trapping and spawning. Evaluate timing and survival of progeny.

Objective: Maintain and improve habitat quality of fish production areas.

Program: Continue working with land management agencies, private landowners, and the Tribe to inform, educate, and assist with land management planning to protect fish habitat and water quality and quantity and quality. Provide fisheries input regarding permitting and monitoring of land use activities affecting fish habitat. Emphasize riparian and stream channel protection, flow, and containment of sediment production areas.

Participate with water users and regulators to increase base stream flows in the Meadow section of the mainstem Little Salmon River.

Objective: Develop methods to estimate levels of salmon and steelhead production and escapement.

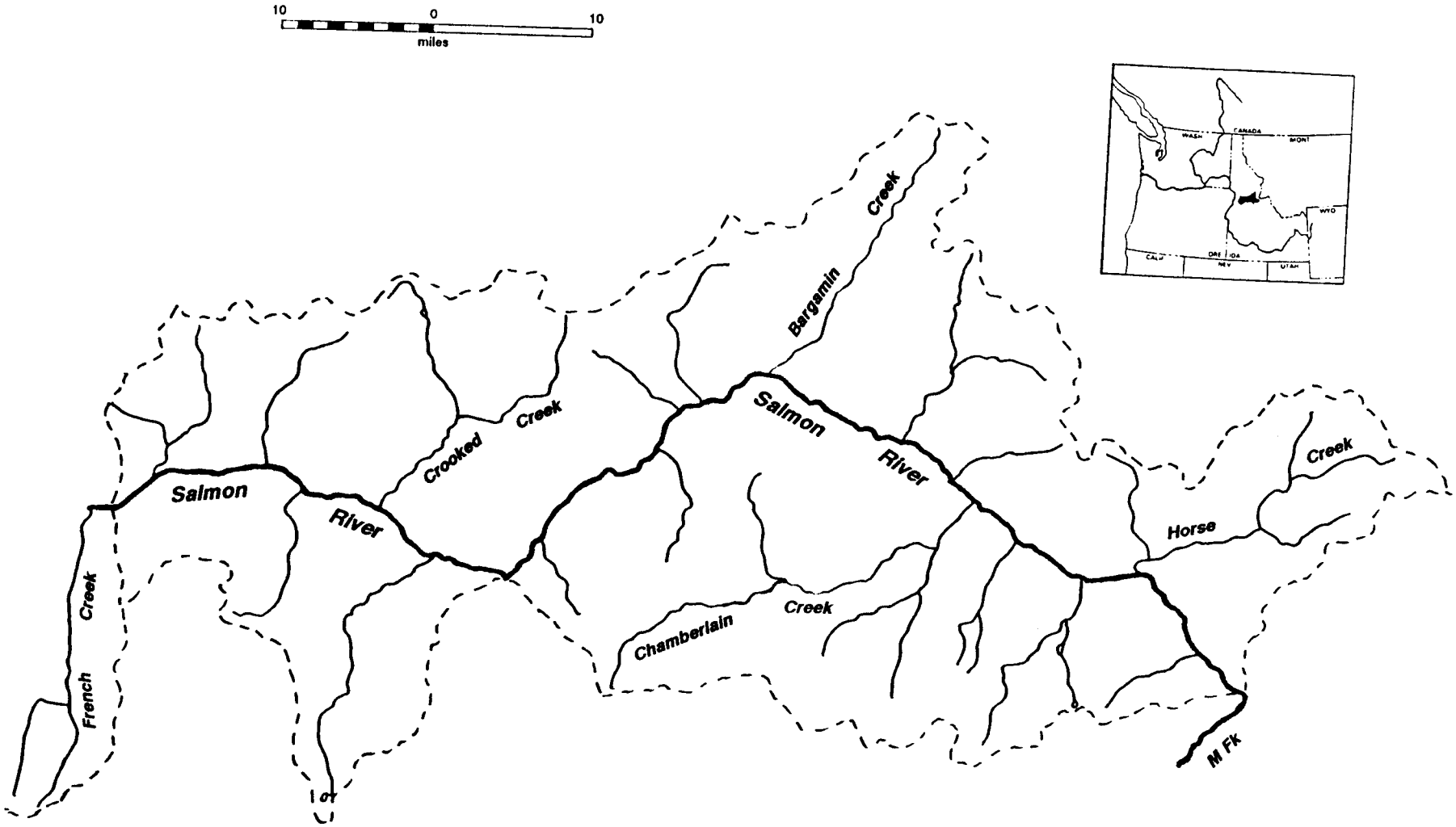
Program: Continue parr density monitoring. Develop methods to estimate tributary salmon and steelhead adult escapement according to production component. Integrate salmon and steelhead data to refine current escapement goals in Tables 20 and 21, Section II.

Continue to collect adult steelhead and summer chinook length and run timing information.

Explore Rapid River Hatchery stock identification techniques at mainstem Columbia and Snake River adult detection facilities.

Salmon River Drainage

French Creek to Middle Fork



Salmon River Canyon, French Creek to Middle Fork Salmon River

Overview-There are 72 miles of unroaded river between French Creek and the mouth of the Middle Fork Salmon River (MFSR), commonly called the Salmon River Canyon. Much of this river segment drains the Frank Church River of No Return and Gospel Hump Wilderness areas. From the South Fork to the Middle Fork, the Salmon River lies within the River of No Return Wilderness and is classified under the National Wild and Scenic Rivers System. The major portion, from Vinegar Creek to Corn Creek, is classified as "wild", while from Corn Creek to the Middle Fork, the river is classified as "recreational". Many commercial fishing outfitters and guides provide service in this area. River access is limited to boat and foot traffic from Vinegar Creek to Corn Creek. The boat ramp at Corn Creek receives heavy use from floaters during the summer and from jet boaters during the fall and spring steelhead seasons.

From French Creek to the MFSR, the Salmon River flows through a deep canyon. Like the lower Salmon, this area is characterized by a series of deep pools separated by rapids and runs. This reach serves primarily as a migration corridor for salmon and steelhead smolts and adults and as an overwinter area for steelhead adults.

The tributary streams are important producers of wild steelhead, particularly Bargamin, Sabe, Chamberlain, Sheep, and Horse creeks. The Salmon River Canyon tributaries represent the largest and the only contiguous production area for wild A-run steelhead in the Salmon River. Although wild chinook spawn and rear in some of the tributaries, Chamberlain Creek is the major wild chinook producer. Most of the subbasin has good to excellent habitat, however, two of the largest tributaries below the South Fork, Crooked and Warren creeks, have been severely impacted by dredge and placer mining for over a century. Logging and road building in steep, unstable drainages have also contributed to habitat degradation in some areas.

Monitoring of parr densities for wild A-run steelhead populations in tributary production areas indicate that parr production averaged 53 percent of potential for 1985-89. Wild chinook densities were very low during this period, averaging 1 percent of potential parr production in the canyon tributaries. However, in the Chamberlain Basin, where low gradient chinook habitat exists, parr densities averaged 28 percent.

Tributaries in this river section will continue to be managed for wild salmon and steelhead production. Maintenance of genetic resources contained in these wild populations is a top priority. The mainstem Salmon will be managed for exploitation of hatchery steelhead. The average annual steelhead harvest from the Little Salmon River to the MFSR was 3,077 from Fall 1985 through Spring 1990.

While a long-range goal is to provide consumptive fisheries, harvest is not expected on wild or natural adult steelhead or spring chinook returning to the canyon during the next five years. Wild adult steelhead will continue to provide significant opportunity for catch

and release fishing in the mainstem Salmon and wild juvenile steelhead contribute to popular catch and release fisheries in the larger tributaries.

Chinook and Steelhead Objectives and Programs, 1992-1996:

Objective: Maintain genetic integrity and diversity of wild, native salmon and steelhead.

Program: Continue to not outplant hatchery steelhead or salmon into the mainstem Salmon River or tributaries between French Creek and Panther Creek. Allow natural production to sustain existing wild populations.

Manage hatchery supplemented Salmon River anadromous fish stocks so that straying into Salmon River Canyon tributaries is minimized.

Objective: Minimize harvest impacts to naturally produced salmon and steelhead.

Program: Continue to ad-clip hatchery steelhead prior to release in Idaho and harvest only ad-clipped fish.

Regulate Idaho steelhead sport harvest to maximize escapement of wild steelhead to spawning tributaries. Maintain adult salmon and wild and naturally-produced steelhead harvest closures in the mainstem and tributaries to maximize natural production of steelhead and salmon. Increase enforcement efforts to ensure compliance with differential harvest regulations. Close spring steelhead fishing season when ad-clipped steelhead are no longer significantly represented in the catch.

Increase public awareness regarding importance of healthy wild salmon and steelhead stocks and wild anadromous fish management programs by developing an information pamphlet.

Maintain fishing regulations designed to avoid excessive harvest of wild juvenile steelhead and evaluate impact of consumptive harvest of wild steelhead presmolts. Implement regulation change if warranted.

Work with affected Indian Tribe(s) to minimize harvest impacts on naturally produced fish through harvest agreement, monitoring, and development of natural production escapement and density goals.

Objective: Maximize harvest and fishing opportunity on hatchery produced steelhead contingent upon achieving hatchery escapement needs.

Program: Continue to evaluate adult return and steelhead harvest to develop steelhead seasons that ensure hatchery escapement needs are met, minimize surplus fish into the hatchery, and maximize catch and harvest.

Continue to evaluate steelhead harvest by river section.

Continue to use smolt releases in the mainstem Salmon River upstream of the Canyon to provide a harvestable component in this river section. Develop smolt release schedule that optimizes catch rates for hatchery fish between upper and lower Salmon River releases, and maximizes harvest of surplus hatchery steelhead.

Develop a Memorandum of Agreement with affected Indian Tribe(s) regarding treaty and non-treaty fisheries. With the tribes, develop a harvest plan which identifies harvest objectives, defines harvest triggers and quotas, identifies treaty and non-treaty fishing areas, and establishes monitoring programs.

Objective: Maintain and improve habitat quality of tributary production areas.

Program: Continue working with land management agencies, private landowners, and affected Indian Tribe(s) to inform, educate, and assist with land management planning to protect fish habitat and water quality and quantity. Provide fisheries input regarding permitting and monitoring of land use activities affecting fish habitat. Emphasize riparian and stream channel protection, flow, and containment of sediment production areas.

Support roadless status for the remaining Bargamin Creek watershed to protect critical steelhead spawning and rearing habitat. Support mineral withdrawal along the Salmon River corridor between French and Vinegar Creeks to ensure adequate riparian and water quality protection.
Correct erosion problems resulting from irrigation diversion in Chamberlain Creek. Encourage implementation of grazing management plans which do not impact fish production and survival.

Eliminate potential for grazing problems in Chamberlain and West Fork Chamberlain creeks. Repair livestock grazing damage where it has occurred.

Objective: Increase fishing access.

Program: Develop small outboard and float boat launch facilities where possible.

Objective: Maintain a diversity of fishing opportunity to meet angler demand.

Program: Emphasize aesthetic fishing experience and wild steelhead catch-and-release opportunities in the Salmon River Canyon.

Objective: Develop Salmon River native steelhead stock for upper Salmon River supplementation.

Program: Evaluate feasibility of collecting and spawning wild steelhead from Salmon River canyon tributaries. Consider steelhead collection in tributaries maintaining juvenile densities over 50 percent of estimated carrying capacity.

Select suitable tributaries above the MFSR for monitoring, and evaluation of steelhead supplementation. Monitor survival of existing Salmon River A-run hatchery stock and native Salmon River A-run stock.

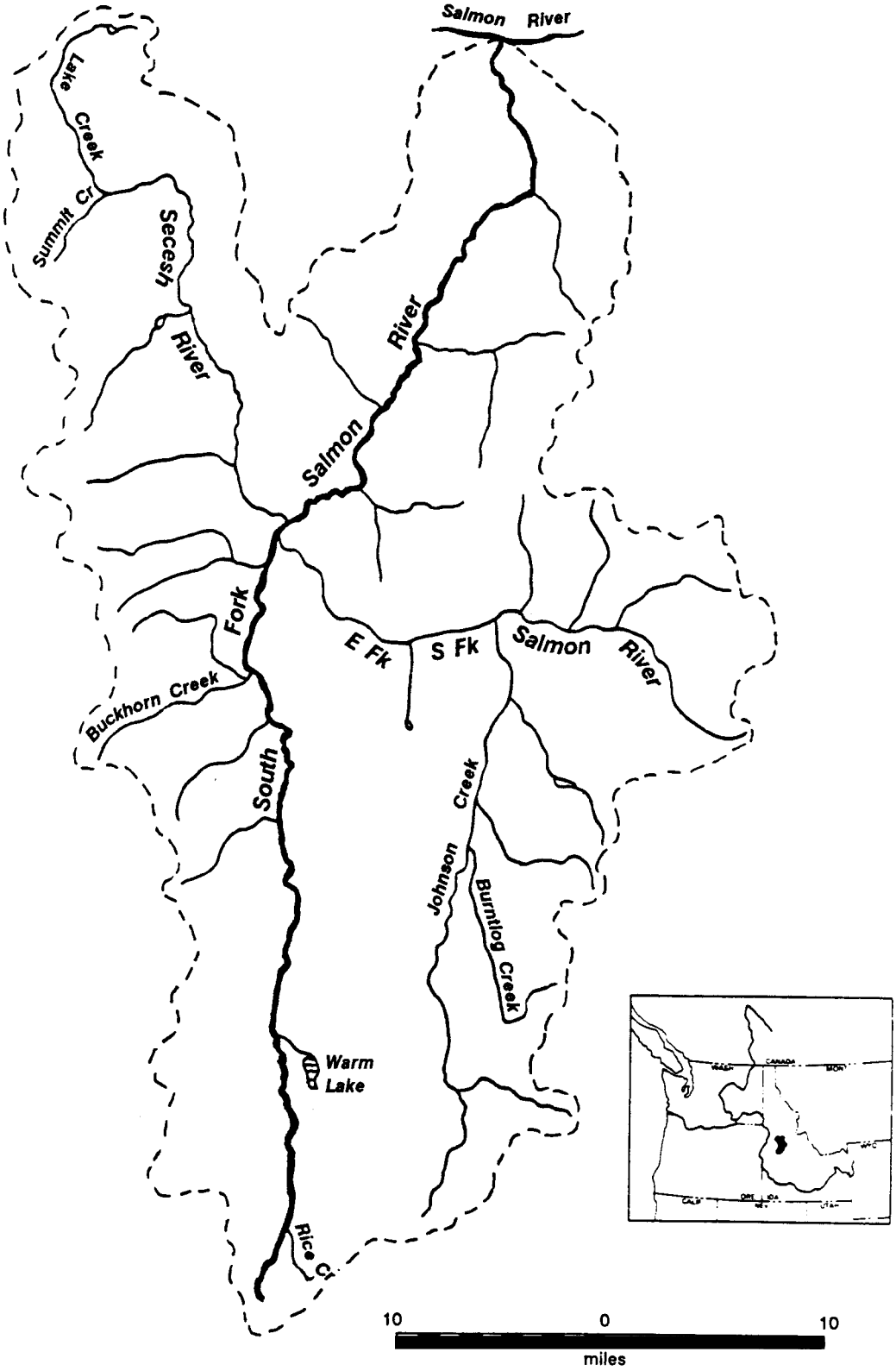
Objective: Develop methods to estimate levels of salmon and steelhead production and escapement.

Program: Continue parr density monitoring and redd count activities. If streams conducive to steelhead redd counts are identified, develop standardized steelhead redd count program. Develop methods to estimate tributary salmon and steelhead adult escapement according to production component. Integrate data to refine current escapement goals in Tables 20 and 21, Section II.

Continue to collect adult steelhead size and run timing information to better define stock characteristics.

Salmon River Drainage

South Fork



South Fork Salmon River

Overview-The South Fork Salmon River (SFSR) enters the main Salmon at river mile 133. The basin includes about 500 miles of streams accessible to anadromous fish. Major tributaries of the SFSR are the Secesh and the East Fork South Fork, and its major tributary, Johnson Creek. The drainage is characterized by steep, rocky canyons with extensive meadows in headwater areas. It is located primarily within the Idaho batholith and soils consist of decomposed granite.

Historically, the SFSR was the major summer chinook salmon stream in Idaho, producing 60 to 70 percent of the annual run to Idaho. It supported a major summer chinook fishery with harvest exceeding 1,700 fish in the early 1960s. However, non-treaty harvest of adult summer chinook has been prohibited since the 1970s. During the mid 1960s, unusual precipitation events combined with logging and road construction resulted in massive silt loads flowing in the SFSR. Spawning and rearing areas were buried under several feet of sand, destroying a major portion of the anadromous fish production area. The habitat has recovered somewhat in the past 20 years due to natural processes, restoration actions by the U. S. Forest Service, and a moratorium on large-scale logging, but elevated sediment levels remain in several key production areas, reducing early rearing survival.

Hatchery production of summer chinook at McCall Fish Hatchery began in 1980 as part of mitigation for lower Snake River dams. The hatchery has the capacity to rear 1 million smolts from eggs collected at an adult weir and trap located on the upper SFSR. Since the program's inception, about one-third of the run to the weir has been released above the weir to provide spawners for natural production. Eggs and fry excess to smolt needs have been used for small-scale supplementation activities in the SFSR, East Fork South Fork, Johnson Creek, and to backfill broodstock shortages at Pahsimeroi Hatchery. No hatchery fish have been outplanted into the Secesh River.

The SFSR historically supported a wild steelhead run estimated at 3,000 spawners. The present population is believed to be less than 1,000 fish. Available data indicate these fish are predominantly 2-ocean, late arriving, B-run fish. They are larger than the A-run fish which predominate in the Salmon River drainage, except for the South Fork, Middle Fork, and East Fork Salmon River. Hatchery steelhead were released in the SFSR in 1979 and 1980, however, survival appeared to be poor and there appeared to be little genetic introgression (Thurow 1986). No other hatchery steelhead have been outplanted into the drainage and this population will be managed as wild in the future. South Fork steelhead are caught incidentally to target hatchery stock fisheries and provide an exceptional catch and release opportunity for trophy class wild steelhead in the main Salmon River. The South Fork has been closed to adult steelhead fishing since 1968.

The overriding habitat factor in the SFSR is extremely unstable granitic soils which contribute to siltation. Any land-disturbing activity such as logging, road building, or

mining has the potential for dramatic sediment contribution. The U.S. Forest Service and other interested parties have carefully planned and developed management techniques to aid the restoration of the South Fork fish habitat. However, recovery from past degradation has been slow and may be negated by existing sediment sources or new land use activities. Of increasing concern is the transport of hazardous substances used in the mining industry along roads which border the river. Ranging from fuel to leaching compounds, these substances are extremely harmful to fish populations when spills occur.

Currently, salmon and steelhead natural production habitat is underutilized for spawning and rearing. Parr densities of wild summer chinook in the Salmon subbasin, including the Secesh River, averaged 12 percent of estimated carrying capacity for 1985-89. Steelhead parr densities in the South Fork drainage were 13 percent for the same period. Natural populations of summer chinook in the South Fork drainage averaged 21 percent of estimated carrying capacity for 1985-89. However, in C-channel stream habitat, which is more conducive to chinook production, densities averaged 50 percent of estimated carrying capacity. In Johnson Creek, densities in some monitoring transects were influenced by fry outplants. It is unknown if this practice will lead to a sustained increase in natural production.

The South Fork is a traditional fishery for both treaty and non-treaty fishers. Recently, the Shoshone-Bannock Tribes have exercised treaty rights to hold fisheries between Goat Creek and the South Fork weir. Harvest is directed toward hatchery fish and has been limited to 100 fish or less annually.

Both groups desire restoration of fishing opportunities for summer chinook. In order to meet restoration objectives for summer chinook and steelhead populations, it is critical that migration survival be improved and habitat restoration continue. Habitat protection in a drainage that is also high in demand from mineral and forest extractors is also crucial to maintain the resiliency of these fish populations. Preservation of the South Fork's unique summer chinook and steelhead stocks is a high priority.

Management of this drainage is complex because of the presence of wild steelhead and summer chinook, a summer chinook hatchery, and habitat which could support extensive natural production. During the next five years, management emphasis will be on maintaining the genetic resources contained in natural and wild spawning populations. Providing fishing opportunity on surplus hatchery summer chinook is also high priority but opportunities will be limited over the next five years because of poor mainstem migration survival. Current production and mortality levels probably will not support a steelhead sport fishery over the next five years.

Chinook and Steelhead Objectives and Programs, 1992-1996:

Objective: Preserve genetic integrity of wild, native steelhead and summer chinook.

Program: Continue wild steelhead management in the SFSR and wild summer chinook management in the Secesh. Allow natural production to sustain existing wild populations.

Structure hatchery steelhead smolt releases in the Salmon River to minimize straying into the SFSR. Manage hatchery summer chinook in the SFSR to minimize straying into the Secesh.

Do not outplant summer chinook trapped at the SFSR trap into Johnson Creek until management implications of baseline genetic identification of summer chinook in the SFSR and Johnson Creek are evaluated. Make management recommendation regarding Johnson Creek summer chinook supplementation and broodstock early in this planning period.

Continue to work with other state and federal agencies and tribes to improve juvenile downstream and adult upstream passage to and from the SFSR.

Structure adult chinook harvest opportunities to protect genetic integrity of naturally produced fish.

Objective: Maintain existing natural spawning populations of salmon and steelhead.

Program: Allow natural production to sustain existing natural populations of summer chinook. Limit outplanting of hatchery summer chinook, other than mainstem SFSR hatchery releases for harvest augmentation, to support supplementation evaluation. Outplant in areas found to be devoid of natural production which can be identified as having little genetic risk from outplanting hatchery fish.

Determine the impact of catchable rainbow trout stocking and harvest on wild steelhead production in the South Fork drainage. Alleviate impacts if they exist.

Implement chinook supplementation evaluation activities, proposed in the upper SFSR with controls in Johnson and Lake creeks. Rear smolts at McCall Hatchery and release into natural production areas in treatment streams as part of supplementation research evaluation. Annual release numbers to be based on 50:50 balance of hatchery and natural fish

spawning or rearing in the natural environment. Develop marks to differentiate between natural, supplementation, and general hatchery production/harvest augmentation chinook.

Refine long-term escapement goals for summer chinook to be released upstream of the South Fork weir for natural production. Proposed goal is identified in Table 23, Section II.

During this planning period, continue to release at least 1/3 of the adult chinook returning to the weir until marked chinook return or differentiation is achieved through other methods. Then, release only naturally produced chinook above the weir unless supplementation adults are released as part of the evaluation. Evaluate methods to ensure that fish released above the weir utilize the entire production area.

Over the long-term, as marked hatchery summer chinook begin returning, release naturally produced summer chinook upstream of the weir up to the proposed escapement goal. Incorporate supplementation brood stock needs into weir management. As the escapement goal for natural production above the weir is met, begin incorporating naturally produced salmon and steelhead into general hatchery production.

Objective: Minimize harvest impacts to naturally produced salmon and steelhead.

Program: Continue to harvest only ad-clipped hatchery steelhead adults in the mainstem Salmon. Regulate Idaho mainstem steelhead and salmon sport harvest to maximize SFSR spawning escapement. Continue to maintain salmon and steelhead non-treaty harvest closures in the South Fork drainage as necessary.

Retain fishing closures in the South Fork spawning areas during chinook spawning season.

Assess angler harvest impact on of wild steelhead smolt production in the SFSR to determine if protection if warranted. Implement regulation changes if needed.

Conduct research to assess timing of hatchery and natural chinook adult returns. Develop harvest strategies which minimize impact on naturally produced fish and monitor any chinook seasons or test fisheries to allow modification or closure when naturally produced fish are adversely

affected.

Discourage treaty harvest of naturally produced salmon and steelhead until seeding densities approach 70 percent of capacity. Work with the Shoshone-Bannock and Nez Perce tribes to minimize harvest impacts on naturally produced fish through harvest agreement, season structure, monitoring, and development of natural production escapement and density goals.

Objective: Maximize harvest and fishing opportunity on hatchery produced salmon contingent upon achieving hatchery escapement needs and protecting genetic integrity of naturally produced fish.

Program: Continue to evaluate adult salmon returns to develop seasons that ensure hatchery escapement needs are met, minimize surplus fish into the hatchery, and maximize catch and harvest opportunity. Structure non-treaty chinook harvest seasons to ensure anglers an opportunity to harvest hatchery fish surplus to hatchery escapement needs.

Continue to release hatchery summer chinook smolts for harvest augmentation. Evaluate feasibility of developing an acclimation pond on the upper South Fork Salmon River near Knox Bridge.

Release adequate numbers of summer chinook smolts to provide adult returns capable of producing 1 million smolts at McCall Hatchery. Other production levels may be proposed to enhance smolt-to-adult survival. Smolt release numbers will be based on capacity, smolt-to-adult survival rates, harvest, and broodstock availability and needs.

Refine methodology to discriminate between natural and hatchery salmon stocks to allow differentiation for harvest and production management. Complete marking survival evaluation at McCall Hatchery. Develop management recommendations regarding marking of hatchery production as data analysis suggests.

Develop strategies to provide fishing and harvest opportunity for hatchery summer chinook when weir escapement is expected to exceed spawning escapement needs. Utilization of surplus hatchery adults for tribal harvest in areas would be negotiated. Proposed harvest areas will be evaluated for suitability. Because only a small surplus would be expected in the near term, the potential for limited entry harvest opportunity for hatchery chinook will also be explored.

Develop utilization plans for salmon surplus males at the trap. Possible options include: 1) haul to East Fork South Fork for sport harvest opportunity above temporary weir, 2) tribal harvest above temporary weir, 3) donate to tribes, or 4) experiment with sperm cryopreservation.

Evaluate feasibility of developing acclimation pond to return hatchery summer chinook to the weir and limit interactions with natural and wild fish. Evaluate potential for developing a rearing pond to increase artificial production for summer chinook harvest augmentation in the South Fork drainage.

Encourage tribal ceremonial and subsistence fishing only in areas containing hatchery summer chinook.

Develop Memorandum of Agreement with Shoshone-Bannock Tribes and Nez Perce Tribe regarding treaty and non-treaty fisheries. With the tribes, develop a harvest plan which identifies harvest objectives, defines harvest triggers and quotas, identifies treaty and non-treaty fishing areas, and establishes monitoring programs.

Work with tribal biologists to develop accurate run predictors for summer chinook returning to the SFSR weir. Run predictors will be used for planning to meet hatchery production and harvest needs.

Objective: Improve McCall fish hatchery survival.

Program: Coordinate with the USFWS through the LSRCP to implement hatchery improvements to potentially include: 1) Provide a cool well water source at the South Fork Trap to reduce prespawning mortality; 2) Incorporate a full spectrum fish disease sampling and egg culling or segregation program for chinook to reduce the possibility of disease transmissions; ~~and~~ 3) Construct a false floor for the South Fork Trap to facilitate handling of adult chinook; and 4) Upgrade incubation water to disease free water source.

Continue fish health research to improve hatchery fish survival. Continue Hatchery Evaluation Studies under Lower Snake River Compensation Plan funding to assess rearing and release strategies.

Objective: Maintain and improve habitat quality of mainstem and tributary production areas.

Program: Continue working with land management agencies, private landowners, and the Tribes to inform, educate, and assist with land management planning to protect fish habitat and water quality and quantity. Provide fisheries input regarding permitting and monitoring of land use activities affecting fish habitat. Emphasize riparian and stream channel protection, flow and quality, and containment of sediment production areas.

Support and encourage the U.S. Forest Service to continue to accomplish South Fork fish habitat recovery measures. Work with the U. S. Forest Service to identify when the Land and Resource Management Plan goal for fish habitat in the SFSR is attained. Participate in interagency mining oversight committees to review operating plans and work with regulatory agencies to require compliance with mining and transportation laws to protect water quality and fish populations. Encourage implementation of grazing management plans which do not impact fish production and survival.

Objective: Develop methods to estimate levels of salmon and steelhead production and escapement.

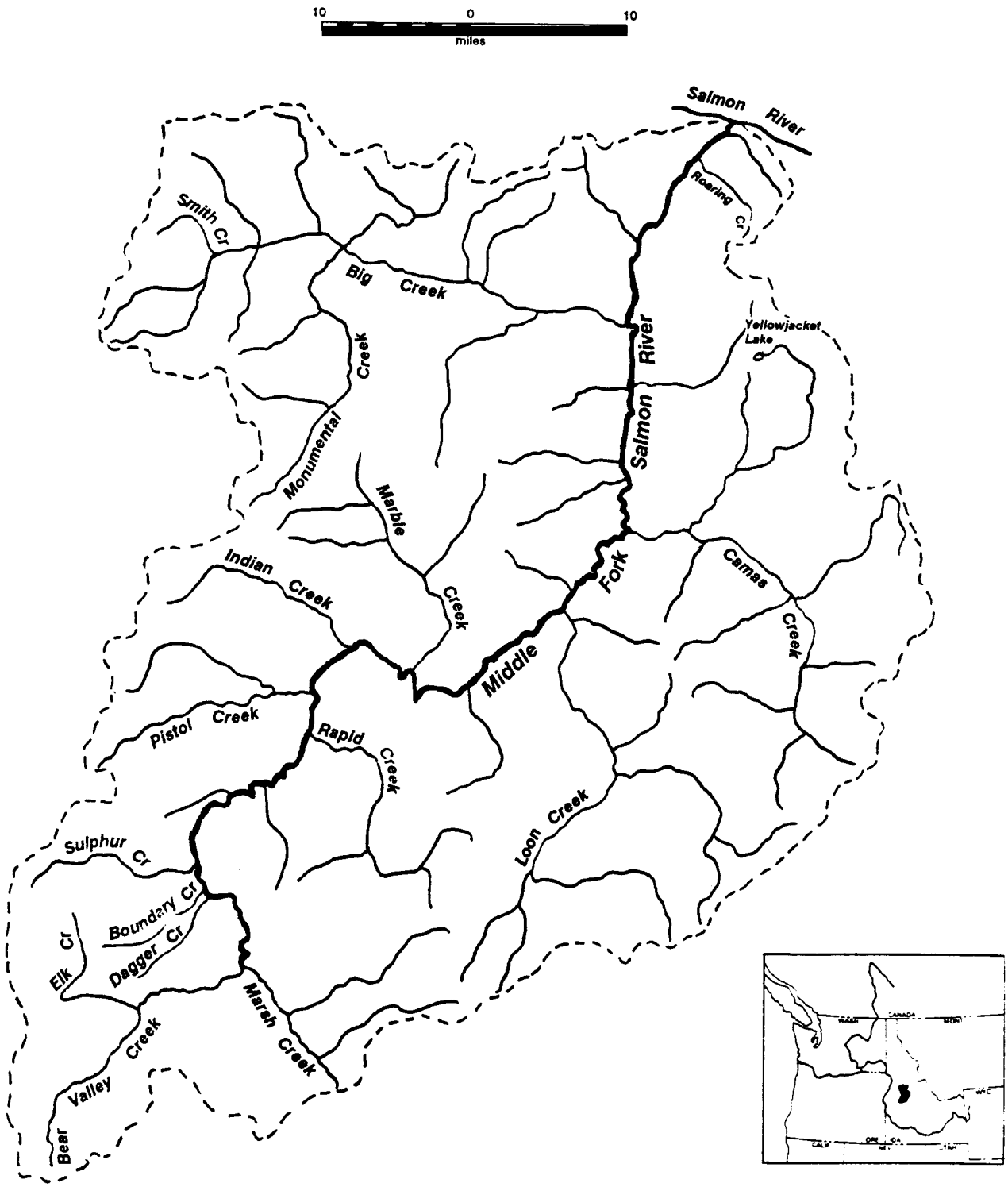
Program: Continue parr density monitoring and redd count activities. If streams conducive to steelhead redd counts are identified, develop standardized steelhead redd count program. Develop methods to estimate tributary salmon and steelhead adult escapement according to production component. Integrate data to refine current escapement goals in Tables 20 and 21, Section II.

Evaluate feasibility of methods such as PIT tags for monitoring summer chinook and steelhead escapement at Lower Granite Dam for run size prediction and timing.

Continue to collect adult steelhead size and run timing information to better define stock characteristics of the SFSR and its tributaries.

Salmon River Drainage

Middle Fork



Middle Fork Salmon River Drainage

Overview-The Middle Fork Salmon River (MFSR) drains 2,830 square miles of central Idaho and includes 685 miles of stream accessible to salmon and steelhead for spawning and rearing. The main river is classified as wild, as part of the Wild and Scenic Rivers System, and most of the drainage is within the Frank Church River of No Return Wilderness Area. There are no dams in this drainage.

The rugged topography and wilderness designation has preserved the majority of the Middle Fork habitat in pristine condition and the principal means of access are air, water, and trail. The major exceptions are mines, grazing, and access roads in several headwater spawning streams, including Bear Valley, Marsh, Camas, Marble, Big and Loon creeks which are outside the wilderness. There is also access to the mainstem Middle Fork at Dagger Falls. Mining, grazing, and logging activities have resulted in serious habitat degradation in the Bear Valley drainage. Grazing has also degraded portions of Camas Creek.

Except for some alpine lakes and a few small streams, the MFSR drainage contains only native species. Anadromous fish species are spring and summer chinook salmon and summer steelhead. These populations represent wild, indigenous gene pools. The MFSR is one of only three drainages in the Columbia Basin that support wild steelhead classified as B-run because they are predominantly large fish which spend two or three years in the ocean, unlike the smaller A-run steelhead which comprise most of the Salmon River run. Run timing of Middle Fork steelhead over Bonneville and Lower Granite dams is unknown, but they begin arriving early (mid-August) relative to other Salmon River stocks. The proportion of one and two ocean fish in the MFSR appears to be different than proportions of other Idaho B-run steelhead populations. Renewed efforts began in 1990 to collect fork-length information to better characterize the Middle Fork population. Both the chinook and steelhead of the MFSR are adapted to the long migration distances necessary for their perpetuation. Preservation of these gene pools is a top priority.

The Middle Fork supported a major chinook fishery with annual harvests exceeding 2,200 fish in the late 1960s. Steelhead harvests, limited by water levels and access conditions, averaged 430 fish annually during this same period. Non-treaty harvest has not been allowed for either species since 1978 because of low escapements. Shoshone-Bannock and Nez Perce tribal ceremonial and subsistence harvests have also been minimized or closed. Middle Fork steelhead are caught incidentally to target hatchery stock fisheries and provide an exceptional catch and release opportunity for trophy class wild steelhead in the main Salmon River.

Currently, MFSR salmon and steelhead adult escapement is extremely depressed. Low juvenile densities reflect this underescapement. Steelhead parr densities in monitored transects, averaged 11 percent of estimated carrying capacity for 1985-89. Excluding the Bear Valley transects, chinook salmon parr densities averaged 18 percent of estimated

carrying capacity. Transects in the Bear Valley drainage exhibited extremely low juvenile chinook seeding densities, averaging 4 percent for the same period because of the degraded habitat.

The key component to meeting production and harvest objectives will be improved migration survival. Although numbers are low, when moderate mainstem juvenile migration survival occurs, wild fish have demonstrated better capacities to rebuild than hatchery influenced populations. Because of the very low densities and the genetic importance of these fish for rebuilding, significant consumptive harvest seasons are not anticipated during this 5 year planning period.

This drainage will be managed for wild production with natural rebuilding as the top priority. Habitat protection, particularly in non-wilderness areas, will continue to be important. Major issues regarding MFSR salmon and steelhead pertain to their importance as a unique genetic resource, their cultural significance to treaty and non-treaty peoples, habitat restoration in the Bear Valley drainage, and the desire to restore traditional salmon and steelhead fisheries in the MFSR.

Chinook and Steelhead Objectives and Programs. 1992-1996:

Objective: Maintain genetic integrity and diversity of wild, native salmon and steelhead.

Program: Continue to not outplant hatchery salmon or steelhead into the Middle Fork Salmon River drainage. Allow natural production to sustain existing wild populations.

Structure hatchery steelhead and chinook releases in the Salmon River to minimize straying into the MFSR.

Continue baseline genetic identification and monitoring.

Continue to work with other state and federal agencies and tribes to improve juvenile downstream and adult upstream passage to and from the MFSR.

Seek implementation of effective measures to restore riparian and aquatic habitat of Bear Valley and Camas Creek drainages.

Objective: Minimize harvest impacts to wild salmon and steelhead populations.

Program: Regulate Idaho steelhead sport harvest in the mainstem Salmon River to maximize wild adult steelhead escapement to spawning areas. Maintain adult salmon and steelhead non-treaty harvest closures. Continue general season catch-and-release regulations and closures regarding resident species for the MFSR drainage to protect juvenile steelhead. Assess angler harvest impact on of wild steelhead smolt production to determine if additional protection if warranted. Implement regulation changes if needed. Retain general fishing closures during salmon spawning season to protect spawning spring chinook.

Encourage Shoshone-Bannock Tribes and the Nez Perce Tribe to continue ceremonial and subsistence harvest alternatives outside of the MFSR until parr densities reach 70 percent of estimated carrying capacity and salmon and steelhead populations in the MFSR can sustain a harvestable surplus.

Increase public awareness regarding importance of healthy wild salmon and steelhead stocks and wild anadromous fish management programs by developing an information pamphlet.

Seek harvest modifications on the Columbia River that will allow improved wild fish escapements.

Develop Memorandum of Agreement with the Shoshone-Bannock Tribes and the Nez Perce Tribe regarding treaty and non-treaty fisheries. With the tribes, develop a harvest plan which identifies harvest objectives, defines harvest triggers and quotas, identifies treaty and non-treaty fishing areas, and establishes monitoring programs.

Objective: Maintain and improve habitat quality of fish production areas.

Program: Continue working with land management agencies, private landowners, and the Tribes to inform, educate, and assist with land management planning to protect fish habitat and water quality and quantity. Provide fisheries input regarding permitting and monitoring of land use activities affecting fish habitat. Emphasize riparian and stream channel protection, water flow and quality, and containment of sediment production areas. Identify and screen irrigation diversions where needed.

Participate in interagency mining oversight committees to review mine operating plans, transportation plans, and mine operations. Encourage

implementation of grazing management plans which do not impact fish production and survival.

Work with the Forest Service and use permittees to establish riparian vegetation objectives that annually provide at least eighty percent of the potential vegetation mass in the riparian zone for the spring runoff period in land management plans. Establish stream substrate objectives for sediment that would restore and maintain productivity of aquatic habitat. An objective of twenty-eight percent surface sand and fines (or less) for headwater spawning areas is proposed for MFSR headwater spawning areas.

Objective: Continue to monitor levels of salmon and steelhead production and escapement and refine ability to estimate escapement and escapement needs.

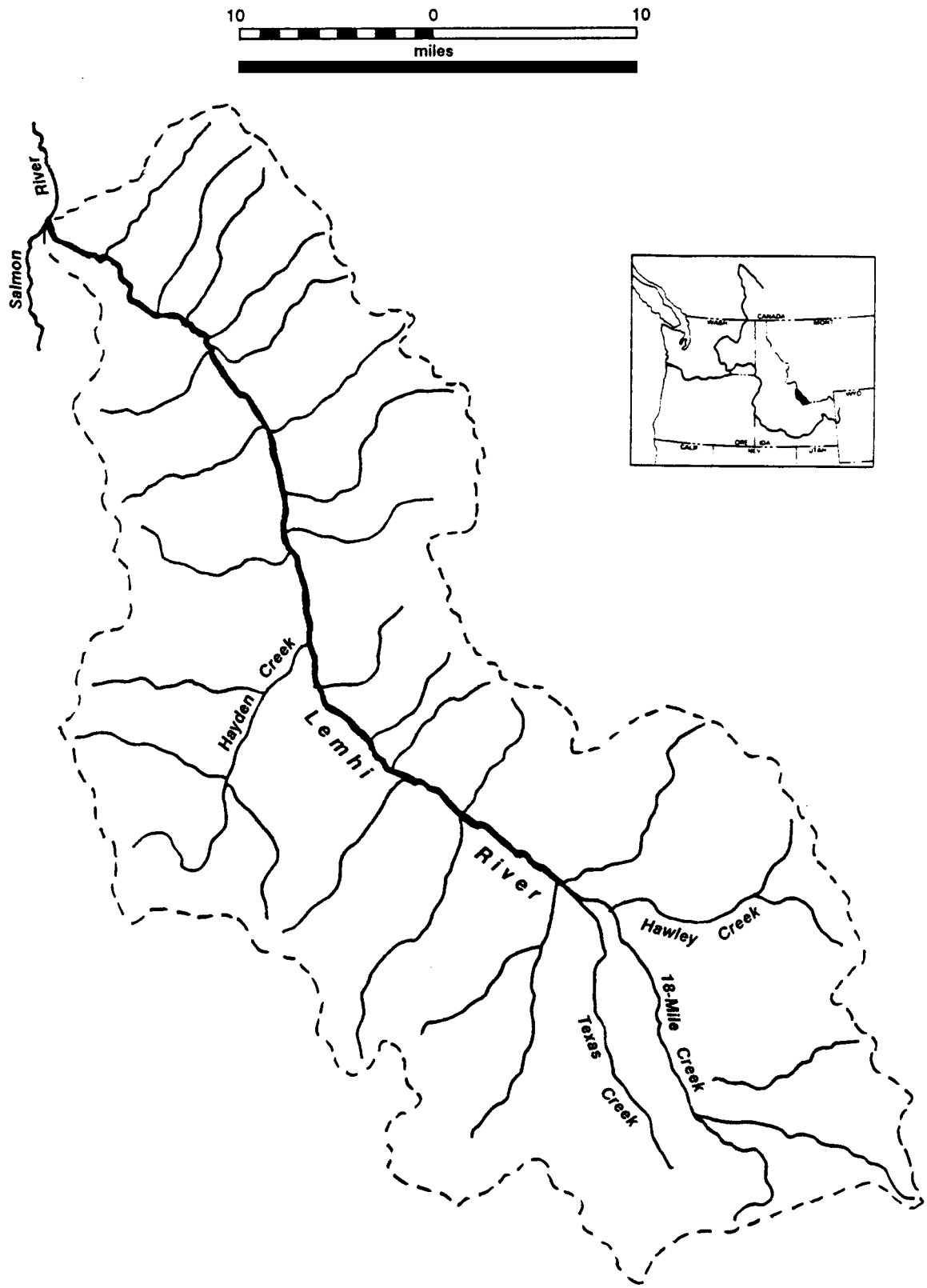
Program: Continue parr density monitoring and redd count activities. If streams conducive to steelhead redd counts are identified, develop standardized steelhead redd count program. Develop methods to estimate salmon and steelhead adult escapement according to production component. Integrate salmon and steelhead data to refine current escapement goals in Tables 20 and 21, Section II.

Continue to collect adult steelhead length, age, and timing information to better define stock characteristics of the MFSR and its tributaries.

Evaluate and identify sites for adult and juvenile traps and weirs to collect adult escapement and smolt production data for chinook supplementation research control streams. Complete construction by 1992, if feasible. Install a weir on one key tributary to refine relationships between spawning escapement, juvenile production and redd counts for chinook and steelhead.

Evaluate PIT (passive integrated transponder) tag data from returning MFSR fish for production and harvest management application. Expand PIT tagging program in MFSR to provide management data, particularly migration timing of juvenile and adult steelhead and salmon.

Lemhi River Drainage



Lemhi River Drainage

Overview-The Lemhi River flows 56 miles to join the Salmon River at river mile 258.5. It is a meandering, low-gradient spring-fed river which flows through a broad valley of fertile agricultural land between the Bitterroot and Lemhi mountain ranges. This makes the Lemhi one of the most productive tributaries of the Salmon River.

The Lemhi Valley includes more than 25,000 acres of land irrigated for hay production and grazing. Public access to the river is limited. The principal form of irrigation is flooding from an extensive system of ditches dating back to the 1850s. Although all of the major ditches are screened and have bypass systems to minimize fish losses, many screens need replacement and additional screens are needed for the smaller diversions. The river is overappropriated for irrigation and is totally dewatered in the lower reach during low water years, impeding adult and juvenile migration. In addition, the amount of spawning habitat has been reduced by stream channel alterations, but it is still abundant.

This drainage supports runs of both spring chinook and A-run steelhead and has the potential for being a major production area. Managers periodically planted spring chinook in this system from the 1920s through the early 1980s. Native broodstock, and more recently Rapid River broodstock, have been used. However, during the 1980s, mounting concern regarding in-basin passage mortality coupled with other needs lowered the priority of chinook supplementation in the Lemhi River. Currently, the population is sustained by natural production of spring chinook. Spring chinook parr densities averaged 13 percent of estimated carrying capacity for the period 1985-89. There is chinook supplementation research and evaluation planned for the Lemhi which includes rebuilding the Lemhi weir to allow capture of natural broodstock for experimental use.

The Lemhi drainage has received stockings of A-run steelhead adults, fry, presmolts, and smolts from Pahsimeroi broodstock on a regular basis since the 1960s through 1989. Whether the population can sustain itself with migration survival improvements needs to be determined. For 1985-89, steelhead parr densities in eastern Salmon River tributaries, including the Lemhi, averaged 47 percent.

From 1966 to 1982, a small hatchery was operated on Hayden Creek which tested the rearing of steelhead and chinook salmon in earthen ponds. This facility is currently a research facility for the University of Idaho. It has potential for producing chinook salmon for supplementation research but substantial water quality, disease, and homing problems would have to be overcome.

This drainage has significant natural production potential and will be managed to fulfill that potential as the first priority. No non-treaty tributary chinook or steelhead fisheries are anticipated in this next 5-year planning period. Outplanted hatchery adults have

provided a small ceremonial and subsistence fishery for the Shoshone-Bannock Tribes who historically utilized the Lemhi.

Chinook and Steelhead Objectives and Programs. 1992-1996:

Objective: Maintain existing natural spawning populations of salmon and steelhead.

Program: Allow natural production to sustain existing natural populations to preserve genetic integrity. Limit outplanting of hatchery chinook to support supplementation evaluation.

Implement chinook supplementation research and evaluation activities. Renovate the Lemhi weir to collect Lemhi River broodstock to evaluate use of in-basin broodstock for supplementation and to document sustained natural production. Rear and release approximately 106,000 smolts for supplementation evaluation using Lemhi broodstock. Annual release numbers to be based on 50:50 balance of hatchery and natural fish spawning or rearing in the natural environment. Develop marks to differentiate between natural and supplementation fish for evaluation.

Evaluate feasibility of using Hayden Creek hatchery as a production facility to rear supplementation fish by 1993.

Continue to not supplement steelhead populations with hatchery fish. Enumerate adult returns at the renovated weir.

Objective: Minimize harvest impacts to naturally produced salmon and steelhead.

Program: Regulate Idaho mainstem steelhead and salmon sport harvest to promote Lemhi spawning escapement. Maintain adult salmon and steelhead harvest closures in the Lemhi to maximize natural production of steelhead and salmon.

Develop Memorandum of Agreement with the Shoshone-Bannock Tribes and the Nez Perce Tribe regarding treaty and non-treaty fisheries. With the tribes, develop a harvest plan which identifies harvest objectives, defines harvest triggers and quotas, identifies treaty and non-treaty fishing areas, and established monitoring programs.

Continue to provide for tribal ceremonial and subsistence fishing with outplanted hatchery chinook when possible.

Objective: Maintain and improve habitat quality of tributary production areas.

Program: Continue working with land management agencies, private landowners, and the Tribes to inform, educate, and assist with land management planning to protect fish habitat and water quality and quantity. Provide fisheries input regarding permitting and monitoring of land use activities affecting fish habitat. Emphasize riparian and stream channel protection, *flow,* and containment of sediment production areas.

Improve in-basin passage and survival for juveniles and adults by accelerating replacement of old wiper screens with new roller drum screens consistent with the IDFG 5-year screening program. Evaluate screen design and efficiency. Install screens in remaining unscreened ditches, particularly in the Hayden Creek drainage. Maintain and repair screens as necessary.

Cooperate with the Shoshone-Bannock Tribes to improve passage and survival conditions with BPA funding. Investigate methods to improve flows in the lower river during the peak irrigation season such as purchasing water rights, improving irrigation delivery systems, constructing permanent headgates, and improving the stream channel.

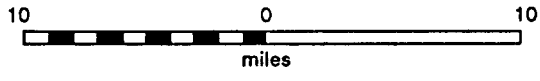
Objective: Develop methods to estimate levels of salmon and steelhead production and escapement.

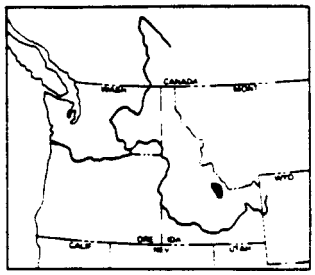
Program: Continue parr density monitoring and redd count activities. Develop methods to estimate tributary salmon and steelhead adult escapement according to production component. Integrate data to refine current escapement goals in Tables 20 and 21, Section II.

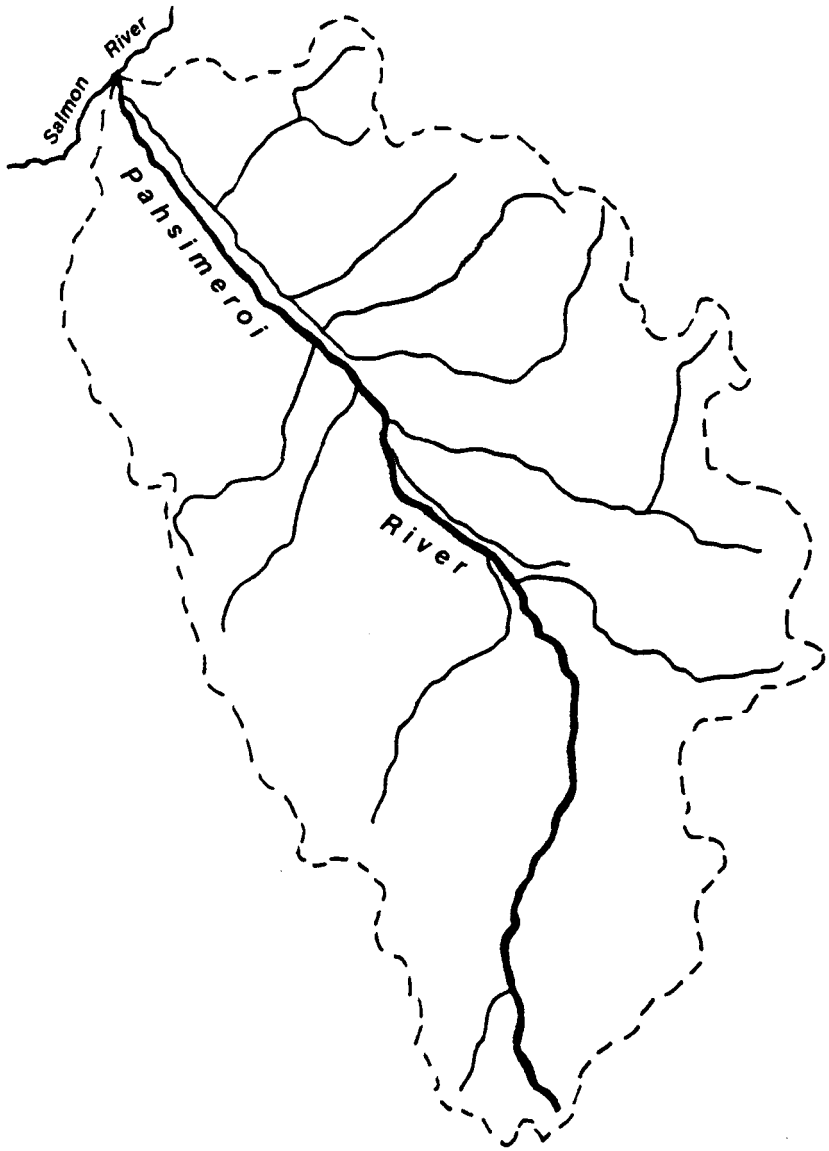
Renovate the existing weir to allow trapping of adults and subsampling of outmigrating juveniles to document production and escapement.

Continue to collect adult steelhead size and run timing information to better define stock characteristics.

Pahsimeroi River Drainage







Pahsimeroi River Drainage

Overview-The Pahsimeroi River is a spring-fed stream meandering 49 miles to join the Salmon River at river mile 304. The drainage is approximately 845 square miles and is bordered by the Lemhi and Lost River mountain ranges. Similar to the Lemhi, the Pahsimeroi Valley is mostly under private ownership and heavily irrigated for hay and grazing, particularly in the lower drainage. Most major tributaries are dewatered in the lower reaches during the irrigation season, making them inaccessible for chinook spawning. Water percolates through the alluvial fan in the upper valley and enters the river through ground water and springs lower in the valley, making the Pahsimeroi much more productive than other streams in the upper Salmon Basin.

The Pahsimeroi River is the site of major artificial production programs for summer chinook and A-run steelhead. Pahsimeroi Hatchery is owned and funded by Idaho Power Company and operated by the Department. Summer chinook are trapped and reared and A-run steelhead are trapped but are reared at Niagara Springs, also owned by Idaho Power Company, in the Hagerman Valley. The hatchery is part of the mitigation for anadromous fish production lost due to construction of the Hells Canyon Dam complex. Steelhead eggs surplus to Idaho Power's mitigation requirements are often transferred for rearing at other facilities which is not a part of the mitigation program, but is negotiated annually.

Adult steelhead returning to the Pahsimeroi Hatchery contribute significantly to the steelhead fishery in the upper Salmon River; angler exploitation of returning adults is estimated to be about 65 percent from the time they enter Idaho. A program of off-site releases in the upper Salmon River was begun in 1988 and is being evaluated to determine how to shape the steelhead fishery in time and place through different off-site release strategies of Pahsimeroi steelhead. Adult return goals for smolt production have been met regularly.

Prior to 1989, at least one-third of the steelhead run was released above the weir to spawn naturally. Since then, only naturally-produced steelhead have been released above the weir to develop a naturally produced run component that can eventually be utilized for hatchery broodstock management. To date, the escapement goal for natural production has not been met. Steelhead parr densities for eastern Salmon River tributaries, including the Pahsimeroi averaged 47 percent of estimated carrying capacity for 1985-89.

The summer chinook program has not been as successful. Although small numbers of summer chinook were reared at Pahsimeroi Hatchery for several years, spring chinook production was the major focus during the mid-1980s. In 1987, the program was shifted to summer chinook propagation, and 1989 was the first year that the mitigation goal of one million smolts was released. Meeting this goal required additional summer chinook eggs from the South Fork Salmon River because low smolt-to-adult survival and small

releases precluded sufficient Pahsimeroi broodstock from returning. There have been no excess fish for supplementation activities and low summer chinook escapement into Idaho in 1989 will again prevent the smolt goal from being met in 1991. Development of a self-sustaining run with a harvestable surplus is dependent on increased smolt-to-adult survival rates.

Since 1986, about one-third of the adult summer chinook run has been released upstream of the Pahsimeroi weir to maintain genetic resources and to utilize productive spawning and rearing habitat. To date, there has been no consistent differentiation between hatchery and natural adults. As with the hatchery program, adults needed for natural production have also been underescaped. Chinook parr densities for eastern Salmon River tributaries, including summer chinook in the Pahsimeroi averaged 13 percent of estimated carrying capacity for 1985-89.

Because of the productivity of this drainage and the importance of natural populations as a genetic resource to supplement hatchery broodstock, the Pahsimeroi will continue to be managed for rebuilding natural production. Supplementation research activities will be compatible with this goal. Hatchery produced steelhead will continue to support harvest in the mainstem Salmon. When a harvestable surplus of summer chinook adults becomes available, they will be utilized in fisheries consistent with rebuilding goals and the policies of this plan. However, until main stem survival problems are solved, large harvestable surpluses are not likely. Differentiation of hatchery and natural summer chinook will also be a key component to production and harvest management. Prioritization and allocation of summer chinook between hatchery production, natural production, and fisheries, and effective utilization of hatchery chinook in a fishery without impacting natural production will be major issues.

Chinook and Steelhead Objectives and Programs. 1992-1996:,

Objective: Maintain existing natural spawning populations of salmon and steelhead.

Program: Allow natural production to sustain existing natural populations to preserve genetic integrity. Limit outplanting hatchery fish to support supplementation evaluation and areas devoid of natural salmon and steelhead production.

Implement chinook supplementation research and evaluation activities. Rear smolts at Pahsimeroi Hatchery and release into natural production areas. Annual release numbers to be based on 50:50 balance of hatchery and natural fish spawning or rearing in the natural environment. Develop marks to differentiate between natural, supplementation and hatchery production fish for supplementation evaluation.

Develop guidelines to release chinook and steelhead adults above hatchery

weirs for natural production. Refine long-term escapement goals for fish to be released upstream of the Pahsimeroi weir for natural production. Proposed goals are identified in Tables 22 and 23, Section II.

During this planning period, continue to release at least 1/3 of the adult chinook returning to the Pahsimeroi weir until marked chinook return or differentiation is achieved through other methods. Continue to release only natural steelhead above the weir up to proposed escapement goal identified in Table 22.

Over the long-term, as marked hatchery summer chinook begin returning to the Pahsimeroi weir, release known naturally produced summer chinook upstream of the weir up to the proposed escapement goal identified in Table 23 and incorporate supplementation broodstock needs into weir management. As escapement goals for natural production above the weir are met, begin incorporating natural produced salmon and steelhead into hatchery production.

Objective: Maximize harvest and fishing opportunity on hatchery produced salmon and steelhead contingent upon achieving hatchery escapement needs.

Program: Continue to evaluate adult salmon and steelhead returns and harvest to develop seasons that ensure hatchery escapement needs are met, minimize surplus fish into the hatchery, and maximize catch and harvest. Structure non-treaty chinook harvest seasons to ensure anglers an opportunity to harvest hatchery fish surplus to hatchery escapement needs.

Continue to release marked hatchery steelhead smolts on-site for harvest augmentation and also release marked hatchery steelhead smolts at inriver sites. Evaluate release sites and adjust smolt releases to achieve at least 30 hours per adult steelhead harvested and 60-80 percent exploitation, when possible. Mark hatchery chinook prior to release when having marked hatchery fish may increase harvest opportunity or facilitate broodstock management. Coordinate smolt releases with tribes.

Release adequate numbers of salmon and steelhead smolts to provide adult returns capable of producing 1 million summer chinook smolts at Pahsimeroi Hatchery and 1 million smolts at Niagara Springs Hatchery. Other production levels may be proposed to enhance smolt-to-adult survival. Smolt release numbers will be based on capacity, smolt-to-adult survival rates, harvest, and broodstock availability and needs.

Transfer surplus hatchery steelhead adults and eggs to Magic Valley or Hagerman NFH for rearing. Release additional surplus hatchery steelhead adults and marked juveniles into drainages which have underutilized habitat including Panther Creek, Yankee Fork, North Fork, and Little Salmon River.

Develop funding in conjunction with Idaho Power Company for future adult steelhead and chinook CWT recovery and analysis of harvest information such as exploitation rate, numbers harvested and production component. Continue to conduct steelhead harvest surveys. Work with tribal biologists to develop accurate run predictors for chinook.

Objective: Improve Pahsimeroi Hatchery and Niagara Springs Hatchery fish survival.

Program: Coordinate with Idaho Power Company to implement Pahsimeroi hatchery improvements to potentially include: 1) Upgrade water source to a disease free status by the use of well water or ozonation; 2) Construct concrete raceways or ponds for final rearing to reduce disease prevalence 3) Incorporate a full spectrum fish disease sampling and egg culling or segregation program for chinook to reduce the possibility of disease transmission to other rearing facilities. Continue fish health monitoring.

Coordinate with Idaho Power Company to implement Niagara Spring Hatchery improvements to potentially include: 1) Enlarge existing incubation system to reduce incubator density to less than 100,000 eggs to improve water flow and egg survival; 2) Install new early rearing vats to decrease existing density problems and improve survival; 3) Modify effluent pipe to increase flow from incubation and early rearing vats; 4) Provide predation protection by installing bird screening of final rearing raceways; 5) develop adequate space to rear 400,000 pounds of steelhead smolts without exceeding discharge standards, as necessary.

Evaluate adult steelhead and summer chinook return rates with regard to rearing densities, feed studies and for steelhead, truck loading densities and transport mortality. Determine if transport and release techniques can be improved. Begin to evaluate acclimation by releasing Niagara Springs steelhead in Pahsimeroi settling pond.

Objective: Minimize harvest impacts to naturally produced salmon and steelhead.

Program: Continue to ad-clip hatchery steelhead smolts prior to release and harvest only ad-clipped fish in the mainstem Salmon.

Regulate Idaho mainstem steelhead and salmon sport harvest to promote Pahsimeroi spawning escapement. Maintain adult salmon and steelhead harvest closures in the Pahsimeroi to maximize natural production of steelhead and salmon.

Conduct research to assess timing of hatchery and natural chinook adult returns.

Work with the Shoshone-Bannock tribes to minimize harvest impacts on naturally produced salmon and steelhead through harvest agreement, monitoring, and development of natural production escapement and density goals.

Objective: Maintain and improve habitat quality of tributary production areas.

Program: Continue working with land management agencies, private landowners, and the Tribes to inform, educate, and assist with land management planning to protect fish habitat and water quality and quantity. Provide fisheries input regarding permitting and monitoring of land use activities affecting fish habitat. Emphasize riparian and stream channel protection, flow, and containment of sediment production areas.

Improve in-basin passage and survival for juveniles and adults by accelerating replacement of old wiper screens with new roller drum screens consistent with the IDFG 5-year screening program. Evaluate screen design and efficiency. Install screens in remaining unscreened ditches and maintain and repair screens as necessary.

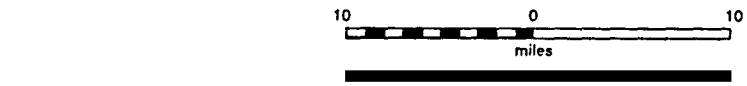
Objective: Develop methods to estimate levels of salmon and steelhead production and escapement.

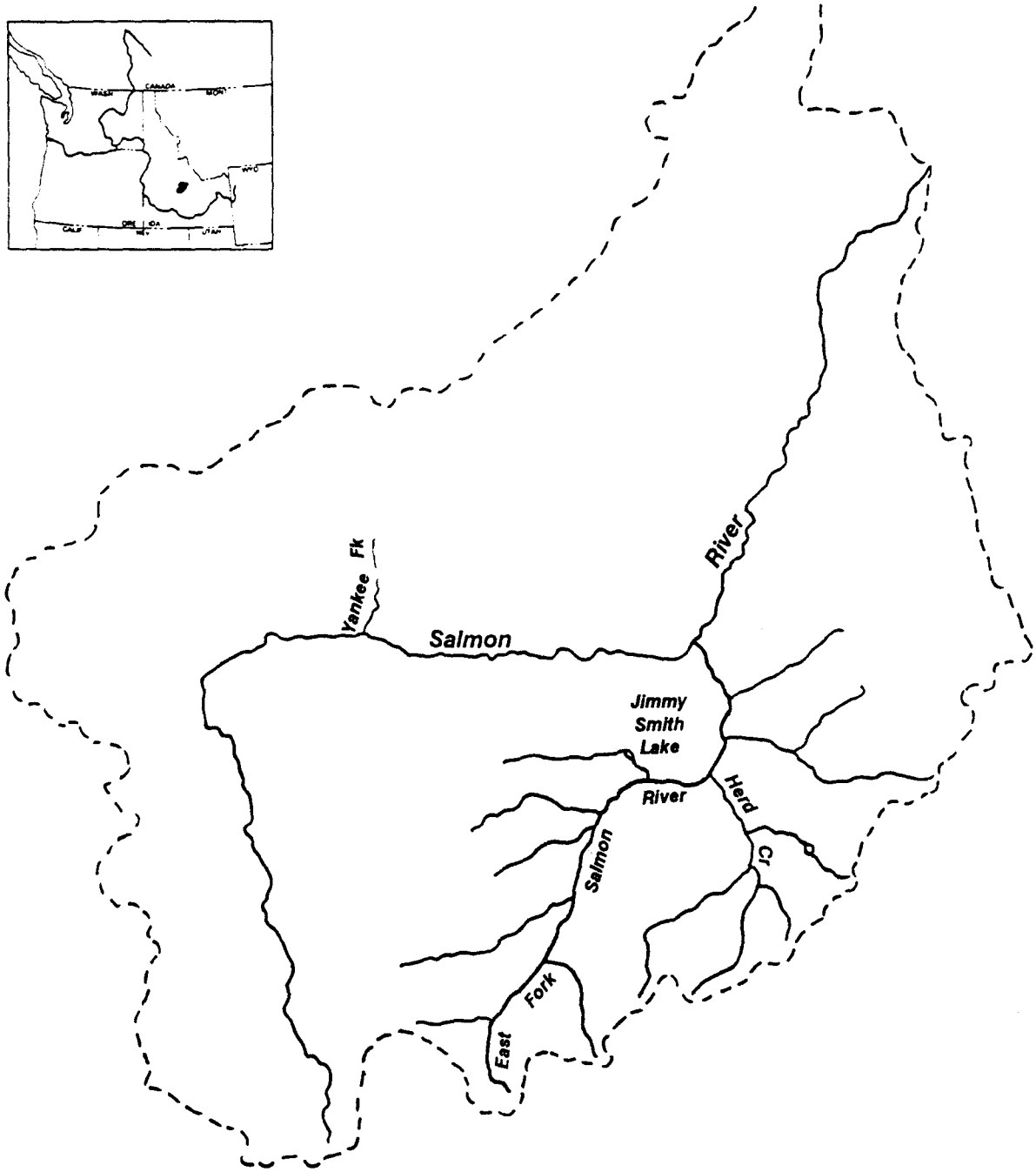
Program: Continue parr density monitoring activities. Develop methods to estimate tributary salmon and steelhead adult escapement according to production component. Integrate data to refine current escapement goals in Tables 20 and 21, Section II.

Develop relationship between adult salmon and steelhead escapement above the Pahsimeroi weir, parr production, and resulting adult returns.

Salmon River Drainage

East Fork





East Fork Drainage

Overview-The East Fork Salmon River flows 33 miles from the confluence of the South and West forks before entering the Salmon River at river mile 343. The drainage area is 540 square miles and includes the White Cloud Peaks to the east and the Boulder Mountains to the south. Water quantity and quality in the upper drainage is excellent for fish spawning and rearing. In the lower drainage, the river bisects a zone of volcanic soils which are highly erosive. Lack of vegetative cover and livestock grazing in the riparian zone result in substantial sediment loads to the river, particularly during spring runoff.

This drainage is one of the most important tributaries for chinook spawning and rearing in the upper Salmon River drainage, supporting runs of spring and summer chinook, as well as steelhead. It is an important traditional fishing area for the Shoshone-Bannock Tribes who have initiated habitat improvement projects to reduce sediment recruitment to the upper East Fork drainage.

Summer chinook spawn primarily below Herd Creek, while spring chinook spawn in Herd Creek and in the East Fork above Herd Creek. The summer chinook population has never been supplemented and is considered wild. Spawning and rearing habitat is underutilized for both chinook and steelhead. Spring chinook parr densities for the East Fork and upper Salmon river averaged 14 percent of estimated carrying capacity for 1985-89. Historically, the East Fork was considered an A-run steelhead stream but it has received both A- and B-run steelhead supplementation. Parr densities for this and similar streams averaged 38 percent for 1985-89.

A trapping facility, constructed in 1984 at approximately river mile 18, collects spring chinook and steelhead as part of the Sawtooth Hatchery operation. East Fork spring chinook are reared separately from Sawtooth spring chinook while at Sawtooth Hatchery. Smolts are returned to the East Fork Trap site for release. There has been no surplus East Fork chinook for additional supplementation activities in the East Fork drainage.

Hatchery steelhead in this drainage are a mixture of B-run fish originally from Dworshak National Fish Hatchery, and broodstock collected at the trap site. These fish are reared at Magic Valley Fish Hatchery in the Hagerman Valley and trucked back for release. Efforts to introduce B-run steelhead into the East Fork began in 1982. Poor adult returns and high exploitation rates resulted in a 31 inch maximum length harvest restriction in 1988 to attempt to return enough adults to the East Fork Trap for egg collection. This regulation will be removed after the Spring, 1991 steelhead season. East Fork steelhead management options will be reevaluated during this five year period.

Increasing natural production in this drainage will be a priority. Because neither hatchery nor natural fish are meeting escapement objectives, non-treaty harvest may not be possible in the East Fork in the next five years. Hatchery steelhead will be managed

to contribute to mainstem Salmon River steelhead harvest.

Chinook and Steelhead Objectives and Programs, 1992-1996:

Objective: Maintain genetic integrity and diversity of wild, native summer chinook.

Program: Continue to allow natural production to sustain existing wild population. Do not outplant any hatchery summer chinook.

Continue to work with other state and federal agencies to improve juvenile downstream and adult upstream passage to and from the East Fork.

Objective: Maintain existing natural spawning populations of salmon and steelhead.

Program: Allow natural production to sustain existing naturally produced populations. Limit outplanting of hatchery fish, other than mainstem or hatchery site releases, to support supplementation research and areas devoid of natural salmon and steelhead production.

Implement spring chinook supplementation evaluation activities, tentatively proposed in Herd Creek and upper East Fork. Rear smolts at Sawtooth Hatchery from East Fork broodstock, and release into natural production areas. Annual release numbers to be based on 50:50 balance of hatchery and natural fish spawning or rearing in the natural environment. Develop marks to differentiate between natural and supplementation fish for evaluation. Through this planning period, convert hatchery production and broodstock role to supplementation of natural production and evaluation.

Refine long-term escapement goals for fish to be released upstream of the East Fork weir for natural production. Proposed goals are identified in Tables 22 and 23, Section II.

During this planning period, release at least 1/2 of the adult chinook returning to the East Fork weir above the weir, until marked chinook return or differentiation is achieved through other methods. Release all naturally produced steelhead (unmarked) above the weir. Release up to 1/3 of the hatchery steelhead above the weir. Develop steelhead weir management guidelines during this planning period based on management program reevaluation. If hatchery broodstock goals are met, release additional hatchery steelhead up to the escapement goal for natural production in Table 22.

Over the long-term, as marked hatchery spring chinook return to the East Fork weir, release known naturally produced spring chinook upstream of the weir up to the proposed escapement goal identified in Table 23 and incorporate supplementation broodstock needs into weir management. As escapement goals for natural production above the weir are met, begin incorporating naturally produced salmon and steelhead into hatchery production.

Objective: Minimize harvest impacts to naturally produced salmon and steelhead.

Program: Continue to ad-clip hatchery steelhead smolts prior to release and harvest only ad-clipped fish in the mainstem Salmon. Maintain adult salmon and steelhead harvest closures in the East Fork as necessary to maximize natural production of steelhead and salmon.

Conduct research to assess run timing of hatchery and natural chinook adult returns in the Salmon River.

Work with the Shoshone-Bannock tribes to minimize harvest impacts on naturally produced fish through harvest agreement, monitoring, and development of natural production escapement and density goals.

Objective: Maximize harvest and fishing opportunity on hatchery produced salmon and steelhead contingent upon achieving hatchery escapement needs.

Program: Continue to evaluate adult salmon and steelhead returns and harvest to develop seasons that ensure hatchery escapement needs are met, minimize surplus fish into the hatchery, and maximize catch and harvest opportunities.

Continue to evaluate steelhead harvest by river section. Adjust smolt releases to achieve 30 hours per steelhead or better, when possible.
Eliminate restrictive length regulations on East Fork B-run hatchery steelhead after the Spring, 1991 season and evaluate the East Fork B-run steelhead program to determine if it can be self-sustaining. Solicit public and tribal input to develop new program options and directions.

Develop Memorandum of Agreement with the Shoshone-Bannock Tribes regarding treaty and non-treaty fisheries. With the tribe, develop a harvest plan which identifies harvest objectives, defines harvest triggers and quotas, identifies treaty and non-treaty fishing areas, and establishes monitoring programs.

Work with tribal biologists to develop accurate run predictors for chinook.

Continue to release marked hatchery steelhead smolts for harvest augmentation. Coordinate smolt releases with tribes.

Release adequate numbers of steelhead smolts to provide adult returns capable of producing 1 million B-run steelhead smolts, reared at Magic Valley. Other production levels may be proposed to enhance smolt-to-adult survival. Smolt release numbers will be based on capacity, smolt-to-adult survival rates, harvest, and broodstock availability and needs.

Objective: Improve East Fork fish survival at Sawtooth and Magic Valley hatcheries.

Program: Continue fish health research to improve hatchery fish survival. Continue Hatchery Evaluation Studies under LSRCP to assess rearing and release strategies. Evaluate acclimation of smolt releases or other methods to avoid drop-out of adult hatchery steelhead and spring chinook complementary to supplementation evaluation.

Objective: Maintain and improve fish habitat and water quality.

Program: Continue working with land management agencies and private landowners to inform, educate, and assist with land management planning to protect fish habitat and water quality and quantity. Provide fisheries input regarding permitting and monitoring of land use activities affecting fish habitat. Emphasize riparian and stream channel protection, water flow and quality, and containment of sediment production areas.

Work with landowners, the Shoshone-Bannock Tribes, and land management agencies to reduce erosion. Encourage implementation of grazing strategies which do not impact fish production and survival.

Improve anadromous juvenile and adult fish passage in the Salmon River by working with landowners to alleviate passage problems due to irrigation diversions. Identify and screen irrigation diversions, or repair screens, as needed.

Objective: Develop natural production escapement goals for salmon and steelhead in tributaries and continue to develop methods for estimating levels of production and escapement.

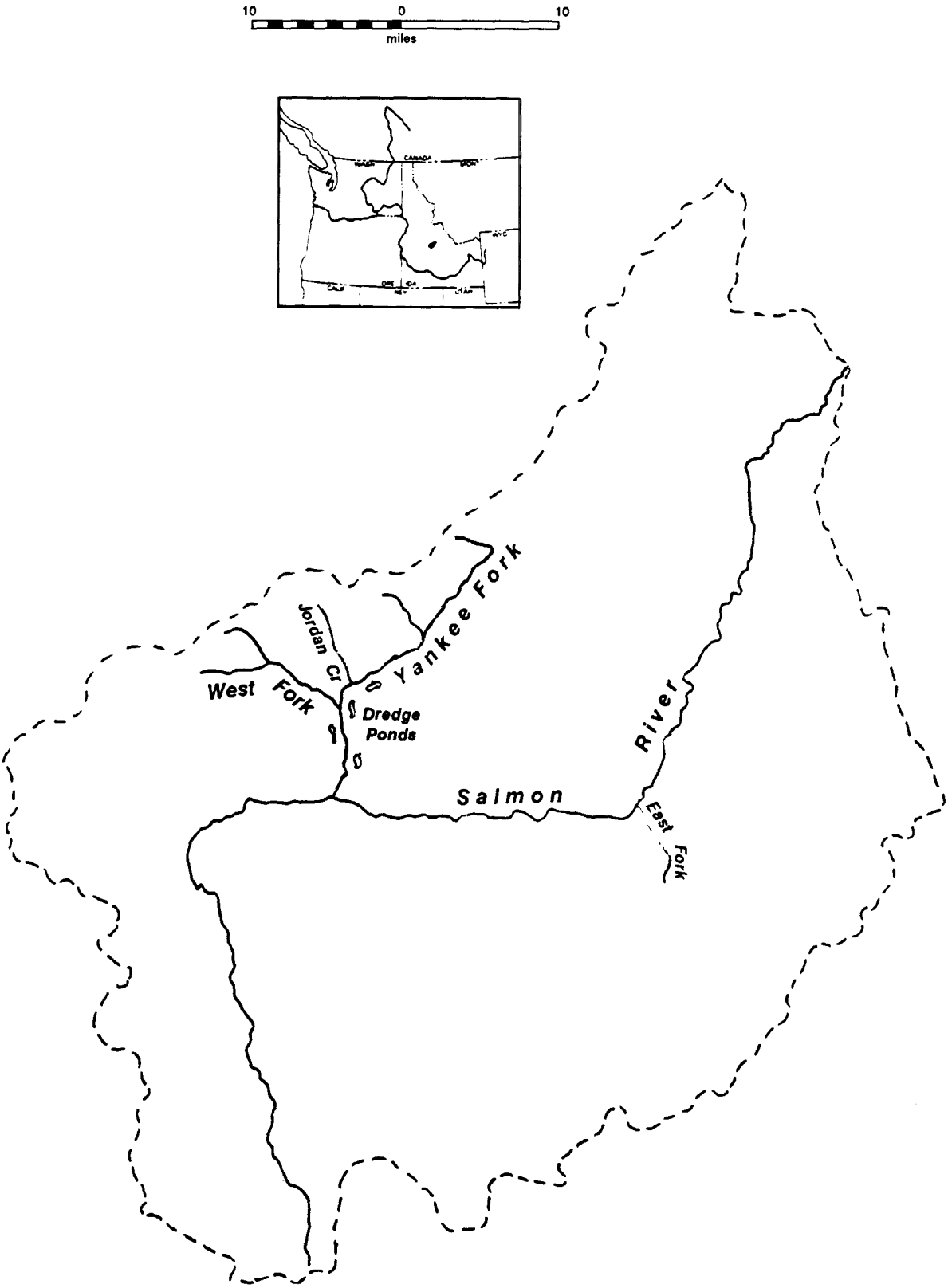
Program: Continue parr density monitoring and redd count activities. If streams conducive to steelhead redd counts are identified, develop standardized steelhead redd count program. Develop methods to estimate tributary salmon and steelhead adult escapement according to production component. Integrate data to refine current escapement goals in Tables 20 and 21, Section II.

Encourage the Shoshone-Bannock Tribes to implement natural production monitoring in East Fork .

Continue to collect adult steelhead size and run timing information to better define stock characteristics.

Salmon River Drainage

Yankee Fork



Yankee Fork

Overview-The Yankee Fork Salmon River flows 26 miles from its headwaters to the Salmon River at river mile 367.1. The drainage area includes 195 square miles.

Much of the mainstem Yankee Fork is accessible by road. Secondary roads border the entire length of Jordan Creek and the Yankee Fork upstream to McKay Creek. The lower West Fork is accessible by road and the remainder of the stream is bordered by a trail.

Gold was discovered in the drainage in 1873. Until the late 1930s, gold was extracted by placer mining. In 1938, a large dredge was constructed and operated from 1939-42. After World War II, the dredge was reactivated and operated until 1952. Most of the gold was extracted from approximately eight miles of Yankee Fork and Jordan Creek. Impacts have been stream channelization and the addition of tremendous silt loads and toxic pollutants. Mining activity continues throughout the drainage, particularly in Jordan Creek.

Despite extensive mining, the Yankee Fork continues to support runs of spring chinook salmon and steelhead. This is an important drainage to the Shoshone-Bannock Tribes, who have implemented a BPA-funded project to enhance dredge ponds to rear juvenile chinook. For several years, surplus hatchery adult spring chinook have been outplanted into the drainage to provide ceremonial and subsistence opportunities for tribal fishers. Spring chinook smolts and juveniles from both Rapid River and Sawtooth stock have been planted in the drainage since 1985. Steelhead supplementation occurred consistently through the 1980s, primarily with fry from Pahsimeroi Hatchery broodstock.

Regardless of efforts to use hatchery fish for harvest augmentation and supplementation and the use of dredge ponds as additional rearing habitat, adult escapements into the Yankee Fork remain low. Improved smolt-to-adult survival rates are needed to provide significant harvestable surpluses and rebuilding of natural populations. Biologists from the Shoshone-Bannock Tribes monitoring natural production in the Yankee Fork estimated that the average chinook parr density was 7 percent of estimated carrying capacity for 1984-89.

The priority for chinook management will be harvest augmentation to provide tributary harvest. However, harvest opportunity is expected to be limited during the next five years because low escapements of salmon and steelhead to the Yankee Fork are expected. Until mainstem survival problems are solved, large harvestable surpluses are not likely. Because portions of the drainage do support natural populations, areas will be identified for increasing natural production and managed as such. Chinook supplementation research activities will be focused on rebuilding natural populations.

Chinook and Steelhead Objectives and Programs. 1992-1996:

Objective: Maximize harvest and fishing opportunity on hatchery produced salmon and steelhead when hatchery salmon and steelhead are available.

Program: Continue to release marked hatchery steelhead and hatchery spring chinook for harvest augmentation. Continue to release spring chinook fry into enhanced Yankee Fork dredge ponds for final rearing.

Develop Memorandum of Agreement with the Shoshone-Bannock Tribes regarding treaty and non-treaty fisheries. With the tribe, develop a harvest plan which identifies harvest objectives, defines harvest triggers and quotas, identifies treaty and non-treaty fishing areas, and establishes monitoring programs.

Structure non-treaty chinook harvest seasons to ensure anglers an opportunity to harvest hatchery fish surplus to escapement needs. If a non-treaty season occurs, conduct chinook harvest creel surveys and develop in-season harvest estimates in cooperation with tribal harvest managers to ensure that escapement goals are met. Work with tribal biologists to develop accurate run predictors and achieve accurate harvest estimates.

For harvest augmentation, release marked surplus hatchery steelhead juveniles into Yankee Fork from the Pahsimeroi Hatchery. Release additional surplus hatchery steelhead adults from Pahsimeroi Hatchery into Yankee Fork.

Support Shoshone-Bannock Tribal efforts to evaluate potential of increasing dredge pond production by feeding juveniles and to evaluate feasibility of trapping Yankee Fork spring chinook for tributary broodstock development.

Objective: Maintain existing natural spawning populations of salmon and steelhead.

Program: Implement chinook supplementation research activities in the West Fork Yankee Fork when adequate numbers of chinook return to Sawtooth Hatchery. Develop marks to differentiate between natural, supplementation and hatchery production fish. Release approximately 61,000 smolts for evaluation. Install temporary weir to allow differentiation of supplementation and natural adult returns for broodstock management and evaluation.

Objective: Minimize harvest impacts to naturally produced salmon and steelhead.

Program: Conduct research to assess timing of hatchery and natural chinook adult returns. Develop harvest strategies which minimize impact on naturally produced fish and monitor chinook seasons or test fisheries to allow modification or closure when naturally produced fish are adversely affected.

Work with the Shoshone-Bannock Tribes to minimize harvest impacts on naturally produced fish through harvest agreement, monitoring, and development of natural production escapement and density goals.

Objective: Develop methods to estimate levels of salmon and steelhead production and escapement.

Program: Coordinate with the Shoshone-Bannock Tribes to conduct spring chinook redd counts compatible with IDFG redd count manual to maximize benefits from redd count efforts and minimize duplicate counts.

Cooperatively with the Shoshone-Bannock Tribes, evaluate feasibility of PIT tags, or other marks, to provide run prediction information for Yankee Fork spring chinook and steelhead.

Encourage the Shoshone-Bannock Tribes to continue spring chinook and steelhead parr monitoring and data analysis to track natural production trends.

Develop methods to estimate tributary salmon and steelhead adult escapement according to production component. Integrate salmon and steelhead data to refine current escapement goals in Tables 20 and 21, Section II.

Continue to collect adult steelhead size and run timing information to better define stock characteristics.

Objective: Maintain and improve habitat quality of tributary production areas.

Program: Continue working with land management agencies, private landowners, and the Tribes to inform, educate, and assist with land management planning to protect fish habitat and water quality and quantity. Provide fisheries input regarding permitting and monitoring of land use activities affecting fish habitat. Emphasize riparian and stream channel protection, water flow and quality, and containment of sediment production areas.

Salmon River Drainage

Middle Fork to Headwaters

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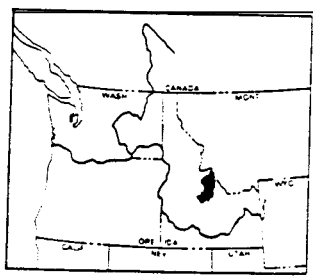
miles



North Fork Salmon River

Owl Cr

Creek

Panther

Morgan

Creek

Yankee Fork

Valley Creek

Squaw Creek

Salmon River

Warm Springs Creek

Warm Spr Cr

4th of July Cr

Salmon River

E Fk

Upper Salmon River - Middle Fork to Headwaters

Overview-The Salmon River from the Middle Fork to the North Fork is about 40 miles long. This river section is classified as "recreational" under the Wild and Scenic River Act. From the North Fork to the headwaters, the river runs for 173 miles and drains approximately 6,000 square miles. The headwaters area, upstream from Thompson Creek, lies within the Sawtooth National Recreation Area (SNRA), administered by the USFS. Panther Creek and North Fork are two major tributaries not addressed in separate drainage plans.

Upstream from its confluence with the Middle Fork, the Salmon River is lower gradient and the river flows in braided channels through an alluvial plain. The drainage is characterized by mountainous terrain bisected by river valleys. The major mountain range is the Sawtooth Range within the Sawtooth Wilderness, west of the upper Salmon River. The 41 mile reach of the Salmon river between the Pahsimeroi and the East Fork is characterized by cobble and boulder runs with occasional deep pools. The 24 mile reach of the main Salmon River between the East Fork and Yankee Fork flows mostly in a deep canyon with narrow alluvial bars. The canyon walls create a very stable stream channel with deep pools interspersed with rocky runs and gravel riffles. The 18 miles of the Salmon River between the mouth of Yankee Fork and the Sawtooth Hatchery weir is primarily a series of runs and riffles with few deep holes. Upstream from Sawtooth Hatchery, the Salmon River is a meandering meadow stream in a subalpine valley and habitat quality is mostly excellent except for some increased sediment and riparian and stream channel impacts due to grazing. Numerous lakes with road access in the Sawtooth National Recreational Area, including Stanley, Redfish, and Alturas, provide significant recreational opportunity.

The Salmon River between the Middle Fork and Pahsimeroi Rivers serves primarily as a migration corridor and overwintering area steelhead adults and juveniles. Upstream from the Pahsimeroi, the river supports both spawning and rearing of chinook and steelhead. The reach of Salmon River from the East Fork to Yankee Fork contains good habitat for mainstem spawning chinook and substantial number of wild summer chinook spawn in the broad riffles near the mouth of Warm Spring Creek.

Upstream from the Middle Fork, the Salmon River is very accessible. There is a secondary road along the river from the Middle Fork to the North Fork. Highways 93 and 75 border most of remaining stretch of river. Salmon, Challis and Stanley are the only primary population centers in the upper Salmon River drainage. Logging, mining, ranching, and recreation are the major industries.

Fishing, particularly steelhead fishing, is an important recreational activity in the mainstem Salmon River. The majority of the steelhead migrate to the area between the Middle and North Fork Salmon rivers in the fall and overwinter in this area prior to resuming upstream migration in the spring. Since hatchery and naturally produced stocks

intermingle and natural stocks have been consistently underescaped, harvest occurs only on hatchery fish although naturally produced steelhead provide significant catch-and-release fishing. From the Middle Fork to the Lemhi, the annual average steelhead harvest for Fall 1985 through Spring of 1990 was 6,303. From the Lemhi to the Pahsimeroi the annual average harvest was 1,419. Fewer fish are harvested above the Lemhi River. The average harvest from the area between the Lemhi and East Fork Salmon rivers was 344 fish with 853 fish harvested from the river above the East Fork during this same period.

Many recreationists are attracted to the scenic beauty and recreational opportunities of the SNRA. This granitic watershed yields few nutrients to the upper Salmon River and the large morrain lakes. Sterile waters and a short growing season render the lakes and streams incapable of producing the fish necessary to meet the demands of large numbers of anglers. Although large numbers of hatchery rainbow trout are stocked during the tourist season, the mainstem Salmon fishery is primarily supported by hatchery steelhead early in the fishing season.

The Panther Creek drainage contains nearly 100 miles of streams that historically supported chinook runs of 2,000 spawners in addition to substantial runs of steelhead. Although habitat is in good condition, by the late 1960s, anadromous fish runs had declined due to poor water quality as a result of mine effluents. A few steelhead currently use lower Panther Creek and its tributary, Clear Creek, for spawning and rearing. Snorkel monitoring shows that there are moderate densities of juvenile rainbow in the drainage, some of which may be steelhead. There are continuing efforts by the state of Idaho to secure funds to improve the water quality in this drainage.

The North Fork drainage contains about 60 miles of stream, some of which has been severely degraded by a variety of land-use activities such as dredge and placer mining and logging. Spring chinook in this drainage were last supplemented with a small number of hatchery fry in 1977 and limited natural production has continued. Steelhead also spawn and rear in this drainage.

Many of the smaller tributaries to the Salmon River support chinook and steelhead spawning and rearing. Water quality and riparian habitat in several of these streams have been adversely impacted by activities such as mining, road building, and livestock grazing, but they continue to provide fair habitat for natural production. The U.S. Forest Service (USFS) has enhanced passage to a number of tributaries blocked due to poor culvert placement. Some streams, like Morgan and Challis creeks, have been essentially eliminated from anadromous fish production due to irrigation diversions and channel alterations, but there is potential for rehabilitation.

Many of the Salmon River headwater tributaries such as Frenchman, Pole, Alturas Lake, Redfish Lake, Valley, and Basin creeks are critical spawning and rearing areas for steelhead and particularly spring chinook. Although this area is entirely within the

SNRA, many of the streams are located on private land and have been severely impacted by grazing and irrigation diversions. Two diversions, one on Alturas Lake Creek and the other on the upper Salmon River near Alturas Lake Creek, dewater these streams and create migration barriers during most years. A heightened awareness of the effects of grazing or water withdrawals for flood irrigation on critical chinook habitat has led the USFS and some landowners to employ alternative grazing strategies and irrigation systems. Negotiations are underway between the USFS and the private landowner to rectify the dewatering of the upper Salmon River and Alturas Lake Creek, but until a solution is implemented, good quality habitat will remain inaccessible to spring chinook. Research with outplanted chinook has documented that early rearing survival is higher in the headwater habitat above the diversions than below.

Even though there is abundant habitat, adult escapements of chinook and steelhead are insufficient for full utilization, primarily due to poor survival during Snake and Columbia River migration. Several low water years in the upper Salmon River has exacerbated water quantity problems in the mainstem Salmon River as well as tributaries. Parr density monitoring of chinook and steelhead populations from 1985-1989 indicate that the chinook density for the upper Salmon River averaged only 14 percent and steelhead densities averaged 11 percent of the estimated carrying capacity.

At one time, significant runs of sockeye salmon returned to spawn along the shorelines and inlets of the large Stanley Basin lakes. The last trapping effort on Redfish Lake Creek was conducted in 1987 and captured only 16 adult fish. Redfish and possibly Alturas lakes are the only Stanley Basin lakes that currently support sockeye production. Both Redfish and Alturas lakes support kokanee populations and recent evidence indicates that some individuals from these populations do migrate downstream. Spawning and rearing habitat in these lakes and their tributaries are in nearly pristine condition and should be capable of sustaining runs of sockeye if downriver survival conditions improve. Efforts to restore sockeye to Stanley Basin lakes will be a major focus in this drainage because in November, 1991, the National Marine Fisheries Service (NMFS) announced Snake River sockeye would be listed as "endangered" under the Endangered Species Act.

During the spring, 1991, the Department began trapping sockeye smolts migrating out of Redfish Lake Creek, the first phase of emergency recovery actions which the Department and the Shoshone-Bannock Tribes are cooperatively pursuing. The objective of this program is to develop a captive sockeye broodstock to provide progeny which can be returned to the Stanley Basin, once migration survival conditions have improved. The Department also trapped and PIT tagged kokanee migrants at the Sawtooth weir in 1990 and trapped and collected migrants in 1991. Fish collected in 1991 will undergo genetic analyses to compare with fish from Redfish Lake Creek. Also, the four returning adult sockeye adults were spawned to produce progeny for a captive broodstock program.

The headwaters of the Salmon River is the site of the Sawtooth Hatchery, a Lower Snake

River Compensation Plan (LSRCP) facility. The hatchery weir is located 897 stream miles from the ocean, near Boundary Creek at an elevation of approximately 6,500 feet above mean sea level. Broodstock for hatchery spring chinook and A-run steelhead stocked into this portion of the river are trapped at this weir. Progeny of A-run steelhead trapped at the Pahsimeroi Hatchery are also released in the upper Salmon River. Steelhead eggs are reared at Hagerman National Fish Hatchery and Magic Valley Fish Hatchery in the Hagerman Valley. S molts are then trucked back to the upper Salmon River to provide returning adults for a fishery and broodstock. Spring chinook eggs are reared at Sawtooth Hatchery for release into the Salmon River. Progeny of spring chinook broodstock collected at the Sawtooth weir are kept separate from the East Fork fish, also reared at Sawtooth Hatchery. The majority of the spring chinook smolts are released directly into the Salmon River at the hatchery site to return adults for broodstock. Numbers of returning adults have not been sufficient to support a fishery or the proposed hatchery program.

With some surplus fish from Pahsimeroi Hatchery, broodstock needs for the Sawtooth steelhead program have generally been met. For spring chinook, broodstock goals have rarely been attained and the run is underescaped. There has been no non-treaty harvest on this hatchery stock, although the Shoshone-Bannock Tribes have recently held treaty fisheries in the upper Salmon River, near Sawtooth Hatchery. For both species, up to 1/3 of the run to the weir is released upstream for natural production, but naturally produced adults are also underescaped and far more adults are needed to utilize the natural production area of the upper Salmon River. There is also concern about the suitability of transplanted Snake River A-run steelhead for high elevation natural production areas.

Increasing natural production in this drainage will be a priority. Supplementation research will be initiated to develop tools to increase sustained natural production. Because neither hatchery nor natural chinook are meeting escapement objectives, non-treaty harvest is not expected in the upper Salmon River in the next five years. The mainstem Salmon river, below Sawtooth Hatchery will continue to be managed for a hatchery steelhead fishery.

Chinook. Sockeye. and Steelhead Objectives and Programs. 1992-1996

Objective: Reestablish sockeye runs to historic areas and emphasize efforts to utilize Stanley Basin sockeye and kokanee resources.

Program: Using Endangered Species Act and Northwest Power Planning Council's Fish and Wildlife funding, study sockeye enhancement and restoration strategies. In coordination with agencies and the Shoshone-Bannock Tribes, develop and implement Stanley Basin Lakes sockeye recovery plan which may include actions such as the following:

Continue to evaluate captive, indigenous, wild broodstock program to secure sockeye smolts and hold them to maturity for spawning.

Intercept sockeye adults at Snake River dams for spawning and rearing.
Collect kokanee spawners in selected Stanley Basin lakes for spawning and enhancement to investigate the potential of producing anadromous progeny.

Identify production potential of Stanley Basin sockeye habitat by collection and evaluation of lake production index data.

Explore experimental lake fertilization using a small Stanley Basin Lake to increase lake productivity for sockeye production.

Install Redfish Lake weir to collect sockeye adult and juvenile stock, timing, and genetic information.

Continue to intercept juvenile migrants from Redfish and Alturas lakes and PIT tag to collect timing and migration survival information.

Continue genetic assessment of Stanley Basin sockeye and kokanee resources.

Continue kokanee enumeration in Alturas and Redfish lakes.

Establish instream flows in Alturas Lake Creek and upper Salmon River sufficient to allow unimpeded migration of sockeye. Screen diversions as necessary.

Continue to work with other state and federal agencies to improve juvenile downstream and adult upstream passage to and from the upper Salmon River.

Objective: Maintain genetic integrity and diversity of wild, native summer chinook.

Program: Continue to not outplant hatchery summer chinook into the Upper Salmon River. Allow natural production to sustain existing wild population.

Manage hatchery supplemented Pahsimeroi summer chinook stock so that straying into the upper Salmon River is minimized.

Objective: Maintain existing natural spawning populations of salmon and steelhead.

Program: Allow natural production to sustain existing naturally produced populations. Limit outplanting of hatchery salmon and steelhead, other than mainstem or hatchery site releases, to support supplementation research and areas devoid of natural salmon and steelhead production.

Develop methods to separate hatchery and naturally produced salmon when they return to weirs as adults.

Implement chinook supplementation evaluation activities proposed in upper Salmon River and Alturas Lake Creek, with use of North Fork Salmon River and Valley creek as controls. Rear smolts at Sawtooth Hatchery and release into natural production areas of treatment streams. Annual release numbers to be based on 50:50 balance of hatchery and natural fish spawning or rearing in the natural environment. Develop marks to differentiate natural, supplementation, and hatchery production fish for supplementation evaluation.

Refine long-term escapement goals for salmon and steelhead to be released upstream of the Sawtooth weir for natural production. Proposed goals are identified in Tables 22 and 23, Section II. Establish harvest agreements with the Shoshone-Bannock Tribes to support natural production above the Sawtooth weir. Consider alternative production methods than adult release if tribal harvest significantly impacts natural production levels above the weir.

During this planning period, continue to release at least 1/3 of the spring chinook run to Sawtooth weir upstream of the weir for natural production until marked chinook return or differentiation is achieved through other methods. Release all naturally produced steelhead upstream of the weir as well as at least 1/3 of hatchery steelhead returning to the weir. If hatchery broodstock goals are met, release additional hatchery steelhead, up to the escapement goal for natural production in Table 22.

In addition, outplant up to 30 pairs of hatchery chinook adults into three headwater tributaries for research to refine the relationship between seeding levels and resulting parr densities. Outplant 10 pair of steelhead into a headwater tributary to research seeding and fry movement.

Over the long-term, as marked hatchery spring chinook begin

returning to Sawtooth weir, release known naturally produced spring chinook upstream of the weir up to the proposed escapement goals identified in Table 23 and incorporate supplementation broodstock needs into weir management. If returning natural steelhead are sufficient to meet the natural escapement goal, discontinue hatchery fish release. As the escapement goals for natural production above the weir are met, begin incorporating naturally produced salmon and steelhead into hatchery production.

Objective: Minimize harvest impacts to naturally produced salmon and steelhead.

Program: Continue to ad-clip hatchery steelhead smolts prior to release and harvest only ad-clipped steelhead in the mainstem Salmon. Maintain adult salmon and steelhead harvest closures above the Sawtooth weir and upper Salmon tributaries as necessary to maximize natural production of steelhead and salmon.

Develop Memorandum of Agreement with the Shoshone-Bannock Tribes regarding treaty and non-treaty fisheries. With the tribe, develop a harvest plan which identifies harvest objectives, defines harvest triggers and quotas, identifies treaty and non-treaty fishing areas, and establishes monitoring programs.

Objective: Maximize harvest and fishing opportunity on hatchery produced salmon and steelhead contingent upon achieving hatchery escapement needs.

Program: Continue to evaluate adult salmon and steelhead returns and harvest to develop seasons that ensure hatchery escapement needs are met, minimize surplus fish into the hatchery, and maximize catch and harvest opportunity. Structure non-treaty chinook harvest seasons to ensure anglers an opportunity to harvest hatchery fish surplus to hatchery escapement needs.

Develop release strategies for hatchery steelhead smolts that minimize impacts to naturally-produced salmon and steelhead, and maximize return to angler creel and Sawtooth weir. Evaluate acclimation of steelhead released at Sawtooth weir. Document hauling and release mortality of steelhead released at Sawtooth. Determine if transport and release techniques need to be improved.

Continue to evaluate steelhead harvest by river section. Adjust smolt

releases to achieve 30 hours per steelhead or better, when possible.

Work with tribal biologists to develop accurate run predictors for chinook.

Continue to release marked hatchery steelhead smolts and hatchery spring chinook smolts for harvest augmentation. Mark hatchery chinook prior to release when having marked hatchery fish may increase harvest opportunity or facilitate broodstock management. Coordinate smolt releases with tribes.

Release adequate numbers of salmon and steelhead smolts to provide adult returns capable of producing 1.6 million spring chinook smolts at Sawtooth Hatchery and 1.5 million steelhead smolts at Hagerman National Fish Hatchery and 500,000 steelhead smolts at Magic Valley Fish Hatchery. Other production levels may be proposed to enhance smolt-to-adult survival. Smolt release numbers will be based on capacity, smolt-to-adult survival rates, harvest, and broodstock availability and needs.

Release marked hatchery steelhead surplus to smolt production needs at inriver sites, Yankee Fork, or Panther Creek. Release surplus hatchery spring chinook into Yankee Fork. Release surplus hatchery steelhead adults into Panther Creek and Yankee Fork.

Develop opportunities for tributary utilization of hatchery spring chinook and steelhead adults returning to Panther Creek and Yankee Fork.

Objective: Improve Sawtooth Hatchery chinook and steelhead survival.

Program: Coordinate with the USFWS through LSRCP to implement hatchery improvements including disease-free water and baffles for outside raceways to improve cleaning, provide shade, and improve fish distribution.

Continue fish health monitoring and research additional disease sampling and culling or segregation programs which may be incorporated to reduce the possible transmission of fish disease. Continue Hatchery Evaluation Studies under LSRCP to assess rearing and release strategies. Utilize densities that provide maximum adult return rates. Research the acclimation of steelhead smolts at the Sawtooth site and the resulting return rates. Develop a marking program that will provide hatchery personnel the capability of distinguishing between hatchery and natural returning adult chinook with minimal impact on return rates.

Objective: Develop Salmon River native steelhead stock for upper Salmon River supplementation.

Program: Evaluate feasibility of collecting and spawning wild steelhead from Salmon River Canyon tributaries maintaining parr densities over 50 percent of estimated carrying capacity. Outplant adults or spawn and rear progeny in a hatchery and outplant juveniles. Select suitable tributaries in the upper Salmon River for monitoring and evaluation of transplanted steelhead.

Objective: Increase access and facilities for steelhead and salmon anglers.

Program: Acquire additional public fishing access with purchases or easements. Develop boat launches, parking sites, and sanitation facilities.

Objective: Maintain and improve habitat quality of fish production areas.

Program: Continue working with land management agencies, private landowners, and the Tribes to inform, educate, and assist with land management planning to protect fish habitat and water quality and quantity. Provide fisheries input regarding permitting and monitoring of land use activities affecting fish habitat. Emphasize riparian and stream channel protection, water flow and quality, and containment of sediment production areas.

Participate in allotment management plan review. Encourage implementation of grazing management plans which do not impact fish production and survival.

Improve anadromous juvenile and adult fish passage in the Salmon River by working with landowners to alleviate passage problems due to irrigation diversions. Identify and screen irrigation diversions, and repair screens as prioritized in the IDFG 5-year screening plan. Criteria for design, construction and operation of facilities shall be based on currently acceptable standards and best available technologies. Develop screen evaluation program cooperatively with Shoshone-Bannock Tribes.

Work with the Sawtooth National Recreation Area to resolve passage problems in upper Salmon River and Alturas Lake Creek due to irrigation diversions and dewatering. Seek solutions to dewatering/passage barrier problem at irrigation diversions on Squaw Creek. Work to develop instream flows sufficient to support salmon and steelhead spawning and rearing in upper Salmon River and tributaries.

Encourage implementation of rehabilitation measures for Panther Creek. Cooperatively with the Salmon National Forest, evaluate removal or modification of migration barrier to allow access to Napias Creek.

Objective: Develop methods to estimate levels of salmon and steelhead production and escapement.

Program: Continue parr density monitoring and redd count activities. If streams conducive to steelhead redd counts are identified, develop standardized steelhead redd count program. Develop methods to estimate tributary salmon and steelhead adult escapement according to production component. Integrate data to refine current escapement goals in Tables 20 and 21, Section II.

Continue to collect adult steelhead size and run timing information to better define stock characteristics.

PART IV. CRITICAL NEEDS

Critical uncertainties have been identified throughout this document. Language such as "evaluate" and "assess" indicate that answers needed for implementation of programs to meet management objectives may not be available yet. Therefore, a major objective must be to answer critical uncertainties and provide the important data needed for successful salmon and steelhead management. To accomplish this, research and monitoring activities underway or proposed will continue to be directed toward improving salmon and steelhead management in Idaho and affecting management decisions beyond Idaho that influence the state's salmon and steelhead resources.

Critical Data Needs

The following is a compilation of critical activities or data needed in order to implement programs identified in this document. While there are many data gaps, the anadromous fish program staff and managers have developed this as a priority list to help guide in-state research and monitoring proposals. Where current research projects incorporate aspects of these critical data needs, they are identified by the title of the project in parentheses.

1) Monitoring of adult spawning stock in tributaries and juvenile production is needed to strengthen the parr-adult relationship and adult-smolt early life history understanding and refine escapement objectives (Intensive Evaluation of Chinook and Steelhead Smolt Production, Idaho Habitat Evaluation for Off-Site Mitigation Record, Coordinated Information System, System Monitoring and Evaluation Program);

2) Evaluation of habitat quality influence on egg-smolt survival and carrying capacity is needed to support land and water management decisions and harvest management processes relative to spawning escapement needs (Intensive Evaluation of Chinook and Steelhead Smolt Production, Idaho Habitat Evaluation for Off-Site Mitigation Record, Coordinated Information System, System Monitoring and Evaluation Program);

3) Understanding of abundance, population age and size compositions and run timing for stock identification is needed to tune salmon and steelhead management to a stock basis rather than a run basis (Coordinated Information System, System Monitoring and Evaluation Program);

4) Development of genetic guidelines and genetic monitoring is needed to guide decisions relative to wild and natural fish policy and management to maintain genetic

resources (Salmon Supplementation Studies in Idaho Rivers);

5) Evaluation of supplementation effectiveness. This is needed to assess whether supplementation of natural populations with fish reared for some period in a hatchery can be used to rebuild natural populations. A myriad of related broodstock, hatchery rearing practices, outplanting strategies, and genetics questions exist (Salmon Supplementation Studies in Idaho Rivers);

6) Development of methodology to discriminate between natural and hatchery salmon stocks is needed for harvest and production management (Coded Wire Tag Recovery);

7) Evaluation of survival of marking hatchery chinook is needed for hatchery and natural production management (LSRCP Fish Hatchery Evaluation);

8) Assessment of chinook mortality associated with catch and release fishing is needed to optimize harvest opportunities.

9) Optimization of hatchery practices, including fish disease research and rearing and release evaluation, is needed to improve hatchery fish survival, improve supplementation effectiveness, and reduce natural spawning impacts (LSRCP Fish Hatchery Evaluation);

10) Migration timing and survival for smolts in mainstems and tributaries correlated to water management and transportation and determination of where and why major losses of smolts occur prior to Lower Granite Dam is needed to help make water management and production decisions and recommendations (Smolt Condition and Timing of Arrival at Lower Granite Reservoir, Intensive Evaluation of Chinook and Steelhead Smolt Production);

11) Development of improved harvest estimations and methods to predict stock escapements is needed to determine harvest contribution, structure harvest seasons, and make production estimates (LSRCP Evaluation of Hatchery-Wild Composition of Idaho Salmon and Steelhead Harvest, Coded Wire Tag Recovery).

Proposed Research and Monitoring

The following topics represent additional activities the Department will be pursuing to either expand or reprioritize current projects or to implement as new projects during the next five years. Potential funding sources are identified but no funding has been secured. These items are not prioritized.

1)Salmon and Steelhead Telephone Survey Evaluation

Objectives: Determine reliability and accuracy of existing telephone survey harvest estimates.

Synopsis: Based on techniques to be developed with this project, the reliability of statewide harvest estimates will be evaluated and modifications in the existing procedures will be made.

Potential funding: Salmon and Steelhead tag, Wallop-Breaux. Two year project.

2)Anadromous Fish Hatchery History

Objectives: Evaluate historic Coded Wire Tag (CWT) groups utilizing existing CWT database.

Synopsis: Compile CWT database, analyze data to provide a comprehensive document of the release groups.

Potential funding: Lower Snake River Compensation Program. Annual project activities.

3)Downstream Contribution

Objectives: Document contribution of Idaho reared fish in downstream Columbia River and ocean fisheries.

Synopsis: CWT collected by agencies outside Idaho will be compiled and analyzed as to contribution of Idaho reared fish to river and ocean fisheries.

Potential funding: Salmon and Steelhead Tag. Annual project activities.

4)Chinook Redd Survey Evaluation

Objectives: Make comparisons of chinook redd count methods and determine relationships of redd count indices to spawning population size.

Synopsis: Comparison of single peak and multiple total redd counts will provide insight as to whether traditional counts (single peak) are representative indices of spawning run size. On selected streams where weirs exist, a known number of chinook will be released upstream and a single peak count conducted. Multiple counts will also be made on the stream.

Potential funding: U.S. Canada Treaty monies. Annual project activities.

5)Idaho Power Company (IPCo) Anadromous Fish Program

Objectives: Evaluate success of transporting steelhead and chinook from Snake to Salmon River. Assess the contribution of IPCo fish. Analyze production methods, diet, transportation and other operational practices and make recommendations for improving.

Synopsis: Conduct comprehensive evaluation. Historic data will be compiled and analyzed. Future release groups will be marked and evaluated as adults return.

Potential funding: Idaho Power Company. Annual project activities.

6)Downstream passage

Objectives: Compile and evaluate survival rates and timing of anadromous fish migrating out of or into Idaho.

Synopsis: Historical and current survival rates of migrating smolts and adults will be compiled and analyzed to allow for better management.

Potential funding: Bonneville Power Authority. Annual project activities.

7)Production Potential

Objectives: Determine carrying capacities for representative stocks and streams that can be applicable statewide.

Synopsis: Using outplant techniques, carrying capacity of selected streams will be determined to evaluate the status of the rebuilding program. Field techniques such as snorkeling, and electrofishing will be utilized to develop juvenile density information for comparative purposes and applicability to other Idaho streams. Methods will be developed to estimate or enumerate adult escapement into tributary streams by use of sonar or other developing technology.

Potential funding: Bonneville Power Authority. Annual project activities.

8)Stock Separation

Objectives: Develop techniques to separate stocks of anadromous fish at Lower Granite Dam and in field situations such as hatchery weirs.

Synopsis: Separation of different stocks as they enter Idaho is important for management. Techniques such as electrophoresis and scale analysis will be evaluated to ascertain most effective methods for separations.

Potential funding: Lower Snake River Compensation Plan funding. Three year project.

9)Production and Survival of Natural and Wild Stocks

Objectives: Assess production levels of salmon and steelhead stocks in natural and wild streams. Determine survival of different life history phases of salmon and steelhead stocks in natural and wild streams.

Synopsis: Production and survival of wild and natural juvenile salmon and steelhead will be determined by various methods for comparison with historic and future information to determine trends in populations. Methods will be developed to estimate or enumerate adult escapement into tributary streams by use of sonar or other developing technology. Information will assist in effective management and efforts to rebuild.

Potential funding: Bonneville Power Authority. Annual project activities.

10)Steelhead Redd Survey Evaluation

Objectives: Evaluate potential of steelhead redd counts, validate and develop standard methods. Determine relationships of redd count indices to spawning population size.

Synopsis: Comparison of single peak and multiple total redd counts will provide insight as to whether single peak are representative indices of spawning run size. On selected streams where weirs exist, a known number of steelhead will be released upstream and a single peak count conducted. Multiple counts will also be made on the stream. Methods will be developed to estimate or enumerate adult escapement into tributary streams by use of sonar or other developing technology.

Potential funding:Bonneville Power Authority, Lower Snake River Compensation Program. Annual project activities.

11)Steelhead Supplementation Evaluation

Objectives: Determine if various supplementation strategies improve presmolt and smolt production, and adult escapements. Evaluate effects on overall productivity of the population.

Synopsis: Use of outplanting of various life stages of steelhead will be evaluated for both short and long-term effect on endemic populations.

Potential funding: Bonneville Power Authority, Lower Snake River Compensation Program. Annual project activities.

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APPENDICES

Appendix A. Long-term numerical utilization objectives[a] developed for the Northwest Power Planning Council's Subbasin Plans by Idaho Public Advisory Groups and Tribes for the Salmon and Clearwater subbasins.

Subbasin	Species	Sport harvest objective	Tribal harvest objective	Total harvest objective
Salmon	Spring chinook	47,000	47,000	94,000
	Summer chinook	56,000	56,000	112,000
	Sockeye	1,000	1,000	2,000
	Steelhead	63,000	63,000	126,000
Clearwater	Spring chinook	22,500	22,500	45,000
	Summer Chinook	24,000	24,000	48,000
	Fall Chinook	2,500	2,500	5,000
	Coho	NA[b]	NA[b]	4,000
	A-run Steelhead	NA[b]	NA[b]	1,000
	B-run Steelhead	37,000	37,000	74,000

[a]Short-term utilization objectives read as follows: In the short-term, develop and inplement stair steps of opportunities and harvest that reflect increases in escapement, contingent on maintenance of viable, productive runs. Achieve returns to terminal areas at levels that will allow selective harvest of hatchery-origin spring chinook until natural and wild origin runs have been rebuilt to levels that can sustain fisheries and productive spawning escapements.

[b]No individual component identified.

Appendix B. Harvest Regulations

Harvest opportunity and the creation of harvestable surpluses is the ultimate goal of all the anadromous fish programs. The Department will recommend consumptive seasons when harvestable surpluses can be identified. Determination of annual fishing regulations will be based on the best available scientific information, and will be accomplished by the Commission using the following procedure:

Preseason Data Compilation

Department staff will collect pertinent information concerning the current year's fish run including these data:

A) Survival of downstream migrant juveniles that will contribute to current year's adult return.

B) Estimated ocean and Columbia River catch of current year's adult production.

C) Columbia and Snake River dam counts to include estimates of relative strength of hatchery and natural components of the run.

D) Relative strength of previous year's return of jack salmon or one-ocean steelhead.

E) Recent trends in spawning escapements, redd counts, and natural smolt production.

Development of Regulations

The time frame for developing and adopting regulations for salmon and steelhead is restrictive. Accurate steelhead run projection cannot be developed before early August. Sport seasons usually start September 1. For salmon, useful run projections cannot be made before May 1 for seasons opening May 15. Regulations are often developed on an emergency basis with limited opportunity for public review. As the goals of this plan are accomplished and anadromous fish runs increase and stabilize, it may be possible to establish regulations on an biannual basis as are general fishing regulations.

Currently, adoption of regulations proceeds through the following steps:

A) Department staff develop preliminary recommendation for regulation and submits it to the Commission.

B) The Commission adopts regulations with any modifications they deem appropriate.

Steelhead regulations will be considered between August 1 and 10 each year for seasons within the framework outlined on the preceding pages. Salmon regulations will be considered between May 1 and May 10.

C) Department staff publishes regulations.

Within ten days of adoption, staff will distribute regulations to vendors and make the regulations available to the public at all Department offices.

D) Anadromous fish program staff collects in-season data.

Dam counts will be monitored, catch information is analyzed, and projected survival for the criteria component of the run estimated.

E) Anadromous fish program staff monitors effectiveness of regulations.

If inseason data indicates a change in regulation is needed, staff will develop an emergency regulation recommendation and submit it to the Commission.

F) Anadromous fish program staff prepares adjustment in regulations.

The Commission will consider emergency regulation recommendation and adopt or return the recommendation to staff for further consideration.

G) Department staff makes notification of regulation adjustments.

If adopted, the emergency regulation will be immediately announced to the news media and an addendum to the season regulations published and issues as soon as possible.

Season Frameworks

Fishing seasons for salmon and steelhead will be set within the following frameworks:

Steelhead - September 1 to April 30;
Spring and Summer Chinook Salmon - May 1 to August 15.

Depending on the timing, abundance, and composition of the salmon and steelhead runs, the season length, bag and possession limits will be determined within these frameworks. The starting and closing dates for each season will be set during the regulation adoption process.

Appendix C. Northwest Power Planning Council's protected areas classification for Idaho salmon and steelhead habitat. Protected classification codes are as follows: A = Anadromous fish only, C = Anadromous and resident fish and wildlife, D = Anadromous fish and resident fish or wildlife.

RIVER REACH NO.	NAME	FROM	TO	PROT	BEG LEN	END LEN	PROT LEN
		Salmon River Drainage, Mouth to French Creek					
1706020900100.00	SALMON R	MOUTH	FLYNN CR	D	0.0	3.6	3.6
1706020904800.00	CHINA CR	MOUTH	HEADWATERS		0.0	5.0	5.0
1706020900101.00	SALMON R	CHINA CR	EAGLE CR		0.0	6.8	6.8
1706020903600.00	EAGLE CR	MOUTH	HEADWATERS		0.0	13.7	13.7
1706020900200.00	SALMON R	EAGLE CR	DEER CR		0.0	0.5	0.5
1706020903500.00	DEER CR	MOUTH	HEADWATERS		0.0	14.1	14.1
1706020900300.00	SALMON R	DEER CR	COTTONWOOD CR	D	0.0	1.0	1.0
1706020900400.00	COTTONWOOD CR	MOUTH	HEADWATERS		0.0	10.6	10.6
1706020900500.00	SALMON R	COTTONWOOD CR	BILLY CR		0.0	2.5	2.5
1706020903400.00	MALONEY CR	MOUTH	HEADWATERS		0.0	7.3	7.3
1706020900600.00	SALMON R	MALONEY CR	DEEP CR		0.0	0.7	0.7
1706020903300.00	DEEP CR	MOUTH	HEADWATERS		0.0	4.0	4.0
1706020900700.00	SALMON R	DEEP CR	BURNT CR		0.0	6.2	6.2
1706020905200.00	BURNT CR	MOUTH	HEADWATERS		0.0	4.0	4.0
1706020900701.00	SALMON R	BURNT CR	ROUND SPRING CR		0.0	3.8	3.8
1706020905300.00	ROUND SPRING	MOUTH	HEADWATERS		0.0	5.4	5.4
1706020900702.00	SALMON R	ROUND SPRING CR	TELCHER CR		0.0	3.0	3.0
1706020905400.00	TELCHER CR	MOUTH	HEADWATERS		0.0	2.5	2.5
1706020900703.00	SALMON R	TELCHER CR	RICE CR		0.0	4.1	4.1
1706020900800.00	RICE CR	MOUTH	HEADWATERS		0.0	14.1	14.1
1706020900900.00	SALMON R	RICE CR	ROCK CR		0.0	1.3	1.3
1706020903200.00	ROCK CR	MOUTH	GRAVE CR		0.0	4.5	4.5
1706020905100.00	GRAVE CR	MOUTH	HEADWATERS		0.0	4.4	4.4
1706020903201.00	ROCK CR	GRAVE CR	HEADWATERS		0.0	12.4	12.4
1706020901000.00	SALMON R	ROCK CR	WHITE BIRD CR		0.0	15.4	15.4
1706020902900.00	WHITE BIRD CR	MOUTH	WHITE BIRD CR, N FK		0.0	6.2	6.2
1706020903000.00	WHITE BIRD CR,S FK	MOUTH	PINNACLE CR		0.0	2.0	2.0
1706020905500.00	PINNACLE CR	MOUTH	HEADWATERS		0.0	5.7	5.7
1706020903001.00	WHITE BIRD CR,S FK	PINNACLE CR	LITTLE WHITE BIRD CR		0.0	2.3	2.3
1706020905600.00	LITTLE WHITE BIRD CR	MOUTH	HEADWATERS		0.0	5.7	5.7
1706020903002.00	WHITE BIRD CR, S FK	LITTLE WHITE BIRD CR	JUNGLE CR		0.0	8.1	8.1
1706020904700.00	COLD SPRINGS CR	MOUTH	ASBESTOS CR		0.0	2.0	2.0
1706020905800.00	ASBESTOS CR	MOUTH	HEADWATERS		0.0	2.8	2.8
1706020904701.00	COLD SPRINGS CR	ASBESTOS CR	HEADWATERS		0.0	3.2	3.2
1706020903003.00	WHITE BIRD CR, S FK	COLD SPRINGS CR	HEADWATERS		0.0	2.0	2.0
1706020903100.00	WHITE BIRD CR, N FK	MOUTH	HEADWATERS		0.0	10.8	10.8
1706020901100.00	SALMON R	WHITE BIRD CR	SOTIN CR		0.0	1.6	1.6
1706020903700.00	SOTIN CR	MOUTH	HEADWATERS		0.0	4.0	4.0
1706020901101.00	SALMON R	SOTIN CR	DEER CR		0.0	1.7	1.7
1706020904900.00	DEER CR	MOUTH	HEADWATERS		0.0	6.0	6.0
1706020901102.00	SALMON R	DEER CR	SKOOKUMCHUCK CR		0.0	1.5	1.5
1706020902800.00	SKOOKUMCHUCK CR	MOUTH	SKOOKUMCHUCK CR, N FK		0.0	5.2	5.2
1706020904500.00	SKOOKUMCHUCK CR, S FK	MOUTH	HEADWATERS		0.0	3.0	3.0
1706020902801.00	SKOOKUMCHUCK CR, N FK	MOUTH	HEADWATERS		0.0	7.0	7.0
1706020901200.00	SALMON R	SOTIN CR	MCKINZIE CR		0.0	5.6	5.6
1706020903800.00	MCKINZIE CR	MOUTH	HEADWATERS		0.0	7.0	7.0
1706020901201.00	SALMON R	MCKINZIE CR	SLATE CR		0.0	3.0	3.0

1706020902500.00	SLATE CR	MOUTH	LITTLE VAN BUREN CR	D	0.0	4.4	4.
1706020904200.00	SLATE CR, N FK	MOUTH	HEADWATERS	A	0.0	7.0	7.
1706020902501.00	SLATE CR	SLATE CR, N FK	LITTLE SLATE CR	D	0.0	2.7	2.
1706020902600.00	LITTLE SLATE CR	MOUTH	DEADHORSE CR	D	0.0	0.5	0.
1706020904300.00	DEADHORSE CR	MOUTH	HEADWATERS	A	0.0	6.8	6.
1706020902601.00	LITTLE SLATE CR	DEADHORSE CR	VAN BUREN CR	D	0.0	6.2	6.
1706020904400.00	VAN BUREN CR	MOUTH	HEADWATERS	A	0.0	6.3	6.
1706020902602.00	LITTLE SLATE CR	VAN BUREN CR	TUMBULL CR	D	0.0	0.5	0.
1706020902700.00	SLATE CR	LITTLE SLATE CR	HEADWATERS	D	0.0	8.8	8.
1706020901300.00	SALMON R	SLATE CR	JOHN DAY CR	D	0.0	6.7	6.
1706020902400.00	JOHN DAY CR	MOUTH	HEADWATERS	D	0.0	7.6	7.
1706020901400.00	SALMON R	JOHN DAY CR	CHINA CR	D	0.0	4.9	4.
1706020903900.00	COW CR	MOUTH	HEADWATERS	A	0.0	1.0	1.
1706020901401.00	SALMON R	COW CR	FIDDLE CR	D	0.0	4.6	4.
1706020901402.00	SALMON R	FIDDLE CR	RACE CR	A	0.0	2.1	2.
1706020901500.00	RACE CR	MOUTH	RACE CR, S FK	D	0.0	2.2	2.
1706020901600.00	SALMON R	RACE CR	LITTLE SALMON R	D	0.0	1.6	1.
1706020901700.00	SALMON R	LITTLE SALMON R	BERG CR	C	0.0	3.0	3.
1706020905900.00	BERG CR	MOUTH	HEADWATERS	A	0.0	4.6	4.
1706020901701.00	SALMON R	BERG CR	LAKE CR	C	0.0	3.1	3.
1706020905000.00	LAKE CR	MOUTH	HEADWATERS	C	0.0	7.6	7.
1706020901702.00	SALMON R	LAKE CR	ALLISON CR	C	0.0	3.3	3.
1706020904100.00	ALLISON CR	MOUTH	ALLISON CR, W FK	D	0.0	9.4	9.
1706020901703.00	SALMON R	ALLISON CR	VAN CR	C	0.0	1.0	1.
1706020904000.00	PARTRIDGE CR	MOUTH	HEADWATERS	C	0.0	7.2	7.
1706020901704.00	SALMON R	PARTRIDGE CR	ELKHORN CR	A	0.0	2.0	2.
1706020901800.00	ELKHORN CR	MOUTH	HEADWATERS	C	0.0	11.0	11.
1706020901900.00	SALMON R	ELKHORN CR	FRENCH CR	C	0.0	4.4	4.
1706020902000.00	FRENCH CR	MOUTH	LITTLE FRENCH CR	D	0.0	15.4	15.
1706020902300.00	SALMON R	FRENCH CR	GAUGE STA OR NO CONFLUENCE	C	0.0	0.6	0.
1706020906300.00	FLYNN CR	MOUTH	HEADWATERS	D	0.0	1.0	1.
1706020900100.13	SALMON R	FLYNN CR	WAPSHILLA CR	D	0.0	1.0	1.
1706020906400.00	BILLY CR	MOUTH	HEADWATERS	D	0.0	3.3	3.
1706020900501.00	SALMON R	BILLY CR	MALONEY CR	D	0.0	2.5	2.
1706020906500.00	CHINA CR	MOUTH	HEADWATERS	A	0.0	1.0	1.
1706020901400.13	SALMON R	CHINA CR	COW CR	A	0.0	0.7	0.
1706020906600.00	RACE CR, S FK	MOUTH	KOSSLER CR	A	0.0	1.6	1.
1706020901501.00	RACE CR	RACE CR, S FK	HEADWATERS	A	0.0	6.5	6.
1706020906700.00	WAPSHILLA CR	MOUTH	HEADWATERS	D	0.0	1.0	1.
1706020900100.24	SALMON R	WAPSHILLA CR	CHINA CR	D	0.0	2.4	2.
1706020906800.00	KOSSLER CR	MOUTH	HEADWATERS	A	0.0	0.5	0.
1706020906601.00	RACE CR, S FK	KOSSLER CR	GRAVE CR	A	0.0	4.8	4.
1706020906900.00	VAN CR	MOUTH	HEADWATERS	A	0.0	4.7	4.
1706020901703.13	SALMON R	VAN CR	KELLY CR	A	0.0	0.4	0.
1706020907000.00	KELLY CR	MOUTH	HEADWATERS	A	0.0	3.0	3.
1706020901703.24	SALMON R	KELLY CR	PARTRIDGE CR	A	0.0	1.6	1.
1706020907100.00	LITTLE VAN BUREN CR	MOUTH	HEADWATERS	A	0.0	0.2	0.
1706020902500.13	SLATE CR	LITTLE VAN BUREN CR	SLATE CR, N FK	A	0.0	5.0	5.
1706020907200.00	TUMBULL CR	MOUTH	HEADWATERS	A	0.0	0.8	0.
1706020902603.00	LITTLE SLATE CR	TUMBULL CR	HEADWATERS	A	0.0	2.9	2.
1706020907300.00	JUNGLE CR	MOUTH	HEADWATERS	A	0.0	1.3	1.
1706020903002.13	WHITE BIRD CR, S FK	JUNGLE CR	COLD SPRINGS CR	A	0.0	1.4	1.
1706020907400.00	GRAVE CR	MOUTH	HEADWATERS	A	0.0	4.5	4.
1706020906602.00	RACE CR, S FK	GRAVE CR	HEADWATERS	A	0.0	3.6	3.

Little Salmon River Drainage

1706021000100.00	LITTLE SALMON R	MOUTH	SQUAW CR		0.0	1.0	1.0
1706021003300.00	SQUAW CR	MOUTH	SQUAW CR, N FK		0.0	6.0	6.0
1706021000101.00	LITTLE SALMON R	SQUAW CR	RAPID R		0.0	3.4	3.4
1706021000200.00	RAPID R	MOUTH	RAPID R, W FK		0.0	6.6	6.6
1706021000500.00	PARADISE CR	MOUTH	HEADWATERS		0.0	4.6	4.6
1706021000700.00	LITTLE SALMON R	RAPID R	SHEEP CR		0.0	2.6	2.6
1706021003700.00	SHEEP CR	MOUTH	HEADWATERS		0.0	0.7	0.7
1706021000701.00	LITTLE SALMON R	SHEEP CR	HAT CR		0.0	2.0	2.0
1706021003800.00	HAT CR	MOUTH	HEADWATERS		0.0	1.0	1.0
1706021000702.00	LITTLE SALMON R	HAT CR	RATTLESNAKE CR		0.0	3.7	3.7
1706021003900.00	RATTLESNAKE CR	MOUTH	HEADWATERS		0.0	0.1	0.1
1706021000703.00	LITTLE SALMON R	RATTLESNAKE CR	LOCKWOOD CR		0.0	0.2	0.2
1706021004000.00	LOCKWOOD CR	MOUTH	HEADWATERS		0.0	1.0	1.0
1706021000704.00	LITTLE SALMON R	LOCKWOOD CR	ELK CR		0.0	4.1	4.1
1706021003200.00	ELK CR	MOUTH	HEADWATERS		0.0	7.0	7.0
1706021000800.00	LITTLE SALMON R	ELK CR	BOULDER CR		0.0	1.3	1.3
1706021000900.00	BOULDER CR	MOUTH	SQUIRREL CR		0.0	1.8	1.8
1706021004200.00	SQUIRREL CR	MOUTH	HEADWATERS		0.0	3.8	3.8
1706021000901.00	BOULDER CR	SQUIRREL CR	PONY CR		0.0	1.9	1.9
1706021004300.00	PONY CR	MOUTH	HEADWATERS		0.0	3.8	3.8
1706021000902.00	BOULDER CR	PONY CR	HEADWATERS		0.0	14.4	14.4
1706021001000.00	LITTLE SALMON R	BOULDER CR	TRAIL CR		0.0	0.9	0.9
1706021004100.00	TRAIL CR	MOUTH	HEADWATERS		0.0	0.2	0.2
1706021001001.00	LITTLE SALMON R	TRAIL CR	HAZARD CR		0.0	0.6	0.6
1706021002600.00	HAZARD CR	MOUTH	HARD CR		0.0	1.0	1.0
1706021002700.00	HARD CR	MOUTH	BROWN CR		0.0	9.3	9.3
1706021003000.00	HAZARD CR	HARD CR	HEADWATERS		0.0	10.5	10.5
1706021001100.00	LITTLE SALMON R	HAZARD CR	ROUND VALLEY CR		0.0	5.5	5.5
1706021001101.00	LITTLE SALMON R	ROUND VALLEY CR	SIXMILE CR		0.0	8.6	8.6
1706021001200.00	LITTLE SALMON R	SIXMILE CR	GOOSE CR		0.0	2.6	2.6
1706021002000.00	GOOSE CR	MOUTH	UNNAMED		0.0	10.0	10.0
1706021001300.00	LITTLE SALMON R	GOOSE CR	MUD CR		0.0	2.0	2.0
1706021001400.00	MUD CR	MOUTH	LITTLE MUD CR		0.0	3.3	3.3
1706021001700.00	LITTLE SALMON R	MUD CR	BIG CR		0.0	1.0	1.0

Salmon River Drainage, French Creek to Middle Fork Salmon R.

1706020700100.00	SALMON R	ACROSS DRAINAGE	FALL CR	C	0.0	0.4	0.
1706020700101.00	SALMON R	FALL CR	CAREY CR	A	0.0	3.4	3.4
1706020700102.00	SALMON R	CAREY CR	WIND R	A	0.0	1.0	1.0
1706020700500.00	CALIFORNIA CR	MOUTH	HEADWATERS	C	0.0	11.9	11.9
1706020701400.00	WARREN CR	MOUTH	HEADWATERS	C	0.0	21.2	21.2
1706020701600.00	SALMON R	SALMON R, S FK	FIVEMILE CR	A	0.0	3.4	3.4
1706020708100.00	BIG MALLARD CR	MOUTH	HEADWATERS	C	0.0	15.4	15.4
1706020706800.00	SALMON R	KITCHEN CR	SALMON R, M FK	A	0.0	3.9	3.9
1706020708005.00	BARGAMIN CR	PORCUPINE CR	HEADWATERS	A	0.0	1.6	1.6

South Fork Salmon River Drainage

1706020800101.00	SALMON R, S FK	STATION CR	RAINES CR	A	0.0	0.5	0.5
1706020806500.00	RAINES CR	MOUTH	HEADWATERS	D	0.0	6.0	6.0
1706020800102.00	SALMON R, S FK	RAINES CR	CHICKEN CR	A	0.0	2.0	2.0
1706020800200.00	SALMON R, S FK	CHICKEN CR	PORPHYRY CR	A	0.0	1.4	1.4
1706020800300.00	SALMON R, S FK	PORPHYRY CR	GROUSE CR	A	0.0	5.0	5.0
1706020805900.00	GROUSE CR	MOUTH	HEADWATERS	A	0.0	4.5	4.5

1706020800400.00	SALMON R, S FK	GROUSE CR	PONY CR	0.0	3.1	3.
1706020800500.00	PONY CR	MOUTH	HEADWATERS	0.0	7.5	7.
1706020800600.00	SALMON R, S FK	PONY CR	ELK CR	0.0	3.0	3.
1706020805600.00	ELK CR	MOUTH	ELK CR, W FK	0.0	4.9	4.
1706020807900.00	ELK CR, W FK	MOUTH	ELK CR, S FK	0.0	1.0	1.
1706020805800.00	ELK CR, S FK	MOUTH	HEADWATERS	0.0	5.5	5.
1706020805700.00	ELK CR, W FK	ELK CR, S FK	HEADWATERS	0.0	5.9	5.
1706020805601.00	ELK CR	ELK CR, W FK	ELK CR, M FK	0.0	1.3	1.
1706020808000.00	ELK CR, M FK	MOUTH	HEADWATERS	0.0	4.9	4.
1706020805602.00	ELK CR	ELK CR, M FK	HEADWATERS	0.0	3.6	3.
1706020800700.00	SALMON R, S FK	ELK CR	ROCK CR	0.0	3.2	3.
1706020805500.00	ROCK CR	MOUTH	HEADWATERS	0.0	5.4	5.
1706020800800.00	SALMON R, S FK	ROCK CR	BEAR CR	0.0	1.4	1.
1706020800900.00	BEAR CR	MOUTH	HEADWATERS	0.0	5.9	5.
1706020801000.00	SALMON R, S FK	BEAR CR	SHEEP CR	0.0	5.1	5.
1706020805200.00	SHEEP CR	MOUTH	SHEEP CR, S FK	0.0	1.5	1.
1706020805300.00	SHEEP CR, S FK	MOUTH	HEADWATERS	0.0	4.2	4.
1706020805400.00	SHEEP CR	SHEEP CR, S FK	HEADWATERS	0.0	5.8	5.
1706020801100.00	SALMON R, S FK	SHEEP CR	SECESH R	0.0	4.6	4.
1706020802100.00	SALMON R, S FK	SECESH R	SALMON R, S FK, E FK	0.0	1.4	1.
1706020804000.00	SALMON R, S FK, E FK	MOUTH	CATON CR	0.0	9.6	9.
1706020804100.00	CATON CR	MOUTH	HEADWATERS	0.0	7.5	7.
1706020804200.00	SALMON R, S FK, E FK	CATON CR	REEGAN CR	0.0	0.3	0.
1706020804201.00	SALMON R, S FK, E FK	REEGAN CR	PARKS CR	0.0	2.5	2.
1706020804300.00	SALMON R, S FK, E FK	PARKS CR	LOOSUM CR	0.0	0.1	0.
1706020809300.00	LOOSUM CR	MOUTH	HEADWATERS	0.0	3.8	3.
1706020804301.00	SALMON R, S FK, E FK	LOOSUM CR	JOHNSON CR	0.0	1.4	1.
1706020804400.00	JOHNSON CR	MOUTH	RIORDAN CR	0.0	4.6	4.
1706020805000.00	RIORDAN CR	MOUTH	HEADWATERS	0.0	10.4	10.
1706020804500.00	JOHNSON CR	RIORDAN CR	TRAPPER CR	0.0	6.6	6.
1706020804900.00	TRAPPER CR	MOUTH	HEADWATERS	0.0	7.6	7.
1706020804600.00	JOHNSON CR	TRAPPER CR	BURNTLOG CR	0.0	3.1	3.
1706020804800.00	BURNTLOG CR	MOUTH	HEADWATERS	0.0	16.3	16.
1706020804700.00	JOHNSON CR	BURNTLOG CR	HALFWAY CR	0.0	2.0	2.
1706020804701.00	JOHNSON CR	HALFWAY CR	LANDMARK CR	0.0	10.5	10.
1706020807400.00	SAND CR	MOUTH	HEADWATERS	0.0	6.5	6.
1706020804702.00	JOHNSON CR	SAND CR	WHISKEY CR	0.0	2.2	2.
1706020805100.00	SALMON R, S FK, E FK	JOHNSON CR	QUARTZ CR	0.0	1.1	1.
1706020807200.00	QUARTZ CR	MOUTH	HEADWATERS	0.0	7.9	7.
1706020805101.00	SALMON R, S FK, E FK	QUARTZ CR	PROFILE CR	0.0	2.5	2.
1706020807100.00	PROFILE CR	MOUTH	HEADWATERS	0.0	7.9	7.
1706020805102.00	SALMON R, S FK, E FK	PROFILE CR	TAMARACK CR	0.0	2.5	2.
1706020807000.00	TAMARACK CR	MOUTH	HEADWATERS	0.0	7.0	7.
1706020805103.00	SALMON R, S FK, E FK	TAMARACK CR	SALT CR	0.0	3.1	3.
1706020808600.00	SALT CR	MOUTH	HEADWATERS	0.0	3.2	3.
1706020805104.00	SALMON R, S FK, E FK	SALT CR	SUGAR CR	0.0	2.6	2.
1706020806900.00	SUGAR CR	MOUTH	HEADWATERS	0.0	6.6	6.
1706020805105.00	SALMON R, S FK, E FK	SUGAR CR	HEADWATERS	0.0	5.0	5.
1706020802200.00	SALMON R, S FK	SALMON R, S FK, E FK	FITSUM CR	0.0	0.6	0.
1706020802300.00	FITSUM CR	MOUTH	FITSUM CR, N FK	0.0	2.2	2.
1706020802301.00	FITSUM CR, N FK	MOUTH	HEADWATERS	0.0	7.9	7.
1706020807700.00	FITSUM CR	FITSUM CR, N FK	HEADWATERS	0.0	7.3	7.
1706020802400.00	SALMON R, S FK	FITSUM CR	BUCKHORN CR	0.0	7.0	7.
1706020802500.00	BUCKHORN CR	MOUTH	BUCKHORN CR, W FK	0.0	0.6	0.
1706020802600.00	BUCKHORN CR, W FK	MOUTH	HEADWATERS	0.0	7.3	7.
1706020802700.00	BUCKHORN CR	BUCKHORN CR, W FK	HEADWATERS	0.0	9.2	9.

1706020802800.00	SALMON R, S FK	BUCKHORN CR	COUGAR CR	0.0	3.3	3.
1706020806600.00	COUGAR CR	MOUTH	HEADWATERS	0.0	8.1	8.
1706020802801.00	SALMON R, S FK	COUGAR CR	FOURMILE CR	0.0	3.3	3.
1706020803900.00	FOURMILE CR	MOUTH	HEADWATERS	0.0	6.3	6.
1706020802900.00	SALMON R, S FK	FOURMILE CR	BLACKMARE CR	0.0	3.0	3.
1706020803000.00	BLACKMARE CR	MOUTH	HEADWATERS	0.0	7.4	7.
1706020803100.00	SALMON R, S FK	BLACKMARE CR	DOLLAR CR	0.0	8.3	8.
1706020803200.00	DOLLAR CR	MOUTH	DOLLAR CR, N FK	0.0	1.1	1.
1706020808700.00	DOLLAR CR, N FK	MOUTH	HEADWATERS	0.0	3.8	3.
1706020803201.00	DOLLAR CR	DOLLAR CR, N FK	HEADWATERS	0.0	5.8	5.
1706020803300.00	SALMON R, S FK	DOLLAR CR	SIXBIT CR	0.0	3.8	3.
1706020806700.00	SIXBIT CR	MOUTH	HEADWATERS	0.0	6.3	6.
1706020803301.00	SALMON R, S FK	SIXBIT CR	TWOBIT CR	0.0	1.0	1.
1706020803302.00	SALMON R, S FK	TWOBIT CR	WARM LAKE CR	0.0	0.1	0.
1706020803700.00	WARM LAKE CR	MOUTH	CABIN CR	0.0	1.9	1.
1706020806800.00	CABIN CR	MOUTH	HEADWATERS	0.0	6.0	6.
1706020803701.00	WARM LAKE CR	CABIN CR	WARM L	0.0	1.2	1.
1706020803400.00	SALMON R, S FK	WARM LAKE CR	CURTIS CR	0.0	0.6	0.
1706020803500.00	CURTIS CR	MOUTH	HEADWATERS	0.0	7.1	7.
1706020803600.00	SALMON R, S FK	CURTIS CR	BEAR CR	0.0	3.0	3.
1706020808900.00	BEAR CR	MOUTH	HEADWATERS	0.0	4.1	4.
1706020803601.00	SALMON R, S FK	BEAR CR	CAMP CR	0.0	2.5	2.
1706020809000.00	CAMP CR	MOUTH	HEADWATERS	0.0	2.5	2.
1706020803602.00	SALMON R, S FK	CAMP CR	LODGEPOLE CR	0.0	1.0	1.
1706020809100.00	TYNDALL CR	MOUTH	HEADWATERS	0.0	3.8	3.
1706020803603.00	SALMON R, S FK	TYNDALL CR	RICE CR	0.0	1.0	1.
1706020807800.00	RICE CR	MOUTH	HEADWATERS	0.0	6.0	6.
1706020803604.00	SALMON R, S FK	RICE CR	MORMON CR	0.0	2.2	2.
1706020809200.00	MORMON CR	MOUTH	HEADWATERS	0.0	3.2	3.
1706020803605.00	SALMON R, S FK	MORMON CR	HEADWATERS	0.0	1.7	1.
1706020809400.00	LODGEPOLE CR	MOUTH	HEADWATERS	0.0	4.5	4.
1706020803602.13	SALMON R, S FK	LODGEPOLE CR	TYNDALL CR	0.0	1.5	1.
1706020809500.00	LANDMARK CR	MOUTH	HEADWATERS	0.0	3.0	3.
1706020804701.13	JOHNSON CR	LANDMARK CR	ROCK CR	0.0	1.0	1.
1706020809600.00	WHISKEY CR	MOUTH	HEADWATERS	0.0	3.5	3.
1706020804703.00	JOHNSON CR	WHISKEY CR	BOULDER CR	0.0	1.0	1.
1706020809700.00	BOULDER CR	MOUTH	HEADWATERS	0.0	3.5	3.
1706020804704.00	JOHNSON CR	BOULDER CR	HEADWATERS	0.0	4.1	4.
1706020809800.00	ROCK CR	MOUTH	HEADWATERS	0.0	4.5	4.
1706020804701.24	JOHNSON CR	ROCK CR	SAND CR	0.0	2.4	2.
1706020801200.00	SECESH R	MOUTH	ZENA CR	0.0	2.8	2.
1706020801300.00	ZENA CR	MOUTH	HEADWATERS	0.0	5.8	5.
1706020801400.00	SECESH R	ZENA CR	LICK CR	0.0	1.8	1.
1706020802000.00	LICK CR	MOUTH	SPLIT CR	0.0	2.0	2.
1706020808100.00	SPLIT CR	MOUTH	HEADWATERS	0.0	3.8	3.
1706020802001.00	LICK CR	SPLIT CR	HEADWATERS	0.0	7.1	7.
1706020801500.00	SECESH R	LICK CR	LOON CR	0.0	9.8	9.
1706020801900.00	LOON CR	MOUTH	HEADWATERS	0.0	9.9	9.
1706020801600.00	SECESH R	LOON CR	GROUSE CR	0.0	8.7	8.
1706020808200.00	GROUSE CR	MOUTH	HEADWATERS	0.0	4.0	4.
1706020801601.00	SECESH R	GROUSE CR	RUBY CR	0.0	2.0	2.
1706020808300.00	RUBY CR	MOUTH	HEADWATERS	0.0	5.5	5.
1706020801602.00	SECESH R	RUBY CR	LAKE CR	0.0	1.0	1.
1706020801700.00	LAKE CR	MOUTH	THREEMILE CR	0.0	5.0	5.
1706020808400.00	THREEMILE CR	MOUTH	HEADWATERS	0.0	3.5	3.
1706020801701.00	LAKE CR	THREEMILE CR	WILLOW CR	0.0	3.5	3.

1706020808500.00	WILLOW CR	MOUTH	HEADWATERS	A	0.0	5.4	5.
1706020801702.00	LAKE CR	WILLOW CR	HEADWATERS	A	0.0	3.5	3.
1706020801800.00	SUMMIT CR	MOUTH	HEADWATERS	D	0.0	7.5	7.

Middle Fork Salmon River Drainage

1706020607600.00	HOLY TERROR CR	MOUTH	HEADWATERS	A	0.0	1.6	1.
1706020602800.00	BIG CR	LITTLE MARBLE CR	SMITH CR	C	0.0	3.2	3.
1706020603000.00	BIG CR	SMITH CR	LOGAN CR	C	0.0	2.9	2.
1706020603100.00	LOGAN CR	MOUTH	HEADWATERS	D	0.0	9.0	9.
1706020603200.00	BIG CR	LOGAN CR	HEADWATERS	C	0.0	4.7	4.
1706020605900.00	YELLOWJACKET CR	MOUTH	JENNY CR	D	0.0	5.2	5.
1706020605901.00	YELLOWJACKET CR	JENNY CR	HOODOO CR	A	0.0	1.2	1.
1706020606900.00	DUCK CR	MOUTH	HEADWATERS	A	0.0	0.1	0.
1706020605800.00	SILVER CR	MOUTH	HEADWATERS	A	0.0	18.9	18.
1706020607100.00	CASTLE CR	MOUTH	HEADWATERS	A	0.0	9.0	9.
1706020607000.00	FURNACE CR	MOUTH	HEADWATERS	A	0.0	8.0	8.
1706020607500.00	CAMAS CR, S FK	MOUTH	HEADWATERS	A	0.0	8.4	8.
1706020607900.00	COXEY CR	MOUTH	HEADWATERS	A	0.0	5.0	5.
1706020601801.00	BIG CR	COXEY CR	MONUMENTAL CR	A	0.0	5.1	5.
1706020608000.00	HAND CR	MOUTH	HEADWATERS	A	0.0	6.0	6.
1706020602601.00	BEAVER CR	HAND CR	HEADWATERS	A	0.0	4.1	4.
1706020608100.00	LITTLE JACKET CR	MOUTH	HEADWATERS	A	0.0	4.0	4.
1706020606001.00	YELLOWJACKET CR	LITTLE JACKET CR	TRAIL CR	A	0.0	4.0	4.
1706020608200.00	TRAIL CR	MOUTH	HEADWATERS	A	0.0	5.0	5.
1706020606002.00	YELLOWJACKET CR	TRAIL CR	HEADWATERS	A	0.0	8.2	8.
1706020505000.00	LOON CR	MOUTH	CABIN CR	D	0.0	11.0	11.
1706020510100.00	CABIN CR	MOUTH	HEADWATERS	A	0.0	6.0	6.
1706020505001.00	LOON CR	CABIN CR	WARM SPRING CR	A	0.0	3.5	3.
1706020505100.00	LOON CR	WARM SPRING CR	COTTONWOOD CR	D	0.0	1.0	1.
1706020505101.00	LOON CR	SHELL CR	GROUSE CR	C	0.0	3.0	3.
1706020505102.00	LOON CR	GROUSE CR	CANYON CR	C	0.0	2.0	2.
1706020505103.00	LOON CR	CANYON CR	MAYFIELD CR	C	0.0	2.2	2.
1706020505600.00	MAYFIELD CR	MOUTH	MAYFIELD CR, E FK	C	0.0	4.0	4.
1706020506100.00	MAYFIELD CR, W FK	MOUTH	HEADWATERS	C	0.0	6.0	6.
1706020506000.00	LOON CR	MAYFIELD CR	TRAIL CR	C	0.0	0.9	0.
1706020505300.00	LOON CR	TRAIL CR	NO NAME CR	C	0.0	0.4	0.
1706020505301.00	LOON CR	NO NAME CR	PIONEER CR	A	0.0	1.6	1.
1706020505400.00	LOON CR	PIONEER CR	HEADWATERS	A	0.0	7.0	7.
1706020500501.00	MARBLE CR	DYNAMITE CR	COTTONWOOD CR	A	0.0	2.9	2.
1706020509800.00	CORNISH CR	MOUTH	HEADWATERS	A	0.0	3.0	3.
1706020500601.00	MARBLE CR	CORNISH CR	SAFETY CR	A	0.0	1.6	1.
1706020500602.00	MARBLE CR	SAFETY CR	SUNNYSIDE CR	A	0.0	0.4	0.
1706020500603.00	MARBLE CR	SUNNYSIDE CR	HEADWATERS	A	0.0	0.4	0.
1706020504101.00	RAPID R	LUCINDA CR	FLOAT CR	C	0.0	4.3	4.
1706020504300.00	RAPID R	FLOAT CR	VANITY CR	C	0.0	1.5	1.
1706020503200.00	MARSH CR	MOUTH	BEAVER CR	D	0.0	4.5	4.
1706020503600.00	BEAVER CR	MOUTH	BEAR CR	D	0.0	3.0	3.
1706020507000.00	BEAR CR	MOUTH	HEADWATERS	A	0.0	4.0	4.
1706020503601.00	BEAVER CR	BEAR CR	WINNEMUCCA CR	D	0.0	3.0	3.
1706020507100.00	WINNEMUCCA CR	MOUTH	HEADWATERS	A	0.0	7.0	7.
1706020503602.00	BEAVER CR	WINNEMUCCA CR	HEADWATERS	D	0.0	8.5	8.
1706020503300.00	MARSH CR	BEAVER CR	CAPE HORN CR	D	0.0	1.1	1.
1706020503400.00	CAPE HORN CR	MOUTH	BANNER CR	C	0.0	5.5	5.
1706020510200.00	BANNER CR	MOUTH	HEADWATERS	A	0.0	3.5	3.

1706020503401.00	CAPE HORN CR	BANNER CR	HEADWATERS		0.0	2.9	2.
1706020503500.00	MARSH CR	CAPE HORN CR	CAMP CR		0.0	1.0	1.
1706020507200.00	CAMP CR	MOUTH	HEADWATERS		0.0	0.5	0.
1706020503501.00	MARSH CR	CAMP CR	ASHER CR		0.0	0.8	0.
1706020507300.00	ASHER CR	MOUTH	HEADWATERS		0.0	0.9	0.
1706020503502.00	MARSH CR	ASHER CR	SWAMP CR		0.0	0.2	0.
1706020510300.00	SWAMP CR	MOUTH	HEADWATERS		0.0	5.5	5.
1706020503502.50	MARSH CR	SWAMP CR	KNAPP CR		0.0	0.2	0.
1706020503503.00	KNAPP CR	MOUTH	HEADWATERS		0.0	14.5	14.
1706020506300.00	MARSH CR	KNAPP CR	HEADWATERS		0.0	3.2	3.
1706020510600.00	COTTONWOOD CR	MOUTH	COTTONWOOD CR, S FK		0.0	0.4	0.
1706020505100.13	LOON CR	COTTONWOOD CR	SHELL CR		0.0	0.3	0.
1706020510700.00	COTTONWOOD CR, S FK	MOUTH	HEADWATERS		0.0	4.5	4.
1706020510601.00	COTTONWOOD CR	COTTONWOOD CR, S FK	HEADWATERS		0.0	5.6	5.
1706020502300.00	BEAR VALLEY CR	MOUTH	FIR CR		0.0	4.0	4.
1706020503100.00	FIR CR	MOUTH	HEADWATERS		0.0	6.4	6.
1706020502400.00	BEAR VALLEY CR	FIR CR	AYERS CR		0.0	0.4	0.
1706020508000.00	AYERS CR	MOUTH	HEADWATERS		0.0	3.2	3.
1706020502401.00	BEAR VALLEY CR	AYERS CR	COLD CR		0.0	0.5	0.
1706020508100.00	COLD CR	MOUTH	HEADWATERS		0.0	4.1	4.
1706020502402.00	BEAR VALLEY CR	COLD CR	WYOMING CR		0.0	0.1	0.
1706020503000.00	WYOMING CR	MOUTH	HEADWATERS		0.0	4.8	4.
1706020502500.00	BEAR VALLEY CR	WYOMING CR	POKER CR		0.0	2.0	2.
1706020508200.00	POKER CR	MOUTH	HEADWATERS		0.0	2.4	2.
1706020502501.00	BEAR VALLEY CR	POKER CR	ELK CR		0.0	2.7	2.
1706020502600.00	ELK CR	MOUTH	COOK CR		0.0	0.7	0.
1706020508300.00	COOK CR	MOUTH	HEADWATERS		0.0	5.5	5.
1706020502601.00	ELK CR	COOK CR	BEARSKIN CR		0.0	5.2	5.
1706020508400.00	BEARSKIN CR	MOUTH	LITTLE BEAVER CR		0.0	1.6	1.
1706020508500.00	LITTLE BEAVER CR	MOUTH	HEADWATERS		0.0	0.8	0.
1706020508401.00	BEARSKIN CR	LITTLE BEAVER CR	HEADWATERS		0.0	6.0	6.
1706020502602.00	ELK CR	BEARSKIN CR	PORTER CR		0.0	1.0	1.
1706020508700.00	PORTER CR	MOUTH	HEADWATERS		0.0	5.5	5.
1706020508800.00	ELK CR, LITTLE EAST FORK	MOUTH	HEADWATERS		0.0	3.0	3.
1706020508900.00	ELK CR, W FK	MOUTH	HEADWATERS		0.0	3.6	3.
1706020509000.00	ELK CR, E FK	MOUTH	HEADWATERS		0.0	6.3	6.
1706020502700.00	BEAR VALLEY CR	ELK CR	POLE CR		0.0	1.9	1.
1706020509100.00	POLE CR	MOUTH	HEADWATERS		0.0	2.0	2.
1706020502701.00	BEAR VALLEY CR	POLE CR	SACK CR		0.0	2.5	2.
1706020509200.00	SACK CR	MOUTH	HEADWATERS		0.0	6.2	6.
1706020502702.00	BEAR VALLEY CR	SACK CR	CACHE CR		0.0	1.4	1.
1706020502900.00	CACHE CR	MOUTH	HEADWATERS		0.0	8.1	8.
1706020502800.00	BEAR VALLEY CR	CACHE CR	SHEEP TRAIL CR		0.0	1.5	1.
1706020509300.00	SHEEP TRAIL CR	MOUTH	HEADWATERS		0.0	4.4	4.
1706020502801.00	BEAR VALLEY CR	SHEEP TRAIL CR	MACE CR		0.0	1.5	1.
1706020509400.00	MACE CR	MOUTH	HEADWATERS		0.0	3.2	3.
1706020502802.00	BEAR VALLEY CR	MACE CR	CUB CR		0.0	1.0	1.
1706020509500.00	CUB CR	MOUTH	HEADWATERS		0.0	2.8	2.
1706020502803.00	BEAR VALLEY CR	CUB CR	HEADWATERS		0.0	6.2	6.

Salmon River Drainage, Middle Fork Salmon to Pahsimeroi River

1706020300100.00	SALMON R	SALMON R, M FK	COLSON CR	D	0.0	3.7	3.
1706020309300.00	COLSON CR	MOUTH	HEADWATERS	D	0.0	5.3	5.
1706020300200.00	SALMON R	COLSON CR	OWL CR	D	0.0	5.0	5.
1706020309000.00	OWL CR	MOUTH	OWL CR, E FK	C	0.0	1.9	1.

1706020309100.00	OWL CR, E FK	MOUTH	HEADWATERS	0.0	1.7	1.
1706020309200.00	OWL CR	OWL CR, E FK	HEADWATERS	0.0	12.2	12.
1706020300300.00	SALMON R	OWL CR	PANTHER CR	0.0	2.4	2.
1706020303300.00	SALMON R	PANTHER CR	PINE CR	0.0	7.3	7.
1706020303500.00	SALMON R	PINE CR	BOULDER CR	0.0	1.6	1.
1706020303600.00	SALMON R	BOULDER CR	SPRING CR	0.0	1.3	1.
1706020308800.00	SPRING CR	MOUTH	HEADWATERS	0.0	4.2	4.
1706020303700.00	SALMON R	SPRING CR	E BOULDER CR	0.0	5.8	5.
1706020303900.00	SALMON R	E BOULDER CR	SQUAW CR	0.0	0.3	0.
1706020308500.00	SQUAW CR	MOUTH	INDIAN CR	0.0	0.1	0.
1706020308600.00	INDIAN CR	MOUTH	HEADWATERS	0.0	13.7	13.
1706020308700.00	SQUAW CR	INDIAN CR	HEADWATERS	0.0	7.7	7.
1706020304000.00	SALMON R	SQUAW CR	MOOSE CR	0.0	4.6	4.
1706020309500.00	MOOSE CR	MOUTH	LITTLE MOOSE CR	0.0	4.0	4.
1706020304001.00	SALMON R	MOOSE CR	DUMP CR	0.0	1.5	1.
1706020304200.00	SALMON R	DUMP CR	SALMON R, N FK	0.0	4.7	4.
1706020307100.00	SALMON R, N FK	MOUTH	SILVER LEAD CR	0.0	0.4	0.
1706020307300.00	SALMON R, N FK	SILVER LEAD CR	HULL CR	0.0	4.6	4.
1706020310100.00	HULL CR	MOUTH	HEADWATERS	0.0	3.0	3.
1706020307400.00	SALMON R, N FK	HULL CR	HUGHES CR	0.0	1.3	1.
1706020308400.00	HUGHES CR	MOUTH	HEADWATERS	0.0	9.7	9.
1706020307500.00	SALMON R, N FK	HUGHES CR	SHEEP CR	0.0	2.2	2.
1706020307600.00	SHEEP CR	MOUTH	HEADWATERS	0.0	10.7	10.
1706020307700.00	SALMON R, N FK	SHEEP CR	DAHLONEGA CR	0.0	3.5	3.
1706020307800.00	DAHLONEGA CR	MOUTH	ANDERSON CR	0.0	1.0	1.
1706020310200.00	ANDERSON CR	MOUTH	HEADWATERS	0.0	4.0	4.
1706020307801.00	DAHLONEGA CR	ANDERSON CR	NEZ PIERCE CR	0.0	2.9	2.
1706020308000.00	DAHLONEGA CR	NEZ PIERCE CR	HEADWATERS	0.0	4.1	4.
1706020308100.00	SALMON R, N FK	DAHLONEGA CR	TWIN CR	0.0	4.0	4.
1706020308101.00	SALMON R, N FK	TWIN CR	PIERCE CR	0.0	3.0	3.
1706020308200.00	PIERCE CR	MOUTH	HEADWATERS	0.0	4.2	4.
1706020308300.00	SALMON R, N FK	PIERCE CR	HEADWATERS	0.0	2.5	2.
1706020304300.00	SALMON R	SALMON R, N FK	FOURTH OF JULY CR	0.0	5.2	5.
1706020304400.00	SALMON R	FOURTH OF JULY CR	BOYLE CR	0.0	5.3	5.
1706020304500.00	SALMON R	BOYLE CR	WALLACE CR	0.0	4.3	4.
1706020304700.00	SALMON R	WALLACE CR	CARMEN CR	0.0	1.2	1.
1706020304800.00	SALMON R	CARMEN CR	LEMHI R	0.0	5.3	5.
1706020304900.00	SALMON R	LEMHI R	WILLIAMS CR	0.0	9.4	9.
1706020305100.00	SALMON R	WILLIAMS CR	TWELVEMILE CR	0.0	6.0	6.
1706020305200.00	SALMON R	TWELVEMILE CR	WARMSPRING CR	0.0	9.7	9.
1706020306400.00	WARMSPRING CR	MOUTH	HEADWATERS	0.0	10.5	10.
1706020305300.00	SALMON R	WARMSPRING CR	IRON CR	0.0	0.3	0.
1706020305400.00	IRON CR	MOUTH	IRON CR, N FK	0.0	8.0	8.
1706020310400.00	IRON CR, N FK	MOUTH	HEADWATERS	0.0	7.1	7.
1706020305401.00	IRON CR	IRON CR, N FK	IRON CR, S FK	0.0	2.1	2.
1706020310500.00	IRON CR, S FK	MOUTH	HEADWATERS	0.0	5.5	5.
1706020305402.00	IRON CR	IRON CR, S FK	IRON CR, W FK	0.0	0.6	0.
1706020310600.00	IRON CR, W FK	MOUTH	HEADWATERS	0.0	4.7	4.
1706020305403.00	IRON CR	IRON CR, W FK	HEADWATERS	0.0	2.0	2.
1706020305500.00	SALMON R	IRON CR	POISON CR	0.0	2.0	2.
1706020309900.00	POISON CR	MOUTH	HEADWATERS	0.0	6.0	6.
1706020305501.00	SALMON R	POISON CR	MCKIM CR	0.0	5.4	5.
1706020305600.00	SALMON R	MCKIM CR	HAT CR	0.0	0.4	0.
1706020305700.00	HAT CR	MOUTH	HEADWATERS	0.0	11.8	11.
1706020305800.00	SALMON R	HAT CR	ALLISON CR	0.0	1.5	1.
1706020305900.00	SALMON R	ALLISON CR	COW CR	0.0	2.8	2.

1706020306100.00	COW CR	MOUTH	HEADWATERS	D	0.0	6.
1706020306000.00	SALMON R	COW CR	PAHSIMEROI R	C	0.0	5.
1706020300400.00	PANTHER CR	MOUTH	GARDEN CR	C	0.0	0.
1706020300600.00	PANTHER CR	GARDEN CR	CLEAR CR	C	0.0	3.
1706020300800.00	PANTHER CR	CLEAR CR	BEAVER CR	C	0.0	1.
1706020303200.00	BEAVER CR	MOUTH	HEADWATERS	C	0.0	9.
1706020300900.00	PANTHER CR	BEAVER CR	TRAIL CR	C	0.0	2.
1706020303100.00	TRAIL CR	MOUTH	HEADWATERS	D	0.0	5.
1706020301000.00	PANTHER CR	TRAIL CR	BIG DEER CR	C	0.0	5.
1706020301200.00	PANTHER CR	BIG DEER CR	NAPIAS CR	D	0.0	6.
1706020302800.00	NAPIAS CR	MOUTH	ARNETT CR	A	0.0	1.
1706020301300.00	PANTHER CR	NAPIAS CR	DEEP CR	D	0.0	1.
1706020302500.00	DEEP CR	MOUTH	LITTLE DEEP CR	A	0.0	3.
1706020301400.00	PANTHER CR	DEEP CR	BLACKBIRD CR	D	0.0	4.
1706020301600.00	PANTHER CR	BLACKBIRD CR	WOODTICK CR	A	0.0	2.
1706020302400.00	WOODTICK CR	MOUTH	HEADWATERS	A	0.0	6.
1706020301700.00	PANTHER CR	WOODTICK CR	MOYER CR	A	0.0	1.
1706020302300.00	MOYER CR	MOUTH	HEADWATERS	D	0.0	13.
1706020301800.00	PANTHER CR	MOYER CR	MUSGROVE CR	A	0.0	0.
1706020301900.00	MUSGROVE CR	MOUTH	HEADWATERS	D	0.0	12.
1706020302000.00	PANTHER CR	MUSGROVE CR	PORPHYRY CR	A	0.0	1.
1706020302100.00	PORPHYRY CR	MOUTH	HEADWATERS	A	0.0	7.
1706020302200.00	PANTHER CR	PORPHYRY CR	HEADWATERS	A	0.0	14.

Lemhi River Drainage

1706020400100.00	LEMHI R	MOUTH	KIRTLEY CR	D	0.0	3.
1706020400201.00	LEMHI R	GEERTSON CR	MULKEY CR	A	0.0	0.
1706020400200.00	LEMHI R	KIRTLEY CR	GEERTSON CR	D	0.0	3.
1706020400400.00	LEMHI R	MULKEY CR	BOHANNON CR	D	0.0	2.
1706020400500.00	LEMHI R	BOHANNON CR	WIMPEY CR	D	0.0	1.
1706020400600.00	LEMHI R	WIMPEY CR	WITHINGTON CR	D	0.0	0.
1706020400800.00	LEMHI R	WITHINGTON CR	HAYNES CR	D	0.0	3.
1706020400801.00	LEMHI R	HAYNES CR	SANDY CR		0.0	1.
1706020400802.00	LEMHI R	SANDY CR	KENNEY CR		0.0	1.
1706020400900.00	LEMHI R	KENNEY CR	PATTEE CR		0.0	3.
1706020401000.00	LEMHI R	PATTEE CR	BALDY CR		0.0	0.
1706020401200.00	LEMHI R	BALDY CR	AGENCY CR		0.0	1.
1706020401300.00	LEMHI R	AGENCY CR	MCDEVITT CR		0.0	1.
1706020401500.00	LEMHI R	MCDEVITT CR	MUDDY CR		0.0	0.
1706020401700.00	LEMHI R	MUDDY CR	HAYDEN CR	D	0.0	4.
1706020401800.00	HAYDEN CR	MOUTH	BASIN CR	D	0.0	3.
1706020401900.00	BASIN CR	MOUTH	LAKE CR	A	0.0	2.
1706020402000.00	BASIN CR	LAKE CR	MCNUTT CR	A	0.0	1.
1706020402400.00	HAYDEN CR	BASIN CR	BEAR VALLEY CR	D	0.0	4.
1706020402500.00	BEAR VALLEY CR	MOUTH	KADLETZ CR	D	0.0	1.
1706020408200.00	KADLETZ CR	MOUTH	HEADWATERS	A	0.0	3.
1706020402501.00	BEAR VALLEY CR	KADLETZ CR	WRIGHT CR	A	0.0	1.
1706020402600.00	BEAR VALLEY CR	WRIGHT CR	HEADWATERS	D	0.0	4.
1706020402800.00	HAYDEN CR	BEAR VALLEY CR	HAYDEN CR, E FK	D	0.0	1.
1706020408000.00	HAYDEN CR, E FK	MOUTH	HEADWATERS	D	0.0	7.
1706020402801.00	HAYDEN CR	HAYDEN CR, E FK	HAYDEN CR, W FK	D	0.0	4.
1706020408100.00	HAYDEN CR, W FK	MOUTH	HEADWATERS	A	0.0	3.
1706020402802.00	HAYDEN CR	HAYDEN CR, W FK	HEADWATERS	A	0.0	4.
1706020402900.00	LEMHI R	HAYDEN CR	YEARIAN CR	C	0.0	3.
1706020403000.00	LEMHI R	YEARIAN CR	REESE CR	C	0.0	3.

1706020403100.00	LEMHI R	REESE CR	PETERSON CR	C	0.0	2.6	2.
1706020403200.00	LEMHI R	PETERSON CR	MILL CR	C	0.0	2.2	2.
1706020403201.00	LEMHI R	MILL CR	LEE CR	C	0.0	2.3	2.
1706020403400.00	LEMHI R	LEE CR	BIG SPRINGS CR	C	0.0	0.2	0.
1706020403500.00	LEMHI R	LITTLE EIGHTMILE CR	BIG EIGHTMILE CR	C	0.0	1.8	1.
1706020403700.00	LEMHI R	BIG EIGHTMILE CR	GAUGE STA OR NO CONFLUENCE	C	0.0	7.9	7.
1706020403900.00	LEMHI R	GAUGE STA OR NO CONFLUENCE	CANYON CR	C	0.0	1.0	1.
1706020408300.00	BIG SPRINGS CR	MOUTH	HEADWATERS	A	0.0	5.0	5.
1706020403401.00	LEMHI R	BIG SPRINGS CR	LITTLE EIGHTMILE CR	A	0.0	0.2	0.2

Pahsimeroi River Drainage

1706020200100.00	PAHSIMEROI R	MOUTH	MORGAN CR	C	0.0	5.3	5.
1706020200200.00	PAHSIMEROI R	MORGAN CR	LAWSON CR	C	0.0	4.1	4.
1706020200201.00	PAHSIMEROI R	LAWSON CR	MORSE CR	C	0.0	4.1	4.
1706020200300.00	PAHSIMER01 R	MORSE CR	MEADOW CR	C	0.0	0.7	0.
1706020203500.00	PAHSIMEROI R	MEADOW CR	FALLS CR	C	0.0	0.4	0.
1706020200500.00	PAHSIMER01 R	FALLS CR	PATTERSON CR	C	0.0	2.1	2.
1706020200600.00	PAHSIMEROI R	PATTERSON CR	GROUSE CR	C	0.0	1.4	1.
1706020200601.00	PAHSIMER01 R	GROUSE CR	BIG CR	C	0.0	2.3	2.
1706020200700.00	PAHSIMEROI R	BIG CR	GOLDBERG CR	C	0.0	0.6	0.6

Salmon River Drainage, Pahsimeroi River to Headwaters of Salmon River

1706020100100.00	SALMON R	PAHSIMEROI R	MORGAN CR	C	0.0	10.1	10.1
1706020100200.00	MORGAN CR	MOUTH	MORGAN CR, W FK	D	0.0	7.0	7.
1706020100700.00	SALMON R	MORGAN CR	CHALLIS CR	C	0.0	3.7	3.
1706020100800.00	CHALLIS CR	MOUTH	DARLING CR	C	0.0	3.2	3.
1706020101000.00	CHALLIS CR	DARLING CR	MILL CR	C	0.0	1.6	1.
1706020101100.00	CHALLIS CR	MILL CR	EDDY CR	C	0.0	2.4	2.
1706020101700.00	SALMON R	CHALLIS CR	PENNAL GULCH	C	0.0	1.7	1.
1706020101800.00	SALMON R	PENNAL GULCH	WARM SPRING CR	C	0.0	6.0	6.
1706020101900.00	SALMON R	WARM SPRING CR	GARDEN CR	C	0.0	0.5	0.
1706020102100.00	SALMON R	GARDEN CR	BAYHORSE CR	C	0.0	9.4	9.
1706020102200.00	BAYHORSE CR	MOUTH	HEADWATERS	D	0.0	8.5	8.
1706020102300.00	SALMON R	BAYHORSE CR	BRADSHAW GULCH	C	0.0	3.3	3.
1706020102400.00	SALMON R	BRADSHAW GULCH	LYON CR	C	0.0	2.0	2.
1706020116100.00	LYON CR	MOUTH	HEADWATERS	A	0.0	4.0	4.
1706020102401.00	SALMON R	LYON CR	SALMON R, E FK	A	0.0	4.5	4.
1706020109600.00	SALMON R, E FK	MOUTH	SPAR CANYON	D	0.0	4.6	4.
1706020109700.00	SALMON R, E FK	SPAR CANYON	ROAD CR	D	0.0	2.5	2.
1706020112800.00	ROAD CR	MOUTH	CORRAL BASIN CR	D	0.0	4.5	4.
1706020112900.00	ROAD CR	CORRAL BASIN CR	MOSQUITO CR	A	0.0	2.3	2.
1706020113000.00	MOSQUITO CR	MOUTH	HEADWATERS	A	0.0	6.3	6.
1706020113100.00	ROAD CR	MOSQUITO CR	HEADWATERS	A	0.0	9.8	9.
1706020109800.00	SALMON R, E FK	ROAD CR	HERD CR	D	0.0	2.9	2.
1706020112000.00	HERD CR	MOUTH	LAKE CR	D	0.0	5.0	5.
1706020112100.00	HERD CR	LAKE CR	EAST PASS CR	A	0.0	2.1	2.
1706020112200.00	EAST PASS CR	MOUTH	TAYLOR CR	A	0.0	2.1	2.
1706020112300.00	TAYLOR CR	MOUTH	HEADWATERS	A	0.0	3.5	3.
1706020112400.00	EAST PASS CR	TAYLOR CR	HEADWATERS	A	0.0	11.6	11.
1706020114100.00	HERD CR, E FK	MOUTH	HERD CR, W FK	A	0.0	1.3	1.
1706020112500.00	HERD CR, W FK	MOUTH	HEADWATERS	A	0.0	10.0	10.
1706020112600.00	HERD CR, E FK	HERD CR, W FK	HEADWATERS	A	0.0	4.1	4.
1706020109900.00	SALMON R, E FK	HERD CR	MCDONALD CR	D	0.0	0.9	0.
1706020110000.00	SALMON R, E FK	MCDONALD CR	PINE CR	D	0.0	2.9	2.

1706020111800.00	PINE CR	MOUTH	HEADWATERS	0.0	6.6	6.
1706020110100.00	SALMON R, E FK	PINE CR	BIG LAKE CR	0.0	0.6	0.
1706020110200.00	BIG LAKE CR	MOUTH	JIMMY SMITH L	0.0	1.6	1.
1706020110300.00	SALMON R, E FK	BIG LAKE CR	BIG BOULDER CR	0.0	3.7	3.
1706020110400.00	BIG BOULDER CR	MOUTH	HEADWATERS	0.0	9.9	9.
1706020102500.00	SALMON R	SALMON R, E FK	KINNIKINIC CR	0.0	5.0	5.
1706020102700.00	SALMON R	KINNIKINIC CR	SULLIVAN CR	0.0	2.4	2.
1706020102800.00	SALMON R	SULLIVAN CR	SQUAW CR	0.0	0.6	0.
1706020102900.00	SQUAW CR	MOUTH	CASH CR	0.0	7.8	7.
1706020103000.00	CASH CR	MOUTH	HEADWATERS	0.0	5.1	5.
1706020103100.00	SQUAW CR	CASH CR	CINNABAR CR	0.0	0.7	0.
1706020103300.00	CINNABAR CR	MOUTH	HEADWATERS	0.0	4.8	4.
1706020103200.00	SQUAW CR	CINNABAR CR	HEADWATERS	0.0	7.9	7.
1706020103400.00	SALMON R	SQUAW CR	THOMPSON CR	0.0	4.0	4.
1706020103500.00	THOMPSON CR	MOUTH	HEADWATERS	0.0	12.5	12.
1706020103600.00	SALMON R	THOMPSON CR	HOLMAN CR	0.0	0.7	0.
1706020103700.00	SALMON R	HOLMAN CR	SLATE CR	0.0	2.1	2.
1706020109300.00	SLATE CR	MOUTH	HEADWATERS	0.0	13.5	13.
1706020103800.00	SALMON R	SLATE CR	WARM SPRINGS CR	0.0	6.4	6.
1706020109000.00	WARM SPRINGS CR	MOUTH	SWIMM CR	0.0	9.3	9.
1706020103900.00	SALMON R	WARM SPRINGS CR	YANKEE FORK	0.0	3.5	3.
1706020104000.00	YANKEE FORK	MOUTH	RAMEY CR	0.0	3.3	3.
1706020116900.00	RAMEY CR	MOUTH	HEADWATERS	0.0	5.0	5.
1706020104001.00	YANKEE FORK	RAMEY CR	YANKEE FORK, W FK	0.0	3.4	3.
1706020104600.00	YANKEE FORK, W FK	MOUTH	LIGHTNING CR	0.0	6.2	6.
1706020114500.00	LIGHTNING CR	MOUTH	HEADWATERS	0.0	6.0	6.
1706020104601.00	YANKEE FORK, W FK	LIGHTNING CR	CABIN CR	0.0	3.7	3.
1706020116000.00	CABIN CR	MOUTH	HEADWATERS	0.0	4.0	4.
1706020104602.00	YANKEE FORK, W FK	CABIN CR	HEADWATERS	0.0	1.9	1.
1706020104100.00	YANKEE FORK	YANKEE FORK, W FK	JORDAN CR	0.0	2.2	2.
1706020114400.00	JORDAN CR	MOUTH	HEADWATERS	0.0	6.0	6.
1706020104101.00	YANKEE FORK	JORDAN CR	FIVEMILE CR	0.0	1.8	1.
1706020116800.00	FIVEMILE CR	MOUTH	HEADWATERS	0.0	3.0	3.
1706020104102.00	YANKEE FORK	FIVEMILE CR	EIGHTMILE CR	0.0	4.9	4.
1706020104200.00	YANKEE FORK	EIGHTMILE CR	TENMILE CR	0.0	3.9	3.
1706020117000.00	TENMILE CR	MOUTH	HEADWATERS	0.0	3.0	3.
1706020104200.50	YANKEE FORK	TENMILE CR	ELEVENMILE CR	0.0	0.8	0.
1706020114300.00	ELEVENMILE CR	MOUTH	HEADWATERS	0.0	2.5	2.
1706020104201.00	YANKEE FORK	ELEVENMILE CR	TWELVEMILE CR	0.0	1.5	1.
1706020117100.00	TWELVEMILE CR	MOUTH	HEADWATERS	0.0	2.5	2.
1706020104201.50	YANKEE FORK	TWELVEMILE CR	MCKAY CR	0.0	0.7	0.
1706020104300.00	MCKAY CR	MOUTH	HEADWATERS	0.0	4.7	4.
1706020104400.00	YANKEE FORK	MCKAY CR	HEADWATERS	0.0	5.4	5.
1706020104700.00	SALMON R	YANKEE FORK	ROUGH CR	0.0	3.4	3.
1706020104800.00	SALMON R	ROUGH CR	BASIN CR	0.0	1.2	1.
1706020104900.00	BASIN CR	MOUTH	EAST BASIN CR	0.0	3.1	3.
1706020116200.00	EAST BASIN CR	MOUTH	HEADWATERS	0.0	5.0	5.
1706020104901.00	BASIN CR	EAST BASIN CR	HEADWATERS	0.0	9.2	9.
1706020105000.00	SALMON R	BASIN CR	BIG CASINO CR	0.0	2.8	2.
1706020105100.00	SALMON R	BIG CASINO CR	LITTLE CASINO CR	0.0	1.0	1.
1706020105101.00	SALMON R	LITTLE CASINO CR	VALLEY CR	0.0	3.9	3.
1706020105200.00	VALLEY CR	MOUTH	GOAT CR	0.0	0.7	0.
1706020116300.00	GOAT CR	MOUTH	MEADOW CR	0.0	0.5	0.
1706020116500.00	MEADOW CR	MOUTH	HEADWATERS	0.0	2.0	2.
1706020116301.00	GOAT CR	MEADOW CR	HEADWATERS	0.0	3.0	3.
1706020105200.50	VALLEY CR	GOAT CR	IRON CR	0.0	0.1	0.

1706020115700.00	IRON CR	MOUTH	HEADWATERS	0.0	5.2
1706020105201.00	VALLEY CR	IRON CR	CROOKED CR	0.0	3.3
1706020115800.00	CROOKED CR	MOUTH	HEADWATERS	0.0	5.2
1706020105202.00	VALLEY CR	CROOKED CR	STANLEY LAKE CR	0.0	1.3
1706020105300.00	VALLEY CR	STANLEY LAKE CR	STANLEY CR	0.0	0.8
1706020116600.00	STANLEY CR	MOUTH	HEADWATERS	0.0	5.0
1706020105301.00	VALLEY CR	STANLEY CR	ELK CR	0.0	2.7
1706020105700.00	ELK CR	MOUTH	HEADWATERS	0.0	11.6
1706020105400.00	VALLEY CR	ELK CR	TRAP CR	0.0	1.8
1706020105600.00	TRAP CR	MOUTH	MEADOW CR	0.0	2.6
1706020105500.00	VALLEY CR	TRAP CR	HEADWATERS	0.0	12.2
1706020106000.00	SALMON R	VALLEY CR	REDFISH LAKE CR	0.0	5.2
1706020106100.00	REDFISH LAKE CR	MOUTH	REDFISH L	0.0	1.9
1706020106700.00	REDFISH LAKE CR	REDFISH L	LAKE INTERIOR REACH	0.0	3.6
1706020106900.00	SALMON R	REDFISH LAKE CR	GOLD CR	0.0	5.5
1706020108700.00	GOLD CR	MOUTH	HEADWATERS	0.0	6.0
1706020107000.00	SALMON R	GOLD CR	WILLIAMS CR	0.0	1.0
1706020117200.00	MEADOW CR	MOUTH	HEADWATERS	0.0	4.0
1706020105601.00	TRAP CR	MEADOW CR	HEADWATERS	0.0	5.5
1706020110500.00	SALMON R, E FK	BIG BOULDER CR	LITTLE BOULDER CR	0.0	1.2
1706020110600.00	LITTLE BOULDER CR	MOUTH	HEADWATERS	0.0	7.6
1706020110700.00	SALMON R, E FK	LITTLE BOULDER CR	GERMANIA CR	0.0	4.7
1706020110800.00	GERMANIA CR	MOUTH	CHAMBERLAIN CR	0.0	5.4
1706020115200.00	CHAMBERLAIN CR	MOUTH	HEADWATERS	0.0	4.5
1706020110801.00	GERMANIA CR	CHAMBERLAIN CR	HEADWATERS	0.0	10.2
1706020110900.00	SALMON R, E FK	GERMANIA CR	BOWERY CR	0.0	0.8
1706020111700.00	BOWERY CR	MOUTH	HEADWATERS	0.0	5.8
1706020111000.00	SALMON R, E FK	BOWERY CR	WEST PASS CR	0.0	3.9
1706020111600.00	WEST PASS CR	MOUTH	HEADWATERS	0.0	8.5
1706020111100.00	SALMON R, E FK	WEST PASS CR	IBEX CR	0.0	3.1
1706020111200.00	SALMON R, E FK	IBEX CR	SALMON R, E FK, S FK	0.0	2.3
1706020111300.00	SALMON R, E FK_1 W FK	MOUTH	HEADWATERS	0.0	5.8
1706020111400.00	SALMON R, E FK, S FK	MOUTH	HEADWATERS	0.0	6.4
1706020116700.00	WILLIAMS CR	MOUTH	HEADWATERS	0.0	5.5
1706020107000.50	SALMON R	WILLIAMS CR	HUCKLEBERRY CR	0.0	0.7
1706020115400.00	HUCKLEBERRY CR	MOUTH	DECKER CR	0.0	3.5
1706020115600.00	DECKER CR	MOUTH	HEADWATERS	0.0	7.0
1706020115401.00	HUCKLEBERRY CR	DECKER CR	HEADWATERS	0.0	4.1
1706020107001.00	SALMON R	HUCKLEBERRY CR	FISHER CR	0.0	2.8
1706020108600.00	FISHER CR	MOUTH	HEADWATERS	0.0	9.3
1706020107100.00	SALMON R	FISHER CR	FOURTH OF JULY CR	0.0	1.3
1706020108500.00	FOURTH OF JULY CR	MOUTH	HEADWATERS	0.0	12.1
1706020107200.00	SALMON R	FOURTH OF JULY CR	HELL ROARING CR	0.0	0.7
1706020107500.00	SALMON R	HELL ROARING CR	CHAMPION CR	0.0	1.4
1706020107501.00	SALMON R	CHAMPION CR	ALTURAS LAKE CR	0.0	4.4
1706020107700.00	ALTURAS LAKE CR	MOUTH	ALTURAS L	0.0	6.7
1706020107800.00	ALTURAS LAKE CR	ALTURAS L	LAKE INTERIOR REACH	0.0	2.2
1706020115900.00	ALPINE CR	MOUTH	HEADWATERS	0.0	1.0
1706020108200.00	SALMON R	ALTURAS LAKE CR	POLE CR	0.0	4.3
1706020114900.00	POLE CR	MOUTH	HEADWATERS	0.0	9.0
1706020108201.00	SALMON R	POLE CR	BEAVER CR	0.0	0.5
1706020114700.00	BEAVER CR	MOUTH	HEADWATERS	0.0	6.5
1706020108202.00	SALMON R	BEAVER CR	SMILEY CR	0.0	0.5
1706020108300.00	SMILEY CR	MOUTH	HEADWATERS	0.0	9.1
1706020108400.00	SALMON R	SMILEY CR	FRENCHMAN CR	0.0	3.4
1706020114800.00	FRENCHMAN CR	MOUTH	HEADWATERS	0.0	5.0

1706030608200.00	CLEARWATER R	MOUTH	LINDSAY CR	0.0	2.6	2.
1706030600100.00	CLEARWATER R	LINDSAY CR	HATWAI CR	0.0	4.6	4.
1706030608000.00	HATWAI CR	MOUTH	HEADWATERS	0.0	7.4	7.
1706030600200.00	CLEARWATER R	HATWAI CR	LAPWAI CR	0.0	5.4	5.
1706030600300.00	LAPWAI CR	MOUTH	TOM BEALL CR	0.0	2.6	2.
1706030600400.00	LAPWAI CR	TOM BEALL CR	SWEETWATER CR	0.0	4.0	4.
1706030600500.00	SWEETWATER CR	MOUTH	WEBB CR	0.0	4.3	4.
1706030600900.00	WEBB CR	MOUTH	HEADWATERS	0.0	12.9	12.
1706030600600.00	SWEETWATER CR	WEBB CR	SWEETWATER CR, E FK	0.0	5.6	5.
1706030601100.00	LAPWAI CR	SWEETWATER CR	MISSION CR	0.0	4.8	4.
1706030608400.00	MISSION CR	MOUTH	HEADWATERS	0.0	21.3	21.
1706030601101.00	LAPWAI CR	MISSION CR	HEADWATERS	0.0	11.3	11.
1706030601500.00	CLEARWATER R	LAPWAI CR	CATHOLIC CR	0.0	2.0	2.
1706030607900.00	CATHOLIC CR	MOUTH	HEADWATERS	0.0	10.1	10.
1706030601600.00	CLEARWATER R	CATHOLIC CR	POTLATCH R	0.0	1.9	1.
1706030604800.00	POTLATCH R	MOUTH	UNNAMED	0.0	0.4	0.
1706030604900.00	POTLATCH R	UNNAMED	LITTLE POTLATCH R	0.0	3.5	3.
1706030605000.00	POTLATCH R	LITTLE POTLATCH R	MIDDLE POTLATCH R	0.0	5.5	5.
1706030605100.00	POTLATCH R	MIDDLE POTLATCH R	BIG BEAR CR	0.0	4.4	4.
1706030606300.00	BIG BEAR CR	MOUTH	LITTLE BEAR CR	0.0	1.3	1.
1706030606400.00	BIG BEAR CR	LITTLE BEAR CR	DRY CR	0.0	7.1	7.
1706030605200.00	POTLATCH R	BIG BEAR CR	PINE CR	0.0	2.6	2.
1706030606200.00	PINE CR	MOUTH	HEADWATERS	0.0	5.7	5.
1706030605300.00	POTLATCH R	PINE CR	CEDAR CR	0.0	3.5	3.
1706030605400.00	CEDAR CR	MOUTH	HEADWATERS	0.0	10.4	10.
1706030605500.00	POTLATCH R	CEDAR CR	BOULDER CR	0.0	4.9	4.
1706030609500.00	BOULDER CR	MOUTH	HEADWATERS	0.0	1.0	1.
1706030605501.00	POTLATCH R	BOULDER CR	CORRAL CR	0.0	5.4	5.
1706030605600.00	POTLATCH R	CORRAL CR	LITTLE BOULDER CR	0.0	2.0	2.
1706030605601.00	POTLATCH R	LITTLE BOULDER CR	POTLATCH R, E FK	0.0	3.7	3.
1706030605700.00	POTLATCH R, E FK	MOUTH	RUBY CR	0.0	3.7	3.
1706030605701.00	POTLATCH R, E FK	RUBY CR	HEADWATERS	0.0	4.8	4.
1706030605800.00	POTLATCH R	POTLATCH R, E FK	MOOSE CR	0.0	6.4	6.
1706030605900.00	POTLATCH R	MOOSE CR	HEADWATERS	0.0	9.2	9.
1706030601700.00	CLEARWATER R	POTLATCH R	COTTONWOOD CR	0.0	4.0	4.
1706030601800.00	COTTONWOOD CR	MOUTH	HEADWATERS	0.0	20.3	20.
1706030601900.00	CLEARWATER R	COTTONWOOD CR	PINE CR	0.0	4.3	4.
1706030604700.00	PINE CR	MOUTH	HEADWATERS	0.0	4.6	4.
1706030602000.00	CLEARWATER R	PINE CR	BEDROCK CR	0.0	2.9	2.
1706030604400.00	BEDROCK CR	MOUTH	LOUSE CR	0.0	4.9	4.
1706030604600.00	BEDROCK CR	LOUSE CR	HEADWATERS	0.0	5.0	5.
1706030602100.00	CLEARWATER R	BEDROCK CR	JACKS CR	0.0	3.7	3.
1706030602101.00	CLEARWATER R	JACKS CR	BIG CANYON CR	0.0	5.3	5.
1706030602200.00	BIG CANYON CR	MOUTH	LITTLE CANYON CR	0.0	2.7	2.
1706030602400.00	LITTLE CANYON CR	MOUTH	HOLES CR	0.0	17.9	17.
1706030602401.00	HOLES CR	MOUTH	HEADWATERS	0.0	8.0	8.
1706030602300.00	BIG CANYON CR	LITTLE CANYON CR	COLD SPRINGS CR	0.0	26.0	26.
1706030608900.00	COLD SPRINGS CR	MOUTH	HEADWATERS	0.0	8.8	8.
1706030602301.00	BIG CANYON CR	COLD SPRINGS CR	HEADWATERS	0.0	5.0	5.
1706030602500.00	CLEARWATER R	BIG CANYON CR	CLEARWATER R, N FK	0.0	6.4	6.
1706030602600.00	CLEARWATER R	CLEARWATER R, N FK	OROFINO CR	0.0	5.0	5.
1706030608100.00	OROFINO CR	MOUTH	WHISKEY CR	0.0	3.5	3.
1706030604300.00	WHISKEY CR	MOUTH	HEADWATERS	0.0	23.0	23.
1706030602700.00	CLEARWATER R	OROFINO CR	JIM FORD CR	0.0	3.2	3.

1706030604100.00	JIM FORD CR	MOUTH	GRASSHOPPER CR	A	0.0	8.7	8.7
1706030602800.00	CLEARWATER R	JIM FORD CR	BIG CR	C	0.0	3.3	3.3
1706030609300.00	BIG CR	MOUTH	HEADWATERS	D	0.0	8.8	8.8
1706030602801.00	CLEARWATER R	BIG CR	LOLO CR	C	0.0	2.9	2.9
1706030603400.00	LOLO CR	MOUTH	YAKUS CR	D	0.0	23.9	23.9
1706030603500.00	YAKUS CR	MOUTH	HEADWATERS	A	0.0	5.0	5.0
1706030603600.00	LOLO CR	YAKUS CR	ELDORADO CR	D	0.0	3.5	3.5
1706030603700.00	ELDORADO CR	MOUTH	HEADWATERS	C	0.0	18.0	18.0
1706030603800.00	LOLO CR	ELDORADO CR	JIM BROWN CR	C	0.0	1.1	1.1
1706030604000.00	JIM BROWN CR	MOUTH	MUSSELSHELL CR	A	0.0	3.8	3.8
1706030608700.00	MUSSELSHELL CR	MOUTH	HEADWATERS	C	0.0	15.0	15.0
1706030603900.00	LOLO CR	JIM BROWN CR	YOOSA CR	C	0.0	8.8	8.8
1706030608600.00	YOOSA CR	MOUTH	HEADWATERS	D	0.0	8.0	8.0
1706030603901.00	LOLO CR	YOOSA CR	HEADWATERS	C	0.0	6.0	6.0
1706030602900.00	CLEARWATER R	LOLO CR	SIXMILE CR	C	0.0	5.8	5.8
1706030608500.00	SIXMILE CR	MOUTH	HEADWATERS	D	0.0	7.7	7.7
1706030602901.00	CLEARWATER R	SIXMILE CR	LAWYER CR	C	0.0	9.4	9.4
1706030603300.00	CLEARWATER R	LAWYER CR	CLEARWATER R, M FK	C	0.0	7.5	7.5
		North Fork Clearwater River, Mouth to Isabella Creek					
1706030800100.00	CLEARWATER R, N FK	MOUTH	DWORSHAK RES	C	0.0	1.6	1.6
		Middle Fork Clearwater River Drainage, Kooskia to Lowell					
1706030400200.00	CLEAR CR	MOUTH	CLEAR CR, W FK	D	0.0	9.7	9.7
1706030400600.00	CLEAR CR, S FK	MOUTH	KAY CR	D	0.0	4.0	4.0
1706030400900.00	KAY CR	MOUTH	HEADWATERS	D	0.0	4.7	4.7
1706030400601.00	CLEAR CR, S FK	KAY CR	HEADWATERS	D	0.0	3.8	3.8
1706030400201.00	CLEAR CR	CLEAR CR, S FK	CLEAR CR, M FK	D	0.0	1.9	1.9
1706030400700.00	CLEAR CR, M FK	MOUTH	HEADWATERS	D	0.0	4.8	4.8
1706030400202.00	CLEAR CR	CLEAR CR, M FK	PINE KNOB CR	D	0.0	1.6	1.6
1706030400800.00	PINE KNOB CR	MOUTH	HEADWATERS	A	0.0	3.0	3.0
1706030400203.00	CLEAR CR	PINE KNOB CR	BROWNS SPRING CR	D	0.0	1.0	1.0
1706030401100.00	BROWNS SPRING CR	MOUTH	HEADWATERS	A	0.0	4.8	4.8
1706030400204.00	CLEAR CR	BROWNS SPRING CR	HEADWATERS	A	0.0	2.4	2.4
1706030401200.00	CLEAR CR, W FK	MOUTH	HEADWATERS	D	0.0	0.8	0.8
1706030400200.13	CLEAR CR	CLEAR CR, W FK	CLEAR CR, S FK	D	0.0	0.5	0.5
		Lochsa River Drainage					
1706030305800.00	PETE KING CR	MOUTH	WALDE CR	D	0.0	4.5	4.5
1706030305900.00	WALDE CR	MOUTH	HEADWATERS	A	0.0	4.4	4.4
1706030306000.00	PETE KING CR	WALDE CR	HEADWATERS	D	0.0	4.7	4.7
1706030306200.00	KERR CR	MOUTH	HEADWATERS	A	0.0	3.5	3.5
1706030305700.00	CANYON CR	MOUTH	HEADWATERS	D	0.0	7.2	7.2
1706030306300.00	DEADMAN CR	MOUTH	DEADMAN CR, E FK	D	0.0	2.0	2.0
1706030306400.00	DEADMAN CR, E FK	MOUTH	HEADWATERS	A	0.0	3.5	3.5
1706030306900.00	COOLWATER CR	MOUTH	HEADWATERS	C	0.0	5.9	5.9
1706030300400.00	FIRE CR	MOUTH	HEADWATERS	C	0.0	6.7	6.7
1706030306600.00	SPLIT CR	MOUTH	HEADWATERS	C	0.0	7.0	7.0
1706030305400.00	FISH CR	MOUTH	WILLOW CR	D	0.0	2.6	2.6
1706030306700.00	WILLOW CR	MOUTH	HEADWATERS	A	0.0	7.0	7.0
1706030305401.00	FISH CR	WILLOW CR	HUNGERY CR	D	0.0	1.5	1.5
1706030305500.00	HUNGERY CR	MOUTH	OBIA CR	C	0.0	7.3	7.3

1706030306800.00	**OBIA CR**	**MOUTH**	**HEADWATERS**	**A**	**0.0**	**5.0**
1706030305501.00	**HUNGERY CR**	**OBIA CR**	**HEADWATERS**	**C**	**0.0**	**4.5**
1706030305600.00	FISH CR	HUNGERY CR	HEADWATERS		0.0	13.5
1706030308100.00	INDIAN GRAVE CR	MOUTH	HEADWATERS		0.0	5.0
1706030305200.00	WEIR CR	MOUTH	HEADWATERS		0.0	5.0
1706030308000.00	POSTOFFICE CR	MOUTH	HEADWATERS		0.0	8.0
1706030301900.00	WARM SPRINGS CR	MOUTH	WIND LAKES CR		0.0	6.2
1706030304900.00	SQUAW CR	MOUTH	DOE CR		0.0	0.4
1706030305100.00	DOE CR	MOUTH	HEADWATERS		0.0	6.1
1706030305000.00	SQUAW CR	DOE CR	SQUAW CR, W FK		0.0	3.9
1706030307600.00	WENDOVER CR	MOUTH	WENDOVER CR, W FK	D	0.0	1.0
1706030307800.00	WENDOVER CR, W FK	MOUTH	HEADWATERS	A	0.0	2.8
1706030307601.00	WENDOVER CR	WENDOVER CR, W FK	HEADWATERS	D	0.0	2.1
1706030307100.00	PAPOOSE CR	MOUTH	PARACHUTE CR	D	0.0	1.5
1706030307200.00	PARACHUTE CR	MOUTH	HEADWATERS	D	0.0	5.2
1706030307101.00	PAPOOSE CR	PARACHUTE CR	PAPOOSE CR, E FK	D	0.0	0.6
1706030307400.00	PAPOOSE CR, E FK	MOUTH	HEADWATERS	A	0.0	4.0
1706030307500.00	PAPOOSE CR, W FK	MOUTH	HEADWATERS	A	0.0	5.2
1706030306100.00	JAY CR	MOUTH	HEADWATERS	A	0.0	5.6
1706030302500.00	WALTON CR	MOUTH	HEADWATERS	A	0.0	7.5
1706030302600.00	LOCHSA R	UNNAMED	LOCHSA R, CROOKED FK	A	0.0	0.1
1706030302700.00	WHITE SANDS CR	MOUTH	BEAVER CR	D	0.0	3.1
1706030304100.00	BEAVER CR	MOUTH	HEADWATERS	A	0.0	6.5
1706030302800.00	WHITE SANDS CR	BEAVER CR	STORM CR	D	0.0	6.3
1706030303000.00	COLT CR	MOUTH	HEADWATERS	D	0.0	13.0
1706030304200.00	LOCHSA R, CROOKED FK	MOUTH	CROOKED FK, BRUSHY FK	D	0.0	6.6
1706030304300.00	CROOKED FK, BRUSHY FK	MOUTH	SPRUCE CR	D	0.0	10.4
1706030304400.00	SPRUCE CR	MOUTH	HEADWATERS	D	0.0	7.6
1706030304500.00	CROOKED FK, BRUSHY FK	SPRUCE CR	HEADWATERS	D	0.0	9.3
1706030304600.00	LOCHSA R, CROOKED FK	CROOKED FK, BRUSHY FK	BOULDER CR	D	0.0	6.4
1706030304800.00	BOULDER CR	MOUTH	HEADWATERS	D	0.0	6.9
1706030304700.00	LOCHSA R, CROOKED FK	BOULDER CR	HOPEFUL CR	D	0.0	5.5
1706030304701.00	HOPEFUL CR	MOUTH	HEADWATERS	D	0.0	3.9
1706030307000.00	LOCHSA R, CROOKED FK	HOPEFUL CR	HEADWATERS	D	0.0	4.0
1706030308300.00	EAGLE MOUNTAIN CR	MOUTH	HEADWATERS	A	0.0	2.0
1706030301300.13	LOCHSA R	EAGLE MOUNTAIN CR	INDIAN GRAVE CR	A	0.0	3.8
1706030308400.00	CLIFF CR	MOUTH	HEADWATERS	A	0.0	2.5
1706030302401.00	LOCHSA R	CLIFF CR	WALTON CR	A	0.0	1.6
1706030308500.00	SQUAW CR, W FK	MOUTH	HEADWATERS	A	0.0	3.7
1706030305001.00	SQUAW CR	SQUAW CR, W FK	HEADWATERS	A	0.0	1.4

Selway River Drainage

1706030204500.00	GODDARD CR	MOUTH	HEADWATERS	D	0.0	8.3
1706030200200.00	O'HARA CR	MOUTH	O'HARA CR, E FK	D	0.0	6.7
1706030205300.00	O'HARA CR, W FK	MOUTH	HEADWATERS	A	0.0	8.7
1706030206600.00	O'HARA CR, E FK	MOUTH	HEADWATERS	A	0.0	8.7
1706030205400.00	RACKLIFF CR	MOUTH	HEADWATERS	A	0.0	5.9
1706030205500.00	BOYD CR	MOUTH	HEADWATERS	A	0.0	4.7
1706030205600.00	GLOVER CR	MOUTH	HEADWATERS	A	0.0	5.5
1706030204000.00	GEDNEY CR	MOUTH	GEDNEY CR, W FK	D	0.0	3.4
1706030204200.00	GEDNEY CR, W FK	MOUTH	HEADWATERS	D	0.0	7.0
1706030204100.00	GEDNEY CR	GEDNEY CR, W FK	HEADWATERS	D	0.0	7.5
1706030200500.00	MEADOW CR	MOUTH	HORSE CR	A	0.0	4.3
1706030200600.00	HORSE CR	MOUTH	HEADWATERS	D	0.0	7.2
1706030200700.00	MEADOW CR	HORSE CR	FIVEMILE CR	A	0.0	2.0

1706030205700.00	FIVEMILE CR	MOUTH	HEADWATERS	A	0.0	5.8
1706030200701.00	MEADOW CR	FIVEMILE CR	LITTLE BOULDER CR	A	0.0	1.2
1706030205800.00	LITTLE BOULDER CR	MOUTH	HEADWATERS	A	0.0	5.1
1706030200702.00	MEADOW CR	LITTLE BOULDER CR	BUCK LAKE CR	A	0.0	4.0
1706030200900.00	BUCK LAKE CR	MOUTH	HEADWATERS	D	0.0	10.3
1706030200800.00	MEADOW CR	BUCK LAKE CR	BUTTE CR	A	0.0	4.0
1706030200801.00	MEADOW CR	BUTTE CR	SABLE CR	D	0.0	1.6
1706030204800.00	SABLE CR	MOUTH	SIMMONS CR	D	0.0	0.7
1706030204900.00	SIMMONS CR	MOUTH	HEADWATERS	D	0.0	5.9
1706030204801.00	SABLE CR	SIMMONS CR	HEADWATERS	D	0.0	4.1
1706030200802.00	MEADOW CR	SABLE CR	SCHWAR CR	D	0.0	4.9
1706030205200.00	SCHWAR CR	MOUTH	HEADWATERS	D	0.0	7.1
1706030200803.00	MEADOW CR	SCHWAR CR	MEADOW CR, E FK	D	0.0	1.3
1706030205900.00	MEADOW CR, E FK	MOUTH	HEADWATERS	A	0.0	2.4
1706030200804.00	MEADOW CR	MEADOW CR, E FK	THREE PRONG CR	D	0.0	3.3
1706030205100.00	THREE PRONG CR	MOUTH	HEADWATERS	D	0.0	5.3
1706030200805.00	MEADOW CR	THREE PRONG CR	BUTTER CR	A	0.0	4.5
1706030206000.00	BUTTER CR	MOUTH	HEADWATERS	A	0.0	4.0
1706030200806.00	MEADOW CR	BUTTER CR	HEADWATERS	A,.	0.0	7.2
1706030104200.00	EAGLE CR	MOUTH	HEADWATERS	A	0.0	12.0
1706030100801.00	RUNNING CR	EAGLE CR	LYNX CR	A	0.0	8.1
1706030104100.00	LYNX CR	MOUTH	HEADWATERS	A	0.0	6.0
1706030100802.00	RUNNING CR	LYNX CR	RUNNING CR, S FK	A	0.0	0.8
1706030104000.00	RUNNING CR, S FK	MOUTH	HEADWATERS	A	0.0	5.0
1706030100803.00	RUNNING CR	RUNNING CR, S FK	HEADWATERS	A	0.0	9.0
1706030100900.13	SELWAY R	GARDNER CR	BAD LUCK CR	A	0.0	3.2
1706030100900.24	SELWAY R	BAD LUCK CR	CROOKED CR	A	0.0	2.1

South Fork Clearwater River Drainage

1706030500100.00	CLEARWATER R, S FK	MOUTH	COTTONWOOD CR	C	0.0	4.5
1706030500700.00	CLEARWATER R, S FK	COTTONWOOD CR	RABBIT CR	C	0.0	1.3
1706030500800.00	CLEARWATER R, S FK	RABBIT CR	THREEMILE CR	C	0.0	1.7
1706030500900.00	THREEMILE CR	MOUTH	HEADWATERS	D	0.0	16.5
1706030501000.00	CLEARWATER R, S FK	THREEMILE CR	SALLY ANN CR	C	0.0	4.1
1706030501100.00	BUTCHER CR	MOUTH	HEADWATERS	D	0.0	13.3
1706030501200.00	CLEARWATER R, S FK	BUTCHER CR	MILL CR	C	0.0	20.9
1706030501300.00	MILL CR	MOUTH	HEADWATERS	D	0.0	14.8
1706030501400.00	CLEARWATER R, S FK	MILL CR	MEADOW CR	C	0.0	0.3
1706030504800.00	MEADOW CR	MOUTH	HEADWATERS	C	0.0	13.5
1706030501500.00	CLEARWATER R, S FK	MEADOW CR	JOHNS CR	C	0.0	2.0
1706030501600.00	JOHNS CR	MOUTH	GOSPEL CR	D	0.0	10.0
1706030502000.00	JOHNS CR	MOORES CR	HAGEN CR	D	0.0	0.7
1706030502300.00	CLEARWATER R, S FK	JOHNS CR	PEASLEY CR	C	0.0	3.6
1706030504700.00	PEASLEY CR	MOUTH	HEADWATERS	D	0.0	6.9
1706030502400.00	CLEARWATER R, S FK	PEASLEY CR	SILVER CR	C	0.0	1.6
1706030502500.00	CLEARWATER R, S FK	SILVER CR	WING CR	C	0.0	1.4
1706030502700.00	CLEARWATER R, S FK	WING CR	TWENTYMILE CR	C	0.0	0.7
1706030502900.00	CLEARWATER R, S FK	TWENTYMILE CR	TENMILE CR	C	0.0	4.6
1706030503000.00	TENMILE CR	MOUTH	SIXMILE CR	A	0.0	4.2
1706030506300.00	SIXMILE CR	MOUTH	HEADWATERS	A	0.0	4.2
1706030503001.00	TENMILE CR	SIXMILE CR	WILLIAMS CR	A	0.0	2.2
1706030503100.00	CLEARWATER R, S FK	TENMILE CR	FALL CR	C	0.0	2.0
1706030505000.00	LEGGETT CR	MOUTH	HEADWATERS	A	0.0	6.1
1706030503101.00	CLEARWATER R, S FK	LEGGETT CR	NEWSOME CR	C	0.0	1.0
1706030504300.00	NEWSOME CR	MOUTH	BEAR CR	D	0.0	3.1

1706030506500.00	BEAR CR	MOUTH	HEADWATERS	0.0	4.2
1706030504301.00	NEWSOME CR	BEAR CR	NEWSOME CR, W FK	0.0	0.4
1706030507000.00	NEWSOME CR, W FK	MOUTH	HEADWATERS	0.0	5.0
1706030504301.20	NEWSOME CR	NEWSOME CR, W FK	NUGGETT CR	0.0	0.5
1706030506600.00	SING LEE CR	MOUTH	HEADWATERS	0.0	3.0
1706030504302.00	NEWSOME CR	SING LEE CR	BEAVER CR	0.0	1.3
1706030506700.00	BEAVER CR	MOUTH	HEADWATERS	0.0	5.0
1706030504303.00	NEWSOME CR	BEAVER CR	PILOT CR	0.0	0.8
1706030506800.00	PILOT CR	MOUTH	SAWMILL CR	0.0	0.3
1706030507000.00		MOUTH	HEADWATERS	0.0	3.6
1706030506801.00	PILOT CR	SAWMILL CR	HEADWATERS	0.0	5.8
1706030504304.00	NEWSOME CR	PILOT CR	BALDY CR	0.0	0.2
1706030504400.00	MULE CR	MOUTH	HEADWATERS	0.0	4.7
1706030504500.00	NEWSOME CR	MULE CR	HAYSFORK CR	0.0	0.3
1706030503200.00	CLEARWATER R, S FK	NEWSOME CR	CROOKED R	0.0	3.3
1706030507300.00	WHISKEY CR	MOUTH	MAURICE CR	0.0	0.1
1706030507500.00	MAURICE CR	MOUTH	HEADWATERS	0.0	2.8
1706030507301.00	WHISKEY CR	MAURICE CR	HEADWATERS	0.0	4.1
1706030503401.00	CLEARWATER R, S FK	WHISKEY CR	AMERICAN R	0.0	1.3
1706030503300.00	CROOKED R	MOUTH	RELIEF CR	0.0	7.8
1706030507100.00	RELIEF CR	MOUTH	HEADWATERS	0.0	9.0
1706030503301.00	CROOKED R	RELIEF CR	CROOKED R, E FK	0.0	4.5
1706030507200.00	CROOKED R, E FK	MOUTH	HEADWATERS	0.0	6.3
1706030503302.00	CROOKED R, W FK	MOUTH	HEADWATERS	0.0	4.7
1706030503400.00	CLEARWATER R, S FK	RUNS OUT OF STATE	WHISKEY CR	0.0	2.3
1706030503500.00	RED R	MOUTH	RED HORSE CR	0.0	5.4
1706030507700.00	RED HORSE CR	RED HORSE CR	SIEGEL CR	0.0	1.2
1706030503501.00	RED R	MOUTH	HEADWATERS	0.0	6.4
1706030503900.00	SIEGEL CR	MOUTH	HEADWATERS	0.0	8.2
1706030503600.00	RED R	MOOSE BUTTE CR	RED R, S FK	0.0	1.0
1706030507800.00	MOOSE BUTTE CR	MOUTH	TRAPPER CR	0.0	3.0
1706030503601.00	RED R	MOUTH	HEADWATERS	0.0	5.5
1706030503700.00	RED R, S FK	TRAPPER CR	RED R, W FK	0.0	4.7
1706030505200.00	TRAPPER CR	MOUTH	HEADWATERS	0.0	7.0
1706030503701.00	RED R, S FK	RED R, W FK	HEADWATERS	0.0	4.0
1706030505100.00	RED R, W FK	RED R, S FK	SODA CR	0.0	5.9
1706030503702.00	RED R, S FK	MOUTH	HEADWATERS	0.0	3.0
1706030503800.00	RED R	SODA CR	TRAIL CR	0.0	0.9
1706030505300.00	SODA CR	MOUTH	HEADWATERS	0.0	3.5
1706030503801.00	RED R	TRAIL CR	OTTERSON CR	0.0	2.1
1706030505600.00	TRAIL CR	MOUTH	HEADWATERS	0.0	3.0
1706030503802.00	RED R	OTTERSON CR	BRIDGE CR	0.0	1.5
1706030505500.00	OTTERSON CR	MOUTH	HEADWATERS	0.0	3.5
1706030503803.00	RED R	BRIDGE CR	HEADWATERS	0.0	1.7
1706030505400.00	BRIDGE CR	MOUTH	BUFFALO GULCH CR	0.0	0.7
1706030503804.00	RED R	MOUTH	HEADWATERS	0.0	6.4
1706030504000.00	AMERICAN R	BUFFALO GULCH CR	LITTLE ELK CR	0.0	0.9
1706030507600.00	BUFFALO GULCH CR	MOUTH	LITTLE ELK CR	0.0	2.7
1706030504001.00	AMERICAN R	BUFFALO GULCH CR	HEADWATERS	0.0	10.0
1706030504200.00	BIG ELK CR	MOUTH	HEADWATERS	0.0	11.0
1706030506000.00	BIG ELK CR	LITTLE ELK CR	AMERICAN R, KIRKS FK	0.0	3.0
1706030504201.00	LITTLE ELK CR	MOUTH	AMERICAN R, E FK	0.0	8.2
1706030504100.00	AMERICAN R	LITTLE ELK CR	HEADWATERS	0.0	6.0
1706030504101.00	AMERICAN R, KIRKS FK	AMERICAN R, KIRKS FK			
1706030505800.00	AMERICAN R, E FK	MOUTH			

1706030504102.00	AMERICAN R	AMERICAN R, E FK	LIMBER LUKE CR	D	0.0	5.1	5.
1706030505900.00	LIMBER LUKE CR	MOUTH	HEADWATERS	A	0.0	3.0	3.
1706030504103.00	AMERICAN R	LIMBER LUKE CR	HEADWATERS	D	0.0	4.0	4.
1706030508000.00	SALLY ANN CR	MOUTH	HEADWATERS	A	0.0	1.1	1.
1706030501001.00	CLEARWATER R, S FK	SALLY ANN CR	BUTCHER CR	C	0.0	0.2	0.
1706030508100.00	GOSPEL CR	MOUTH	GOSPEL CR, W FK	A	0.0	1.5	1.
1706030501601.00	JOHNS CR	GOSPEL CR	MOORES CR	A	0.0	4.1	4.
1706030508200.00	FALL CR	MOUTH	HEADWATERS	A	0.0	3.8	3.
1706030503100.13	CLEARWATER R, S FK	FALL CR	LEGGETT CR	A	0.0	2.8	2.
1706030508300.00	NUGGETT CR	MOUTH	HEADWATERS	A	0.0	2.0	2.
1706030504301.30	NEWSOME CR	NUGGETT CR	SING LEE CR	A	0.0	0.3	0.
1706030508400.00	BALDY CR	MOUTH	HEADWATERS	A	0.0	3.3	3.
1706030504305.00	NEWSOME CR	BALDY CR	MULE CR	A	0.0	2.6	2.
1706030508500.00	HAYSFORK CR	MOUTH	HEADWATERS	A	0.0	3.3	3.
1706030504501.00	NEWSOME CR	HAYSFORK CR	HEADWATERS	A	0.0	4.3	4.
1706030508600.00	GOSPEL CR, W FK	MOUTH	HEADWATERS	A	0.0	3.5	3.
1706030508101.00	GOSPEL CR	GOSPEL CR, W FK	HEADWATERS	A	0.0	4.5	4.5

Snake River Drainage, Mouth to Hells Canyon Dam

1707010104700.00	SNAKE R	MOUTH	L SACAJAWEA		0.0	10.5	10.5
1706011000100.00	SNAKE R	MOUTH	L SACAJAWEA		0.0	8.6	8.
1706011001200.00	SNAKE R	L SACAJAWEA	LAKE INTERIOR REACH		0.0	7.9	7.
1706011001800.00	SNAKE R	L SACAJAWEA	LAKE INTERIOR REACH		0.0	7.2	7.
1706011000300.00	SNAKE R	L SACAJAWEA	WALKER CANYON		0.0	6.0	6.
1706011000500.00	SNAKE R	WALKER CANYON	UNNAMED		0.0	1.1	1.
1706011000700.00	SNAKE R	UNNAMED	FIELDS GULCH		0.0	27.8	27.
1706011000900.00	SNAKE R	FIELDS GULCH	PALOUSE R		0.0	3.1	3.
1706010700100.00	SNAKE R	PALOUSE R	TUCANNON R		0.0	3.4	3.
1706010702100.00	SNAKE R	TUCANNON R	ALKALI FLAT CR		0.0	5.3	5.
1706010702200.00	SNAKE R	ALKALI FLAT CR	DRY GULCH		0.0	9.8	9.
1706010702400.00	SNAKE R	DRY GULCH	NEW YORK GULCH		0.0	2.4	2.
1706010702600.00	SNAKE R	NEW YORK GULCH	MEADOW CR		0.0	5.7	5.
1706010703200.00	SNAKE R	MEADOW CR	PENAWAWA CR		0.0	9.8	9.
1706010703300.00	SNAKE R	PENAWAWA CR	ALMOTA CR		0.0	13.6	13.
1706010703400.00	SNAKE R	ALMOTA CR	STEPTOE CANYON		0.0	25.6	25.
1706010703500.00	SNAKE R	STEPTOE CANYON	ALPOWA CR		0.0	2.5	2.
1706010703600.00	ALPOWA CR	MOUTH	PAGE CR		0.0	1.2	1.
1706010703700.00	ALPOWA CR	PAGE CR	POW WAH KEE GULCH		0.0	2.3	2.
1706010703800.00	ALPOWA CR	POW WAH KEE GULCH	CLAYTON GULCH		0.0	2.8	2.
1706010704000.00	ALPOWA CR	CLAYTON GULCH	HEADWATERS		0.0	2.6	2.
1706010704500.00	SNAKE R	ALPOWA CR	CLEARWATER R		0.0	9.7	9.
1706010300100.00	SNAKE R	CLEARWATER R	TAMMANY CR		0.0	4.8	4.
1706010300200.00	SNAKE R	TAMMANY CR	ASOTIN CR		0.0	1.8	1.
1706010300300.00	ASOTIN CR	MOUTH	GEORGE CR		0.0	3.4	3.
1706010301300.00	GEORGE CR	MOUTH	PINTLER CR		0.0	1.5	1.
1706010301400.00	GEORGE CR	PINTLER CR	UNNAMED		0.0	4.6	4.
1706010301600.00	GEORGE CR	UNNAMED	HEADWATERS		0.0	3.8	3.
1706010300400.00	ASOTIN CR	GEORGE CR	CHARLEY CR		0.0	10.4	10.
1706010300500.00	CHARLEY CR	MOUTH	HEADWATERS		0.0	9.9	9.
1706010300600.00	ASOTIN CR	CHARLEY CR	ASOTIN CR, N FK		0.0	1.9	1.
1706010300700.00	ASOTIN CR, N FK	MOUTH	LICK CR		0.0	0.6	0.
1706010300900.00	ASOTIN CR, N FK	LICK CR	ASOTIN CR, N FK, S FK		0.0	9.3	9.
1706010301000.00	ASOTIN CR, N FK	ASOTIN CR, N FK, S FK	HEADWATERS		0.0	3.1	3.
1706010301200.00	ASOTIN CR, S FK	MOUTH	HEADWATERS		0.0	8.0	8.
1706010302200.00	SNAKE R	ASOTIN CR	TENMILE CR		0.0	4.7	4.

1706010302600.00 SNAKE R	TENMILE CR	TENMILE CANYON CR	A	0.0	1.8	1.
1706010302700.00 SNAKE R	TENMILE CANYON CR	REDBIRD CR	A	0.0	3.7	3.
1706010302701.00 SNAKE R	REDBIRD CR	COUSE CR	A	0.0	3.3	3.
1706010302900.00 SNAKE R	COUSE CR	CAPTAIN JOHN CR	A	0.0	5.0	5.
1706010303900.00 CAPTAIN JOHN CR	MOUTH	HEADWATERS	C	0.0	9.0	9.
1706010302901.00 SNAKE R	CAPTAIN JOHN CR	GRANDE RONDE R	A	0.0	7.0	7.
1706010303000.00 SNAKE R	GRANDE RONDE R	CORRAL CR	D	0.0	6.3	6.
1706010304100.00 CORRAL CR	MOUTH	HEADWATERS	D	0.0	3.5	3.
1706010303001.00 SNAKE R	CORRAL CR	CAVE GULCH CR	D	0.0	3.2	3.
1706010304000.00 CAVE GULCH CR	MOUTH	HEADWATERS	A	0.0	0.5	0.
1706010303001.50 SNAKE R	CAVE GULCH CR	COTTONWOOD CR	D	0.0	3.3	3.
1706010101500.00 DIVIDE CR	MOUTH	HEADWATERS	D	0.0	16.2	16.
1706010100400.00 DEEP CR	MOUTH	DEEP CR, W FK	A	0.0	0.4	0.
1706010101600.00 DRY CR	MOUTH	HEADWATERS	A	0.0	2.0	2.
1706010101400.00 WOLF CR	MOUTH	HEADWATERS	D	0.0	12.4	12.
1706010102400.00 GETTA CR	MOUTH	HEADWATERS	D	0.0	5.8	5.
1706010103000.00 LOOKOUT CR	MOUTH	HEADWATERS	A	0.0	1.7	1.
1706010103100.00 JONES CR	MOUTH	HEADWATERS	A	0.0	0.8	0.
1706010101700.00 TRYON CR	MOUTH	HEADWATERS	A	0.0	0.2	0.
1706010101800.00 SOMERS CR	MOUTH	HEADWATERS	A	0.0	1.6	1.
1706010102300.00 BIG CANYON CR	MOUTH	HEADWATERS	A	0.0	1.4	1.
1706010103200.00 WEST CR	MOUTH	HEADWATERS	A	0.0	1.0	1.
1706010103300.00 CORRAL CR	MOUTH	HEADWATERS	A	0.0	0.5	0.
1706010103400.00 KIRBY CR	MOUTH	HEADWATERS	A	0.0	1.0	1.
1706010102200.00 KIRKWOOD CR	MOUTH	HEADWATERS	A	0.0	3.0	3.
1706010101900.00 SALT CR	MOUTH	HEADWATERS	A	0.0	2.7	2.
1706010102000.00 TEMPERANCE CR	MOUTH	HEADWATERS	A	0.0	3.1	3.
1706010102100.00 SAND CR	MOUTH	HEADWATERS	A	0.0	1.4	1.
1706010102800.00 SLUICE CR	MOUTH	HEADWATERS	A	0.0	1.5	1.
1706010102500.00 SADDLE CR	MOUTH	HEADWATERS	A	0.0	7.5	7.
1706010102700.00 BATTLE CR	MOUTH	HEADWATERS	A	0.0	1.0	1.
1706010100900.00 DEEP CR	MOUTH	HEADWATERS	D	0.0	6.0	6.

Appendix D. Anadromous Fish Hatchery Mitigation Goals and Guidelines

Anadromous Fish Hatchery Mitigation Goals

Idaho Power Company Hatcheries:

Rapid River Hatchery-Mitigation goal is to produce 3,000,000 smolts for Rapid River and the Snake River.

Oxbow Hatchery-Mitigation goal is to furnish eggs to produce 200,000 pounds of steelhead smolts for the Snake River, furnish spring chinook eggs sufficient to produce 1,000,000 chinook smolts for the Snake River, and produce 1,000,000 fall chinook smolts.

Pahsimeroi Hatchery-Mitigation goal is to furnish eggs to produce 200,000 pounds of steelhead smolts for the Salmon River and to produce 1,000,000 chinook smolts.

Niagara Springs Hatchery-Mitigation goal is to produce 200,000 pounds of steelhead smolts for the Snake River and 200,000 pounds of steelhead smolts for the Salmon River.

Lower Snake River Compensation Plan Hatcheries:

Dworshak National Fish Hatchery - Mitigation goal is to return 9,135 spring chinook adults above Lower Granite Dam.

McCall Hatchery-Mitigation goal is to return 8,000 summer chinook to the South Fork Salmon River.

Sawtooth Hatchery-Mitigation goal is to return 19,200 spring chinook above Lower Granite Dam.

Magic Valley Hatchery-Mitigation goal is to return 11,660 adult steelhead above Lower Granite Dam.

Clearwater Anadromous Fish Hatchery-Mitigation goal is to return 12,000 spring chinook and 14,000 steelhead adults above Lower Granite Dam.

Anadromous Fish Hatchery Guidelines

Run Timing

To ensure maximum genetic variability in hatchery stocks, adult salmon and steelhead returning to hatchery weirs are collected throughout the entire run period for management programs.

Proportion of Hatchery and Natural Spawners

Fishery managers will decide numbers of fish released and spawned at each weir on a case by case basis. Natural production needs will receive equal consideration to hatchery production at weirs where origin (hatchery or natural) is questionable.

Identifiable natural or wild fish will be released above weirs to provide natural production or used for natural production rebuilding. In severely underescaped runs, and where wild or natural fish cannot be distinguished from hatchery fish, hatchery fish may also be released above the weir to add to the natural production component. During this five year planning period, efforts will be made to mark all salmon and steelhead smolts reared in hatcheries.

In certain instances, gametes will be collected from natural or wild fish and used to supplement hatchery stocks in order to broaden genetic diversity, maintain productivity, or improve overall survival. An interim goal of 60:40 hatchery:natural has been suggested by some researchers for hatchery fish used in supplementation programs. Factors such as run strength, stock similarities, and objective of the hatchery release will also be taken into consideration as the Department works to incorporate guidelines pertaining to hatchery:natural broodstock proportions. Effective population size for broodstock must also be a consideration as run sizes continue to decline or as small populations are tapped as local broodstock for various programs.

Spawning Procedures

Hatchery stocks returning to weirs and collected in traps are sorted and segregated by sex into holding ponds. Fish are sorted for ripeness twice weekly. Those fish not ready to spawn are returned to the holding ponds while ripe fish are removed for egg collection and fertilization.

Fish ready to spawn are killed. If the number of ripe males is insufficient to provide one male to one female spawning, they are not killed but are returned to the holding pond to be used again.

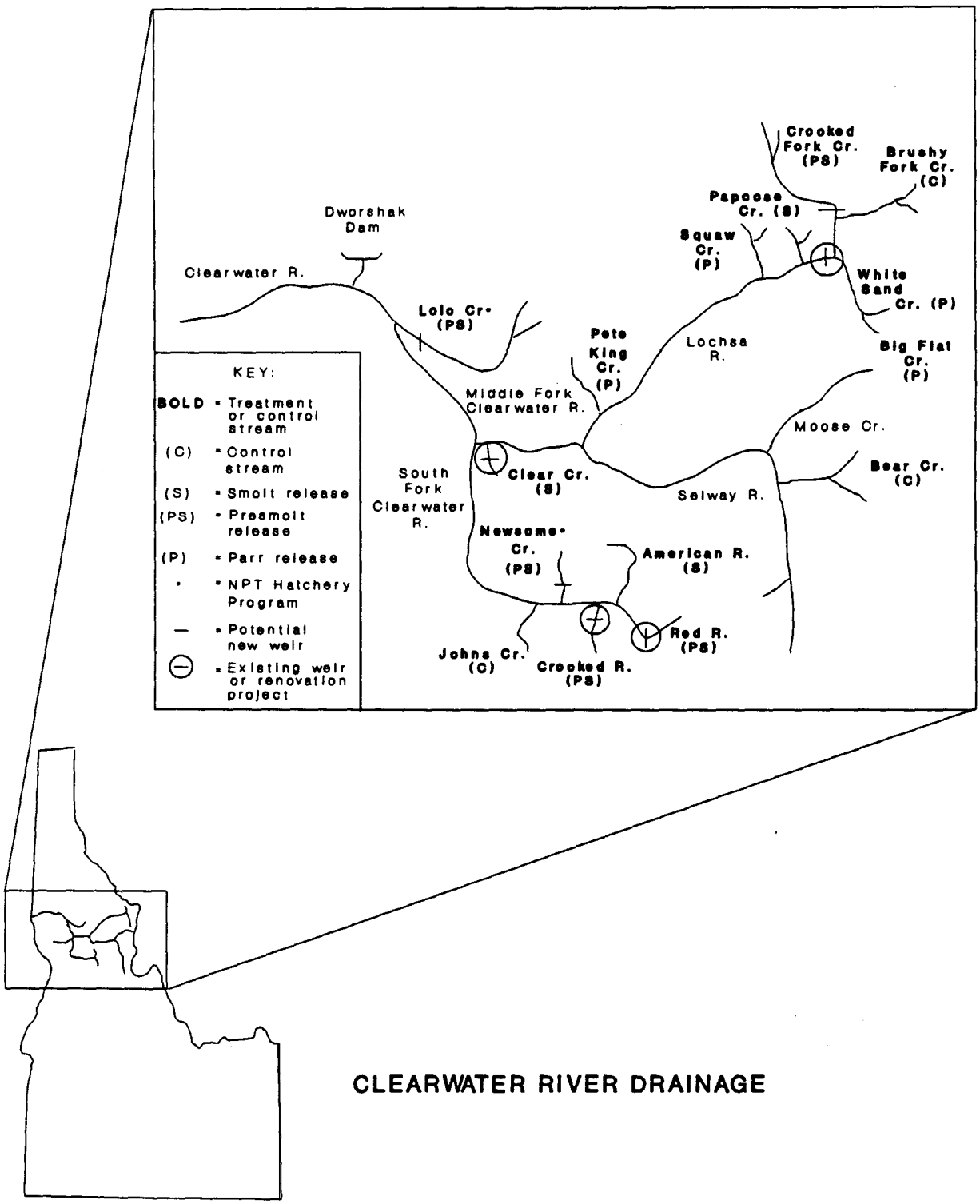
Fish are mated randomly to preclude selection for or against any particular characteristic. However, under certain circumstances, selection may be made against fish with a high prevalence of transmissible diseases.

Eggs are collected by making an abdominal incisions in the female and using a strainer to drain the ovarian fluid. Eggs from one female are placed in a container and sperm from a randomly selected male is added. Pathogen-free water is added to activate the sperm and enhance fertilization. As eggs and sperm are mixed, an iodine solution is added as a disinfectant against bacterial and viral diseases. Fertilized eggs are then transported to the hatchery and placed in incubation containers where they remain until they hatch.

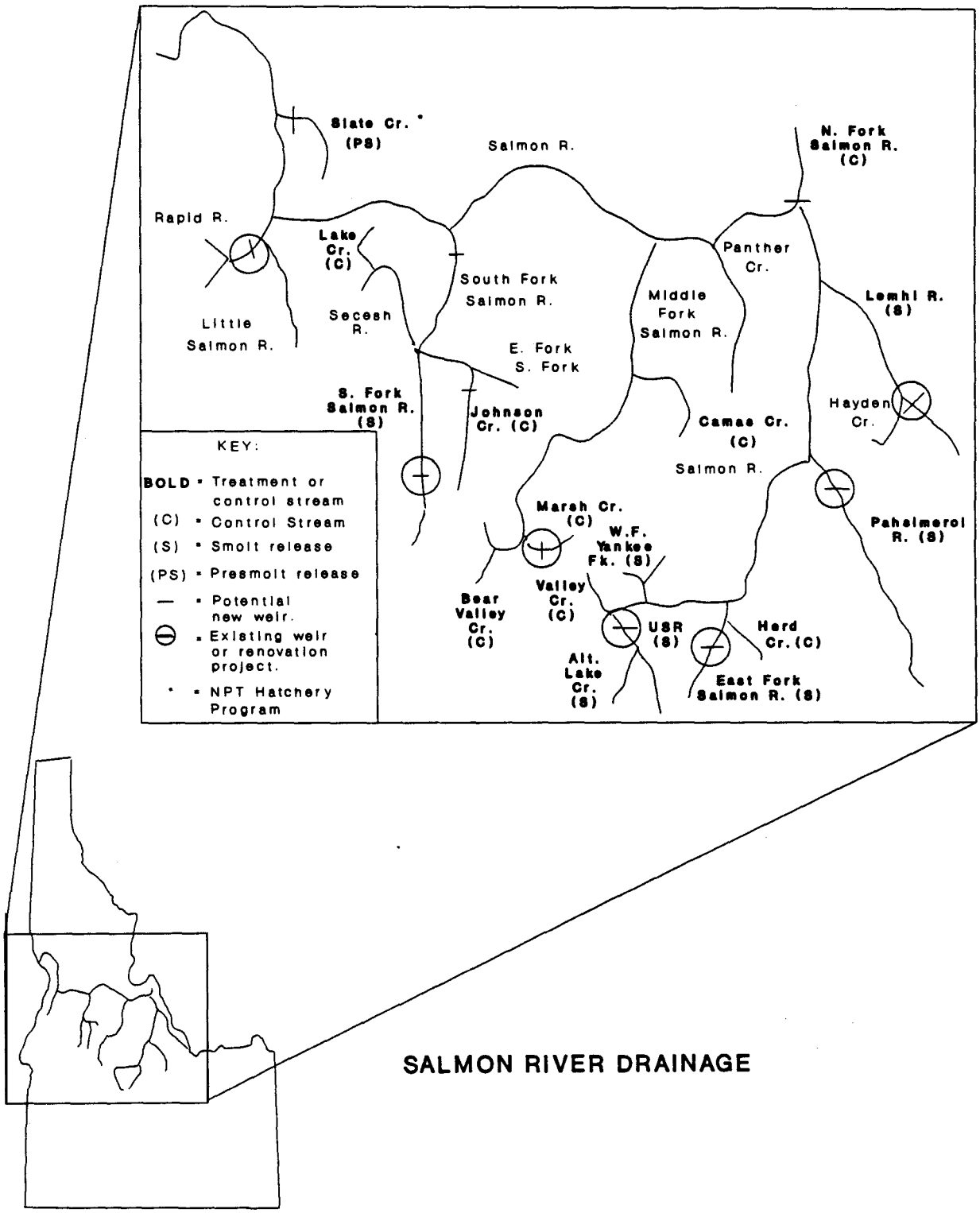
The Department will be investigating sperm cryopreservation programs to ensure gamete preservation for future generations. Other techniques to maximize the effective population size will also be developed and incorporated where numbers of spawners have been reduced to critical levels. This technique would have the most utility in stocks with a high female to male sex ratio, or stocks which are endangered.

There are a number of management situations which may occur for which a priori guidelines do not always exist. In situ management decisions will be based on current genetic and population knowledge and the objective of the program and may deviate from the stated guidelines such as if there is a high male to female ratio, managers may consider splitting eggs and spawning with more than one male.

Appendix E. Map illustrating proposed treatment and control streams for chinook supplementation evaluation in the Clearwater drainage.



Appendix E. Map illustrating proposed treatment and control streams for chinook supplementation evaluation in the Salmon drainage.



GLOSSARY

allele: An alternative form of the same gene.[4]

A-run steelhead: Summer steelhead rearing generally in the Salmon River drainage - except the South Fork and Middle Fork drainages, and also rearing in Snake River tributaries, and certain tributaries of the lower Clearwater River drainage, such as Lolo and Maggie creeks. A-run steelhead enter the Columbia River earlier (June-September) than B-run fish and are smaller than B-run fish of the same age.

anadromous fish: Fish such as salmon or steelhead that hatch in fresh water, migrate to the ocean where they mature, and then return to fresh water to spawn.'

artificial production: Recruits and sustains fish populations in a controlled artificial spawning and rearing environment, generally a hatchery. This includes spawning, incubating, hatching, and rearing of fish in a hatching channel or rearing pond.

B-run steelhead: Steelhead other than A-run, or summer steelhead rearing in the South Fork and Middle Fork Salmon River drainages, and the Clearwater River drainage, except certain tributaries of the lower Clearwater River drainage, such as Lolo and Maggie creeks. An introduced hatchery run is being maintained in the East Fork Salmon River. B-run steelhead enter the Columbia River generally from August to December, and are larger at age than A-run steelhead.

captive broodstock: Generally, wild or natural salmon or steelhead collected to produce progeny which are reared to maturity in a captive environment to subsequently produce second generation progeny. Broodstock captivity protects gene pools of unique populations threatened by low abundance by increasing the numbers of second generation progeny. A short period of captivity (1-2 generations) is necessary to reduce the risk of gene pool alteration as a result of rearing sequential generations in artificial environmental conditions.

carrying capacity: The habitat potential, or limit to the number, density, or poundage of fish that could be produced in the habitat.

ceremonial and subsistence fisheries: Harvests of fish by native Americans for ceremonies and to support traditional lifestyles.'

conservation hatchery: A facility providing hatchery fish that are, as near as possible, ecologically and genetically equivalent to the targeted population.

electrophoresis: Protein separation technique based on the size, net electrical charge and three-dimensional configuration of molecules. Allows the detection of genetic differences among individuals within the same species.'

escapement: Number of returning adult fish surviving past a point in their migration, e.g., "spawning escapement " denoting the number of fish arriving at the spawning grounds.[2]

fitness: A measure of the reproductive success of an individual that is determined both by survival and fertility.'

fry: Young fish from the time they hatch until the time they reach about 1 inch long.[1] Chinook juveniles from swim-up through 50 mm total length, typically encompasses April through June for natural fish and November through January for hatchery fish.[3]

gene: The basic chemical unit of hereditary information that is passed from parent to offspring.'

gene pool: The total collection of genes in a breeding population.'

genetic conservation: The preservation of genetic resources in a breeding population.[1] The practice of one or more strategies of management, sustainable use, or preservation to maintain the genetic diversity and/or genetic resources of living organisms.'

genetic diversity: All of the genetic variation within a species, including both genetic differences between individuals in a breeding population and genetic differences between different breeding populations.' Genetic diversity improves the match between a population and its environment, increasing the population's fitness and productivity.'

genetic drift: The variation of allele frequency from one generation to the next due to chance events.'

genetic integrity: Ability of a breeding population or group of breeding populations to remain adapted to its natural environment. The degree to which the genetic diversity in a population and the genetic identity of the population represent a long-term evolutionary relationship with an environment system.'

genetic resources: Those aspects of genetic diversity, its organization (in genetic complexes, populations, and ecosystems) and its evolved or manipulated relationships to the environment that have immediate or long-term value to human societies.[4]

genetic risk: The possibility that existing or future management actions or environmental conditions will interact with genetic characteristics of a population to diminish its productivity or its likelihood of survival. Possible negative consequences of management actions or environmental conditions on genetic diversity.[4]

harvest augmentation: The stocking of anadromous fish where the primary purpose is to return adults for harvest.

harvestable surplus: That portion of a fish population in excess of the required spawning escapement and natural and manmade mortality factors, which is available to be harvested.'

hatchery fish: Fish sustained by some degree of artificial production, including being spawned artificially or held in an artificial environment for some segment of incubation or rearing, usually for several generations.'

homozygote: An individual with two copies of the same allele at a particular locus.[4]

heterozygote: An individual with two different alleles at a particular locus.[4]

inbreeding: The mating of related individuals.[5]

indigenous: Native; having originated and living in a particular region or environment.[1]

inbreeding depression: A reduction in fitness due to the increased homozygosity resulting from inbreeding.[4]

introgression: The entry or introduction of a gene from one gene complex into another.[6]

locus: The location of a particular gene on a chromosome.'

natural fish: Naturally reared progeny of parents which spawned voluntarily in the natural environment. Parental broodstock may be mixed; natural fish have had extensive opportunity to breed with hatchery or nonnative fish.

natural production: Fish produced by spawning and rearing in natural habitat with no human intervention, regardless of the parentage of the spawners.

natural selection: The natural process by which organisms leave differentially more/less descendants than other individuals because they possess certain inherited advantages/disadvantages.'

outmigration: The movement or migration of fish down the river system to the ocean.[1]

outplant: Practice of releasing hatchery-produced fish in natural habitat remote from the hatchery to supplement naturally spawning returns and/or to disperse returning adults for a fishery.' Synonymous with " to stock".

parr: A juvenile anadromous fish during the freshwater rearing phase of its life cycle, older than fry. Chinook juveniles during their first summer rearing season, typically 50-90 mm total length and July through August for natural fish and April through June for hatchery fish.[3]

parr density: Numbers of parr per unit area, typically number per 100 square meters.

presmolt: Chinook juveniles near the end of their first growing season (September) through their first winter (March).[3]

production: The number or biomass of fish produced.[1]

productivity: Population replacement ability, which incorporates survival, fecundity, age structure and behavior.[3]

redd: A depression in the gravel of a riverbed formed by spawning salmon and steelhead where they deposit and fertilize their eggs.[1]

run: A group of anadromous fish migrating at a distinct time.

satellite facility: A portion of an artificial rearing complex that is remote from the hatchery proper. Satellite facilities are typically rearing ponds in which juveniles may receive their final few weeks or rearing, or a broodstock collection station where adult are captured, held to maturity and spawned. Eggs are taken back to the central facility for incubation.[1]

seed: To fill habitat to its full, or a percentage of, its capacity for rearing juvenile fish. This can be done naturally by adults spawning and producing juveniles, or artificially by releasing subsmolts into the environment.[1]

seeding level: The amount of rearing capacity for a given habitat that a population is utilizing. A seeding level of 70 percent means that fish densities are such that 70 percent of the juvenile rearing capacity is being used.[1]

smolt: A juvenile anadromous fish during the state of migration and acclimation from freshwater to saltwater characterized by silvery color and deciduous scales.[2]

smolt-to-adult survival: The numerical difference between the number of smolts produced by a group of fish and the number of mature adult fish resulting from those smolts.[1]

stock: A genetically distinct group of fish maintained as a self-sustaining,interbreeding population with definable characteristics, through either artificial or natural production.[2]

supplementation: Use of artificial propagation to restore or augment natural production while maintaining the long-term fitness of the target populations, and while keeping the ecological and genetic impacts on nontarget populations within specified biological limits.[8]

treaty fishery: Any fishery, either for commercial, ceremonial, or subsistence purposes that is open only to authorized members of a particular tribe or tribes in which fishing rights are authorized by treaty with the Federal government.

wild fish: Naturally produced native fish which have no history of hatchery or nonnative fish interaction such as from outplanting or supplementation, or a limited amount unlikely to have genetic impact.

[1]Columbia Basin Fish and Wildlife Authority. 1991. Integrated system plan for salmon and steelhead production in the Columbia River Basin. Prepared for: Northwest Power Planning Council, Portland, Oregon.

[2] Idaho Department of Fish and Game. 1985. Idaho anadromous fisheries management plan, 1985-1990. Boise, Idaho.

[3]Bowles, E. and E. Leitzinger. 1991. salmon supplementation studies in Idaho Rivers. Draft experimental design. Prepared for Bonneville Power Administration, Agreement No. DE-BI79-89BPO1466. Idaho Department of Fish and Game, Boise, Idaho.

[4]Riggs, L. 1990. Principles for genetic conservation and production quality. Prepared for Northwest Power Planning Council, Contract No. C90-005. GENREC/Genetic Resource Consultants.

[5] Kapuscinski, A. R. 1991. Genetic analysis of policies and guidelines for salmon and steelhead hatchery production in the Columbia River Basin. Executive summary. Prepared for the Northwest Power Planning Council, Agreement No. 90-037. Department of Fisheries and Wildlife, University of Minnesota.

[6] Merriam-Webster, Inc. 1987. Webster's ninth new collegiate dictionary. Springfield, Massachusetts.

[7]Nehlsen, W. (Memorandum to Council members. Sustainability workshop summary.) 1991 August 27.

[8] Regional assessment of supplementation projects (RASP). 1991. Draft status report for review and comment. Prepared for BPA, PJSP, Portland, Oregon.

TO LEARN MORE

For more information on anadromous fish, contact these Fish and Game offices:

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Region 3
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ID 83686 465-8465

Region 3, Subregional Office
P.O. Box 905
McCall, ID 83637 634-8137

Region 4
868 E. Main
Jerome, ID 83338 324-4350

Region 5
1345 Barton Rd.
Pocatello, ID 83204 232-4703

Region 6
1515 Lincoln Rd.
Idaho Falls, ID 83401 525-7290

Region 7
P.O. Box 1336
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