

COLUMBIA REGION - FISH DIVISION

Annual Meeting

FISH STOCK STATUS

AND

HATCHERY FISH USE REVIEWS

Lower Willamette Fish District

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District Lower Willamette
Basin Clackamas River
Species Bull Trout (Sensitive Species)
Status May Be Extinct

Previous Assessment In 1879, David Starr Jordan described seven species of fish collected by Mr. Levingston Stone from the Clackamas River. One was a dolly varden (bull trout).

Bull trout were sampled in angler catches on the upper Clackamas in 1941 and 1947.

In 1959, a bull trout was caught from the Collawash River near the mouth of the Hot Springs Fork (fish size 18-20").

Two bull trout were caught by an angler from the mainstem Clackamas near the mouth of the Oak Grove fork in 1973 (fish were 16-18").

Bull trout were caught from Buck Creek, tributary of Oak Grove Fork of the Clackamas, by a Forest Service employee about 1976.

Most Recent Findings Reviewed stream survey data for the Clackamas River drainage to look at water temperatures suitable for bull trout in early 1990. Developed priority list of streams to sample with Mt. Hood Forest biologists.

Some sampling was completed by our survey crew, our STEP biologists, and by Forest Service biologists during 1990. Sampling was completed on fourteen streams, but no bull trout were located.

Additional sampling was completed during 1991. Forest Service biologists and our survey crew sampled twelve tributaries and the upper mainstem, but did not find any bull trout.

Actions

We plan to continue sampling in cooperation with the Mt. Hood Forest in 1992. There are a few more streams with suitable habitat for bull trout that we need to sample.

**Current
Assessment**

It appears that bull trout may be extinct in the Clackamas system.

District	Lower Willamette
Basin	Sandy River
Species	Late-Run Coho (Sensitive Species)
Status	May Be Extinct

Previous Assessment The wild late-run coho is declining based on Marmot dam counts and late-run index surveys on other lower Columbia River streams.

The portion of the dam count which falls in the period considered to be late-run is minimal, nearly zero.

Management for early-run fish has taken place for so long that the late-run has been mixed and replaced.

Most Recent Findings Additional spawning ground surveys were conducted during the past two seasons on Sandy River tributaries and other Columbia tributaries to look for late-run coho spawning activities. No late spawning fish were observed.

Actions Several actions were taken over the past few years based on prior information and proposed actions in the Sandy Subbasin Plan.

The mainstem and tributaries of the Sandy above Brightwood Bridge are closed year-round to salmon angling to protect spawning coho and chinook

Releases of early-run coho fry, presmolts and excess hatchery adults above Marmot Dam have been discontinued (including STEP releases).

All releases of hatchery winter steelhead (fry and smolts) have been discontinued above Marmot Dam.

The mainstem Sandy (mouth to Brightwood Bridge) was

closed to salmon angling from November 15 to January 31. This will reduce harvest on the late-run coho and late fall chinook stocks.

Continue to improve screens and juvenile bypass facility on canal at Marmot Dam to reduce mortality and diversion to Roslyn Lake.

Continue fish habitat restoration and enhancement in the upper basin to increase natural carrying capacity (USFS).

**Current
Assessment**

The late-run coho in the Sandy, as in other Lower Columbia River tributaries, has almost disappeared. Several actions either underway or proposed should improve conditions for this fish in the Sandy drainage. However, there are probably not enough fish left in the Sandy for it to recover without additional assistance.

District Lower Willamette
Basin Clackamas River
Species Late-Run Coho (Sensitive Species)
Status Appears Stable

Previous Assessment The late-run Clackamas Coho is believed to be the last remaining stock of wild coho of any significant size in the Columbia Basin.

The fish ladder at Faraday Dam washed out in 1917 and was not rebuilt until 1939, which prevented any fish passage during that period.

Fisheries managers feel that the late-run stock repopulated the upper basin through natural straying from 1939 to the present.

The run size fluctuated widely (309-3,314 fish) from 1957-91 (see Table 1).

The average North Fork passage was 1,131 fish for run years 1981-82 through 1990-91.

Our main concern with late-run coho is the ability to maintain adequate escapement from mixed stock fisheries managed for harvest of hatchery stocks.

Most Recent Findings As part of the information gathering program with PGE and USFS, wild Clackamas coho broodstock were captured at North Fork trap in 1985-86, 1986-87, and 1987-88 runs. Special collection and spawning procedures were followed to minimize selection. Fish were coded-wire tagged and released as smolts in under-seeded areas in the upper Clackamas. CWT returns from these fish in 1988 and 1989 indicate these fish were caught primarily in the Oregon ocean fishery and in the latter part of the gillnet fishery.

In the fall of 1988, a radio tracking study was initiated to determine the distribution and use patterns of the late-run coho above North Fork Reservoir. This also was a cooperative project with PGE, USFS, and Northwest Steelheaders. Data was to be collected during the 1988-89, 1989-90 and 1990-91 run years. Some information from the tracking study is presented in Table 4.

The count of late-run coho at North Fork Dam dropped to a near record low in 1991 with only 314 adults counted. However, the count improved in 1992 with over 1200 adult fish recorded through the end of February (count still incomplete).

Actions

A late trout season was implemented in 1990 on the upper Clackamas River and tributaries which will protect coho smolts.

The salmon closure on upper Clackamas River, above North Fork Reservoir, was extended in 1990 to protect late-run coho adults after they pass North Fork Dam.

A catch and release only regulation for coho salmon was implemented in January 1992 from the mouth to River Mill Dam November 15 to March 16.

Other actions proposed in the subbasin plan includes:

Transport late-run adults into under-seeded areas above the dam.

Continue habitat restoration efforts in upper Clackamas River Subbasin.

Encourage and support PGE's efforts to reduce juvenile mortality at their dam complex on the river.

Current Assessment

Objectives from subbasin plan include:

1. Upper subbasin will be managed for natural production of late-run stock.

2. Maintain genetic characteristics of late-run stock.
3. Increase average annual escapement of late-run coho above North Fork Dam to 3,000 fish.

Some regulations have been implemented that should help increase escapement.

However, we don't know if escapement will show much increase unless out-of-basin harvest is reduced.

Table 1. Estimated abundance of early and late run coho passing North Fork Dam, 1957-92.

RUN YEAR	LATE RUN		EARLY RUN ^{a/}		TOTAL
	NO.	%	NO.	%	
1957-58	512	100	--	--	512
1958-59	309	100	--	--	309
1959-60	1,046	100	--	--	1,046
1960-61	670	100	--	--	670
1961-62	1,449	100	--	--	1,449
1962-63	2,665	100	--	--	2,665
1963-64	513	100	--	--	513
1964-65	1,879	100	--	--	1,879
1965-66	3,314	100	--	--	3,314
1966-67	421	80	107	20	528
1967-68	811	72	285	28	1,096
1968-69	2,987	72	1,167	28	4,154
1969-70	1,172	83	248	17	1,420
1970-71	1,019	46	1,198	54	2,217
1971-72 ^{b/}	--	--	--	--	3,912
1972-73	695	71	285	29	980
1973-74	452	70	191	30	643
1974-75	840	93	61	7	901
1975-76	633	56	500	44	1,133
1976-77	1,041	86	169	14	1,210
1977-78	849	95	47	5	896
1978-79	476	61	307	39	783
1979-80 ^{c/}	--	--	--	--	1,191
1980-81	3,072	96	120	4	3,192
1981-82	509	44	659	56	1,170
1982-83	1,162	48	1,259	52	2,421
1983-84	1,521	95	78	5	1,599
1984-85	410	60	273	40	683
1985-86	1,169	35	2,146	65	3,315
1986-87	3,299	75	1,077	25	4,376
1987-88	824	58	586	42	1,420
1988-89	703	41	1,008	59	1,711
1989-90	1,396	61	882	39	2,278
1990-91	314	46	372	54	686
1991-92 ^{d/}	1,241	40	1,877	60	3,118
AVERAGES:					
1957-66	1,373	100	--	--	1,373
1967-76	1,003	69	449	31	1,452
1977-86	1,135	67	562	33	1,697
1987-91	1,307	62	785	38	2,092

^{a/} Early stock of the 1963-69, 1971, and 1972 broods were released in the upper Clackamas River subbasin.

^{b/} Estimates are not possible because the ladder was closed until November 8.

^{c/} Estimates are not possible because the December counts are missing (film lost).

^{d/} Incomplete count.

Table 2. Movement of wild Clackamas River coho tagged with radio transmitters and released at the head of North Fork Reservoir.

DATE TAGGED	NUMBER TAGGED	AVERAGE MAXIMUM DISTANCE (MILES) TRAVELED
<u>1988-89</u>		
12/9 & 15	3	25.9
1/5	9	10.0
1/11	4	7.1
1/19	5	7.4
2/1	5	2.2
2/16	5	4.7
<u>1989-90</u>		
12/11	4	10.5
1/4	5	7.4
1/17	12	7.1
2/2	7	5.0
2/4	7	5.6
<u>1990-91</u>		
11/29	8	5.7
12/14	6	10.4
1/17	5	7.7
1/28	2	0.8
2/5	8	10.7

District Lower Willamette
Basin Sandy River
Species Fall Chinook
Status Depressed Population

Previous Assessment Historically, Tule and late fall (or winter) chinook were native to the Sandy River.

Additionally, a Lower Columbia River Hatchery (LRH) stock was developed from the native Tule stock and introduced in the drainage. The LRH stock is present in the Sandy as strays from other systems and as a remnant run from hatchery releases.

The wild late stock was known to spawn in the Gordon and Trout Creek systems as well as in the mainstem.

Spawning surveys by Columbia River Management have seen no sign of the wild late-run spawning in Gordon and Trout Creeks, and only rumors of spawning in the mainstem the last few years.

Stocking of LRH fish was discontinued in 1977.

The Tule stock persists in stable numbers, despite the decline of the late-run.

The wild late stock was caught by anglers in December, January, and February during past years.

In the 1970's, the sport catch of fall chinook in the Sandy River averaged 238 fish. From 1981 through 1990, the catch averaged 391 fish.

This is a mixed stock fishery and no method has been developed to apportion the catch between stocks (see Table 3).

Most Recent Findings Received one report in 1990 and one in 1991 from anglers who indicated they had observed two or three of the wild late fish.

Actions A new regulation implemented in 1990 closed several known fall chinook spawning areas to all angling in Oxbow Park to protect spawning fall chinook. The closure runs from September 15 through November 15 (Tule and LRH stocks).

ODFW has filed for an Instream Water Right on the lower Sandy River (mouth of Sandy to mouth of Bull Run River.)

A new regulation to provide more protection for the late-run (winter) fish was implemented in January 1992. The lower Sandy River is closed to salmon angling from November 15 to January 31 from the mouth to Brightwood Bridge (will also protect late-run coho).

Current Assessment The Tule stock of fall chinook appears to be doing fine, but the late-run (winter) fish are disappearing.

Primary objectives in the subbasin plan include:

1. Fall chinook in the Sandy Subbasin will be managed for natural production of Tule and wild late-fall stocks.
2. Maintenance of fall chinook runs in the lower Sandy River will focus on habitat protection and protection of spawning fish through angling regulations and habitat management, rather than hatchery supplementation.

We don't know how many wild fish we have involved. Need study to determine percent of wild fish in runs returning to the lower Sandy.

Table 3. Run size estimate and components for fall chinook run in the Sandy Subbasin. The 1,000-fish estimate is a "best guess," generated for use in a predictive model by Washington Department of Fisheries (Paul Hirose, ODFW, pers. commun.) (Salmon and Steelhead Catch Data, ODFW Fish Division; ODFW, Columbia River Management Estimate of Escapement).

	1978	1979	1980	1981	1982	1983	1984	1985- 1986	1986- 1987	1987- 1988	1988- 1989	1989- 1990
SPORT CATCH												
Bull Run River	0	6	0	6	3	6	6	24	14	19	16	4
Sandy River	453	329	236	255	344	155	388	185	305	735	504	549
TOTAL	453	335	236	261	347	161	394	209	319	754	520	553
SPAWNING ESCAPEMENT ESTIMATE												
Subbasin	1,000	1,000	1,000	1,000	1,000	1,000	1,000	755	685	2,205	2,070	2,060
MINIMUM RUN SIZE ESTIMATE												
Subbasin	1,453	1,335	1,236	1,261	1,347	1,161	394	964	1,004	2,959	2,590	2,613

District Lower Willamette
Basin Lower Willamette
Species Searun Cutthroat (Sensitive Species)
Status Depressed Population

Previous Assessment

Clackamas River

We see or hear about an occasional large cutthroat caught from the lower Clackamas River.

Anglers comment that good fishing for large cutthroat occurred in past years.

Large cutthroat are not seen at the counting station at North Fork Dam.

Sandy River

Some large cutthroat used to move up Cedar Creek and enter the adult holding pond at Sandy Hatchery with the coho. Hardly any have been seen in recent years.

Comments have been received from anglers about good fishing for cutthroat in past years on the lower Sandy.

Anglers have asked about ODFW rebuilding the cutthroat run in the Sandy.

No large cutthroat observed at Marmot Dam.

Other streams in district (Scappoose, Milton, Abernethy Creeks).

Used to have searun cutthroat.

A small number (4,000) of Big Creek stock searun cutthroat

have been released into the North Scappoose Creek the past few years, but no evaluation has been done.

Very few reports of wild searuns on these streams in recent years.

Most Recent Findings

Anglers are probably seeing less large cutthroat than they did a few years ago.

Actions

No actions were taken.

Current Assessment

It appears that searun cutthroat are disappearing from streams in the district.

There is potential for some inventory work on small streams to determine status of searun cutthroat. Traps could be used in fish ladders at small dams on North Scappoose, South Scappoose and on Abernethy Creeks to monitor cutthroat movement.

District	Lower Willamette
Basin	Clackamas River
Species	Late-Run Winter Steelhead (Stock of Concern)
Status	Documented Depressed Population

Previous Assessment From 1917 to 1939, passage was blocked at Faraday Dam. Winter steelhead have naturally re-established themselves above the dam complex, although production appears low based on counts of adult passage.

An analysis of scale samples indicates that about 30% of the steelhead harvest from December to March are naturally produced.

The 1964-73 average North Fork Dam count of naturally produced fish was 2,000 (see Table 4).

The same passage for 1977-88 was 1,600 fish.

A regression of the passage for 1964-88 shows a 15 fish/year decline for naturally produced winter steelhead.

This decline and possibility of mixing with hatchery stocks (especially Eagle Creek stock) are points of concern. Hatchery fish passage at North Fork has increased during the past few years from December through March.

Most Recent Findings The 1990-91 count of winter steelhead passing above North Fork Dam was only 837 fish. An unknown number of these are hatchery fish. This is the lowest winter steelhead count at the dam since the 1973-74 run (Table 4).

Actions Several actions were taken both prior to and during the past year based on prior information and proposed actions in the subbasin plan.

Starting with the 1990 releases, all winter steelhead hatchery smolts are now marked.

A late trout season was implemented on the mainstem and all tributaries above North Fork Dam in the spring of 1990 to protect anadromous smolts.

A late trout season has also been adopted for all tributaries of the Clackamas River below North Fork Dam and will be implemented in the spring of 1992. The entire Clackamas River system now has a late trout season.

A catch and release regulation for all unmarked steelhead was implemented in January 1992 on the Clackamas system. Barbless hooks are also required from November 1 through April 30.

The steelhead season was also changed in 1992 on the mainstem above North Fork Dam to protect the late-run fish while spawning. The season now extends from the fourth Saturday in May through December 31.

Continue development of a wild winter steelhead broodstock and smolt release program for the Clackamas River. About 40 wild adults were collected at North Fork ladder last spring to produce 40,000 winter steelhead smolts. Incubation and early rearing occurred at Clackamas Hatchery, followed by accelerated rearing at Oak Springs Hatchery. The wild smolts are scheduled to be released into the Clackamas during April. This marked smolt release program, along with the catch and release regulation for unmarked wild fish, is designed to reduce the catch of wild fish and still provide the opportunity for anglers to harvest fish throughout the winter. User groups are supportive of the regulation change providing a broodstock and smolt release program are developed to replace the wild catch.

In order to free up space at Oak Springs Hatchery for the wild winter smolts, 40,000 Clackamas summer steelhead presmolts were transferred to net pens in North Fork Reservoir where they are rearing at the present time. The summer steelhead smolts will also be released in April.

A total of 40,000 Eagle Creek stock winter steelhead smolts were acclimated in net pens in the Oregon City Lagoon during April 1991. The young steelhead were moved from the hatchery to the net pens in early April and acclimated about three weeks. These smolts were released in the lagoon to increase the number of hatchery adults available for anglers in the lower Clackamas River. Another 40,000 Eagle Creek stock winter steelhead smolts will be acclimated in the lagoon during April 1992.

Spawning and rearing habitat enhancement projects continued on the Mt. Hood Forest.

Other actions proposed in the subbasin plan which could be implemented in concert with actions discussed above include:

Prevent passage of hatchery steelhead (Big Creek and Eagle Creek stocks) above North Fork Dam. Would require PGE to remodel their trap and install sorting facilities.

Explore development of two acclimation sites for hatchery winter steelhead smolts on the lower Clackamas. Sites could be used for winter steelhead and spring chinook.

Implement a comprehensive creel survey on the winter steelhead fishery to determine contribution of the various stocks.

Encourage and support the Mt. Hood National Forest's fish habitat improvement work.

Encourage and support PGE's efforts to reduce juvenile mortality at the PGE hydroelectric complex.

The subbasin plan calls for increasing the escapement of the wild stock winter steelhead to 3,000 (annual average) passing above North Fork Dam.

**Current
Assessment**

Adult counts at North Fork Dam show that the late winter steelhead run is declining in the Clackamas River. Management actions in the subbasin plan that are underway or proposed to be implemented in the near future should stop the decline and allow the run to increase. Close monitoring of the run will be required to determine the status and success of management actions.

Table 4. Counts of adult winter steelhead passing North Fork Dam. (PGE and ODFW)

Run Year	MONTH								Total Run
	N	D	J	F	M	A	M	J	
1956-58	11	5	3	4	0	399	1,192	34	1,648
1958-59	0	10	1	0	0	137	376	32	556
1959-60	0	0	2	0	0	75	890	181	1,148
1960-61	0	0	0	0	1	343	1,788	72	2,204
1961-62	0	0	0	0	2	1,506	2,502	351	4,361
1962-63	1	0	0	2	11	94	2,069	60	2,237
1963-64	1	0	0	0	0	218	1,554	109	1,882
1964-65	3	0	0	5	0	196	1,312	36	1,552
1965-66	3	0	1	0	0	2	1,158	126	1,290
1966-67	0	0	1	3	2	28	608	40	682
1967-68	3	3	2	10	5	35	721	11	790
1968-69	16	17	4	2	32	341	1,787	117	2,316
1969-70	10	13	2	30	81	946	1,692	35	2,809
1970-71	14	6	86	133	202	1,212	2,514	182	4,349
1971-72	4	20	18	64	62	559	1,784	123	2,634
1972-73	21	8	2	3	47	979	834	3	1,897
1973-74	1	2	9	7	11	132	451	58	671
1974-75	31	9	33	10	12	384	1,047	0	1,526
1975-76	5	55	26	11	60	350	675	0	1,182
1976-77	8	0	0	109	215	724	432	39	1,527
1977-78	0	139	75	177	515	738	329	14	1,987
1978-79	0	231	2	151	177	458	474	18	1,511
1979-80	0	0	120	116	136	853	840	0	2,065
1980-81	0	233	125	250	291	632	1,161	5	2,697
1981-82	60	132	25	8	68	445	692	16	1,446
1982-83	0	0	13	21	34	368	638	25	1,099
1983-84	26	34	35	50	106	176	785	26	1,238
1984-85	4	41	1	26	126	268	736	23	1,225
1985-86	0	0	72	40	126	381	783	30	1,432
1986-87	1	1	21	70	86	541	562	36	1,318
1987-88	5	35	10	19	278	799	627	0	1,773
1988-89	0	0	53	19	216	160	785	18	1,251
1989-90	0	22	23	69	420	603	347	3	1,487
1990-91	13	8	10	247	77	271	210	1	837

Continued.

Table 4 continued.

Run Year	MONTH								Total Run
	N	D	J	F	M	A	M	J	
AVERAGES:									
1960-65	1	0	0	1	3	471	1,845	126	2,447
1965-70	6	7	2	9	24	270	1,193	66	1,577
1970-75	14	9	30	43	67	653	1,326	73	2,215
1975-80	3	85	45	113	221	625	550	14	1,654
1980-85	18	88	40	71	125	378	802	19	1,541
1985-91	3	11	32	77	201	459	552	14	1,349
PERCENTAGES:									
1960-65	0	0	0	0	0	19	75	5	100
1965-70	0	0	0	1	2	17	76	4	100
1970-75	1	0	1	2	3	29	60	3	100
1975-80	0	5	3	7	13	38	33	0	100
1980-85	1	6	3	5	8	25	52	1	100
1985-91	0	1	2	6	15	34	41	1	100

Table 5. Counts of juvenile wild steelhead passing North Fork Dam, Clackamas River.

YEAR	MONTH												ANNUAL TOTAL
	J	F	M	A	M	J	J	A	S	O	N	D	
1959			193	5,151	30,293	682	9				8		36,336
1960			14	3,556	32,927	2,390	1						38,888
1961				3,427	13,177	1,090							17,694
1962				2,985	16,923	2,555	9			11	14	34	22,531
1963	3	2	87	2,914	20,603	1,058	4				110	27	24,808
1964	22	27	10	1,071	26,535	2,891	47	90			7	27	30,727
1965			2	2,358	11,001	496	1						13,858
1966			60	1,770	8,698	505	2						11,035
1967			23	1,848	25,562	3,973							31,406
1968			221	5,683	28,490	1,360	4						35,758
1969				2,544	21,952	4,681	10						29,187
1970			74	2,975	27,069	1,337	2						31,457
1971			50	1,834	15,144	2,072	11						19,111
1972			191	2,305	11,503	1,475	2						15,476
1973			12	3,660	16,875	856							21,403
1974	3		87	2,024	21,973	3,213	3	2	1				27,306
1975			15	698	23,111	4,167	27	1	1			4	28,024
1976 a/	1	13	64	6,332	86,110	12,881	132	16	8	14	6	20	105,597
1977	9	4	18	3,324	27,180	3,094	25			12	94	32	33,792
1978	3	12	205	19,167	56,303	1,681	132	136	11			178	77,828
1979	2	33	52	1,751	35,851	3,239	25	1		97	224	59	41,334
1980	7	1	56	7,457	36,540	4,165	5						48,231
1981		53	526	14,195	28,030	746	8						43,558
1982			489	3,870	38,213	1,968	4						44,544
1983		4	260	7,518	23,191	628	6	2	4	2			31,615
1984	16	2	109	4,062	32,674	3,404	366	1	1	12			40,647
1985			13	4,203	26,805	3,973	19	2	6	42	65	24	35,152
1986	5	56	734	22,628	26,237	695			6	33	19	27	50,440
1987		8	360	16,408	30,086	685	2	24	21	8	10	112	47,724
1988	13	4	105	5,901	29,983	1,782	12	0	16	12	60	90	37,978
1989	4	8	26	5,297	31,476	3,427	2	0	36	42	16	38	40,372
1990	14	8	172	11,535	22,721	1,527	18	0	4	13	131	255	36,398
1991	86	11	70	5,877	35,022	3,536	14	0	1	57	116	48	44,838
AVERAGES:													
63-67	5	6	36	1,992	18,480	1,785	11	18	0	0	23	11	22,367
68-72	0	0	107	3,068	20,832	2,185	6	0	0	0	0	0	26,198
73-77	3	3	39	3,208	35,050	4,842	37	4	2	5	20	11	43,224
78-82	2	20	266	9,288	38,987	2,360	35	27	2	19	45	47	51,099
83-87	4	14	295	10,964	27,799	1,877	79	6	8	19	19	33	41,116
88-91	29	8	93	7,152	29,801	2,568	12	0	14	31	81	108	39,897

Continued.

Table 5. Juvenile counts (continued).

YEAR	MONTH												ANNUAL TOTAL
	J	F	M	A	M	J	J	A	S	O	N	D	
PERCENTAGES:													
63-67	0	0	0	9	83	8	0	0	0	0	0	0	100
68-72	0	0	0	12	80	8	0	0	0	0	0	0	100
73-77	0	0	0	7	81	11	0	0	0	0	0	0	100
78-82	0	0	1	18	76	5	0	0	0	0	0	0	100
83-87	0	0	1	27	68	5	0	0	0	0	0	0	100
88-91	0	0	0	18	75	6	0	0	0	0	0	1	100

a/ In 1976 no attempt was made to distinguish wild and hatchery steelhead.

Table 6. Subbasin harvest, run size, and escapement of winter steelhead by run year in the Clackamas River and tributaries.

Stream	Run Year												Average	
	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1979-90	1984-90
Lower Clackamas River														
Clackamas River	3,252	6,467	5,489	4,724	3,328	4,740	6,930	4,520	4,330	5,527	3,961	4,700	4,831	4,958
Deep Creek	7	42	36	37	17	57	26	35	77	49	28	39	38	44
Eagle Creek	514	1,549	1,231	1,502	1,301	2,077	1,870	1,115	590	788	1,066	1,156	1,230	1,237
Clear Creek	23	73	70	109	99	95	49	42	44	64	57	63	66	59
Upper Clackamas River														
Clackamas River a/						129	298	172	108	86	57	70	131	131
Collawash R.	21	30	9	0	68	3	28	0	0	0	0	0	13	4
Hot Spr. Fk.	113	7	0	0	7	3	8	0	0	0	0	0	12	2
Subbasin Harvest	3,930	8,168	6,835	6,372	4,820	7,104	9,209	5,884	5,149	6,514	5,169	6,028	6,321	6,435
North Fork Dam Count	1,511	2,065	2,697	1,446	1,099	1,238	1,225	1,432	1,318	1,773	1,251	1,487	1,545	1,389
ECNFH Returns	314	568	367	705	636	1,431	1,288	502	555	667	587	443	672	782
Clackamas Catch (L)	3,796	8,131	6,826	6,372	4,745	6,969	8,875	5,712	5,041	6,428	5,082	5,958	6,161	6,295
Estimated Run b/	5,621	10,764	9,890	8,523	6,480	9,638	11,388	7,646	6,914	8,954	6,920	7,879	8,385	8,466
Est. Escapement c/	1,691	2,596	3,055	2,151	1,660	2,534	2,179	1,762	1,765	2,440	1,838	1,930	2,133	2,171

a/ The mainstem was listed under one stream code prior to 1984. Run size estimates prior to 1984 include some fish that were counted twice, once at the dam and once in the harvest. This may amount to several hundred fish based on harvest data from 1984.

b/ Estimated run is ECNFH returns + North Fork Dam count + lower river harvest. It does not include escapement to lower river tributaries.

c/ Estimated escapement is ECNFH returns + North Fork Dam count - upper river harvest. It does not include escapement to lower river tributaries.

District	Lower Willamette
Basin	Sandy River
Species	Late-Run Winter Steelhead (Stock of Concern)
Status	Appears Stable

Previous Assessment The population of late-run winter steelhead in the Sandy River appears stable, however, the public perception is that of a declining run.

Volunteer scale returns indicate a low percentage of wild fish in the sampled catch; but the sample is probably biased because much of the sampling occurs in Oxbow Park, where hatchery smolts are released and hatchery steelhead adults are targeted for return.

A photographic counter in the Marmot Dam fish ladder counts steelhead passing above the dam. The photographs usually differentiate summer and winter steelhead, but the difference between marked and unmarked or early and late-run steelhead is often undetectable in the pictures.

The winter run over Marmot Dam averaged 2,600 fish from 1977-78 through 1987-88 and the sport catch averaged over 8,000 fish from the mid-1970's to the mid-1980's (see Table 7).

Most Recent Findings Volunteers from the Mt. Hood Independent Steelheaders have examined PGE film from the camera at Marmot Dam in an effort to determine the percent of hatchery fish passing over the dam. From samples of winter steelhead where the adipose fins were visible, they came up with 17.5 percent hatchery fish during the '87-'88 migration and 36.75 percent during the '88-'89 migration. We question how reliable these figures are because there were several discrepancies between PGE's interpretation and the interpretation by the volunteers.

Winter steelhead passage at Marmot Dam totaled 1,995 fish during the 1990-91 migration. This is the lowest count in several years (Table 7).

Actions

Several actions were taken both prior to and during the past year based on prior information and proposed actions in the subbasin plan.

A new catch and release regulation for steelhead was adopted for the Sandy River in 1992. The new regulation requires catch and release of all unmarked steelhead year-round on the entire drainage. Barbless hooks are also required from November 1 through April 30.

All hatchery steelhead smolts released in the Sandy system have been marked for the past 4 to 5 years.

All hatchery winter steelhead are now released below Marmot Dam to target the return of adults to the lower river fishery. Also, this program should reduce passage of hatchery steelhead over Marmot Dam where they could compete or mix with late-run fish.

An 8 inch size limit for trout on the Sandy River and all tributaries was also implemented in 1990 to provide more protection for juvenile anadromous fish.

Habitat improvement work by USFS and ODFW's STEP program has improved wild winter steelhead spawning and rearing conditions.

STEP hatchery steelhead fry releases have been discontinued above Marmot Dam so that hatchery stock steelhead fry are not released in areas where wild stock juveniles are rearing.

Other actions proposed in the management plan which would be implemented in concert with actions discussed above include:

Continue plans to build an acclimation pond below Marmot

Dam for winter steelhead hatchery smolts for better imprinting and increasing survival. (Would also be used for spring chinook.)

Conduct a comprehensive creel survey to determine contribution of various stocks to the sport fishery.

The subbasin plan sets an escapement objective at 4,500 winter steelhead over Marmot Dam.

**Current
Assessment**

The wild late-run of winter steelhead in the Sandy River appears stable, but public perception is that of a declining run. Several management actions have been implemented and others are proposed that should allow this run to increase. We will continue to monitor this run closely in the future to determine the status.

Table 7. Marmot Dam counts, sport catch, and total run estimates of wild and hatchery winter steelhead in the Sandy River.

YEAR	DAM COUNT a/	SPORT CATCH b/. c/	TOTAL RUN EST. d/
CALENDAR			
1958		4,108	
1959		2,975	
1960		3,548	
1961	3,155	2,051	5,206
1962	4,070	2,693	6,763
1963	3,387	3,339	6,726
1964	4,020	3,837	7,857
1965	5,235	5,830	11,065
Run Year			
1965-66	3,584	6,702	10,286
1966-67	4,075	6,331	10,406
1967-68	2,932	4,986	7,918
1968-69	2,793	5,185	7,978
1969-70	2,385	5,425	7,810
1970-71 e/	- -	8,647	- -
1971-72	- -	10,315	- -
1972-73		5,640	
1973-74	- -	5,937	- -
1974-75	- -	8,738	- -
1975-76	- -	7,566	- -
1976-77	- -	3,286	- -
1977-78	3,879	11,385	15,264
1978-79	2,000	6,867	8,867
1979-80	3,015	12,926	15,941
1980-81	4,078	7,468	11,546
1981-82	2,600	10,284	12,884
1982-83	2,449	5,822	8,271
1983-84	2,232	7,412	9,644
1984-85	2,841	10,249	13,090
1985-86	2,752	5,483	8,235
1986-87	3,675	8,130	11,805
1987-88	3,081	9,616	12,697
1988-89	2,687	7,650	10,337
1989-90	2,839	8,382	11,221
1990-91	1,995	- -	- -

a/ Source: ODFW and Portland General Electric Co. Marmot Dam Counts. Oregon Game Commission counted prior to 1970-71.

b/ Source: ODFW Fish Division Punchcard Estimates, expanded for non-response bias.

c/ The mainstream Sandy was listed under one stream code prior to 1987. Run size estimates prior to the 1987-88 season includes some fish that were counted twice, once at the dam and once in the harvest.

d/ Run estimates do not include escapement below Marmot Dam.

e/ No counter 1971-76. Count incomplete for 1977.

District Lower Willamette
Basin Sandy River
Species Spring Chinook (Stock of Concern)
Status Unknown

Previous Assessment Historic accounts, back before the turn of the century, tell of large numbers of spring chinook returning to the Sandy River.

Early in the century, diversion structures for hydropower and municipal water supplies were built causing the demise of the indigenous spring chinook.

The Marmot Canal remained unscreened until 1951.

Minimum flow agreements for the river below Marmot Dam, although developed earlier, were not sufficient until the mid-1970's.

The run has been rebuilt, but has essentially been replaced with Willamette stock, which was accepted as a suitable stock for supplementation many years ago. This stock replacement is the source of concern from the public.

The sport catch now averages nearly 1,000 fish annually.

The Marmot Dam count, down to a handful each year only 30 years ago, has averaged 1,600 fish in recent years (see Table 8).

Most Recent Findings Nothing new.

Actions Several actions were taken over the past several years based on prior information and proposed actions in the subbasin plan.

The diversion canal at Marmot was screened several years

ago plus several improvements have been made to the screens in recent years.

Minimum flows have been established below Marmot Dam.

A strong smolt release program has been developed.

Spawning and rearing habitat above Marmot Dam has been improved.

Other actions proposed in the subbasin plan which could be implemented in the future include:

The potential straying of adults into the Willamette needs to be evaluated.

Acclimation of spring chinook smolts may be the answer to help prevent straying and increase adult returns.

One acclimation pond is proposed below Marmot Dam.

Smolts need to be marked to determine percent of hatchery fish in the run. Also, marking the fish would allow us to determine if straying into the Willamette River is a problem.

Continue habitat improvement projects on Mt. Hood Forest.

The subbasin plan sets escapement and harvest objectives of 2,500 and 2,000 fish respectively.

**Current
Assessment**

We are rebuilding the spring chinook run in the Sandy River. The sport harvest is good and escapement quite good. Anglers are happy with the program. However, we are doing this with Willamette stock, not Sandy River stock. We do not know what percent of the escapement is hatchery fish, but we assume it is very high.

Table 8. Components of the spring chinook run size in the Sandy subbasin. (PGE Marmot Dam counts; ODFW Salmon and Steelhead catch data).

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MARMOT DAM COUNTS	349	607	267	553	1,003	505	561	1,212	566	714	1,420	1,897	1,350	1,469	1,888
SPORT CATCH															
Bull Run River	--	12	15	9	15	3	44	38	8	0	0	12	4	16	--
Sandy River	275	116	597	1,260	1,739	854	1,259	1,124	875	572	932	972	587	1,897	--
TOTALS <u>a/</u>	624	735	879	1,822	2,757	1,362	1,864	2,374	1,449	1,286	2,352	2,881	1,941	3,382	--

a/ The mainstem Sandy was listed under one stream code prior to 1988. Run size estimates prior to 1988 include some fish that were counted twice, once at the dam and once in the harvest. Run estimates do not include escapement below Marmot Dam.

District Lower Willamette
Basin Clackamas River
Species Spring Chinook (Stock of Concern)
Status Unknown

Previous Assessment Historically, the Clackamas River was considered one of the largest producers of spring chinook in the Pacific Northwest.

As early as 1876, runs in the Clackamas were considered to be reduced from previous years as a result of commercial harvest in the Columbia River.

The fish ladder at Faraday Dam washed out in 1917 and was not rebuilt until 1939, preventing any upstream migration. During that time, spring chinook were trapped at various locations for artificial propagation.

Spring chinook re-established themselves naturally above the dam complex, but run size remained low for many years.

The run above the dam complex continued low until Clackamas Hatchery was built.

Clackamas Hatchery completed in 1979 was financed by PGE to compensate for fish losses at their dam complex on the river.

Several stocks have been used to supplement the Clackamas River Subbasin with spring chinook. From 1892 to 1899 Sandy stock was released into the Clackamas and in 1895 spring chinook eggs were obtained from California. Willamette stock has been used in the Clackamas River for many years, primarily at ECNFH.

When production began at Clackamas Hatchery, managers preferred to use Clackamas fish for brood stock, but felt the run

was too low to meet the brood stock needs of the hatchery, so Willamette stock was used.

The first release of spring chinook smolts to provide adult returns to Clackamas Hatchery was in 1978 (1976 brood).

The first return from Clackamas Hatchery production was in 1980. The North fork Dam count which had averaged 530 fish from 1970-79 increased to 2,172.

The sport catch in the Clackamas River, which had ranged from 300 to 2,100 prior to 1980, increased to 4,200 in 1980, a substantial increase.

Total run size estimate which averaged 3,110 fish from 1970-80 increased to an average of 9,167 from 1980-90.

We are rebuilding the run, but we are doing it with Willamette stock.

We do not know the percent of hatchery fish passing above North Fork Dam, but assume it is high.

Counts of wild juvenile downstream migrants at North Fork Dam showed an increase in natural production following the increase in escapement, but the increase was not as much as expected. However, the downstream counts of juvenile chinook at North Fork are only an indicator of trends in natural production above the dam since many juveniles pass over the dam in the spill.

Most Recent Findings

Nothing new.

Actions

Several thousand Clackamas spring chinook smolts are being acclimated in net pens this spring in cooperation with the Wildlife Heritage Foundation and Northwest Steelheaders. A total of 50,000 smolts are acclimating in five net pens in the Oregon City Lagoon (near the mouth of Clackamas) and 30,000 in two net pens in the Willamette River at River Place Marina.

The young chinook were moved to the pens in late February and will be released near the middle of March.

Several actions are proposed in the subbasin plan:

Continue to improve habitat above North Fork Dam.

Continue to work with PGE to test and implement flows that will reduce adult fish delays below Faraday Dam.

Encourage and support PGE's effort to reduce juvenile mortality at their dam complex on the Clackamas.

Construct two acclimation ponds on the lower Clackamas River for spring chinook. Intent of this proposed action is to have juvenile spring chinook imprint to the lower river so returning adults will hold in the lower river. This would increase the amount of time adults are available for harvest.

Determine percent of hatchery fish in the run. Would require that all smolts be marked.

Emphasize improvements in hatchery production. Evaluate fish hatchery to determine the best operating procedures and production alternatives. Continue effort to improve disease control.

**Current
Assessment**

We feel that the spring chinook program on the Clackamas has been quite successful. Adult returns from smolt releases have been good and catch has been good (Table 9). Objectives in the subbasin plan call for increasing the average annual run size to 12,400 spring chinook and increasing the annual escapement to 2,900 fish. The utilization objective calls for increasing the catch to 5,000 fish.

Our concern at this time is that we are essentially replacing the wild Clackamas stock with Willamette stock.

Table 9 a/. Estimated Clackamas Spring Chinook runs into the Willamette River (thousands of fish), 1981-91 b/.

Component	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	10-Yr. Avg.	1991
Lower Clackamas Sport Catch	2.3	2.5	4.5	4.3	2.5	3.9	3.2	2.7	2.9	4.7	3.4	3.8
Escapement above North Fork	3.2	3.1	2.7	2.8	1.8	2.0	2.3	3.1	2.9	3.4	2.7	4.7
Escapement below North Fork	0.6	0.2	0.8	0.6	0.7	0.6	1.0	0.2	0.6	0.5	0.6	0.5
Numbers returning to Clackamas Hatchery	1.1	0.6	1.9	2.5	0.9	0.8	1.0	1.3	0.9	1.9	1.3	2.8
Numbers returning to Eagle Creek Hatchery	0.8	0.9	0.5	1.0	0.7	0.7	1.8	1.4	1.3	0.9	1.0	0.1
Total entering Clackamas	8.0	7.3	10.4	11.2	6.6	8.0	9.3	8.7	8.6	11.4	9.0	11.9
Lower Willamette Sport Catch	2.2	2.9	4.7	3.7	2.5	2.5	2.7	2.7	2.7	3.2	3.0	5.6
Total entering Willamette	10.2	10.2	15.1	14.9	9.1	10.5	12.0	11.4	11.3	14.6	12.0	17.5

a/ Table prepared by Columbia River Management

b/ Jack salmon included.

District Lower Willamette
Basin Lower Willamette
Species Willamette Valley Cutthroat (Stock of Concern)
Status Unknown

Previous Assessment Valley cutthroat are found in the Tualatin, Clackamas, and Sandy River systems.

These fish probably have several life history patterns.

Anglers report that cutthroat numbers appear to be declining on the West Fork of Dairy Creek.

Cutthroat are valuable as indicator species for Class I head-water streams that would not otherwise have adequate protection.

Most Recent Findings Nothing new.

Actions Balch Creek was closed to angling beginning in 1990 to protect a small population of cutthroat. Additional STEP sampling was completed on Balch Creek, Fanno Creek, and a few other small streams. Our survey crew completed some sampling on Murtagh Creek, in the Tualatin drainage, and on several streams in the Clackamas drainage while sampling for bull trout.

Minimum flows were converted to instream water rights on many streams in the district.

Habitat protection activities continued.

Some habitat improvement work was completed on Balch Creek by STEP biologists and volunteers and more is planned for the future.

Some actions were proposed based on prior information and proposed actions in subbasin plans.

Determine status of cutthroat populations in the Tualatin drainage.

Monitor cutthroat movement at Oregon Iron and Steel Dam on the lower Tualatin River.

**Current
Assessment**

We really don't have enough information on this fish to comment. Need additional population sampling throughout district.

District	Lower Willamette
Basin	Clackamas River
Species	Summer Steelhead
Status	Stable

Previous Assessment

Summer steelhead are not believed to be native to the Clackamas basin.

Skamania Foster stock were introduced beginning in 1968.

Natural production is thought to be low based on examination of fish passing through the North Fork ladder.

Through scale analysis (various years), about 8 percent were naturally produced.

An extremely popular fishery has developed for this summer steelhead.

The annual sport catch for run years 1984-85 through 1989-90, averaged 7,013 fish, while the North Fork Dam count averaged 6,696 fish (see Table 10).

The concern with this stock is the potential for competition with wild steelhead and coho stocks.

The downstream juvenile steelhead counts at PGE dams has doubled since hatchery summer steelhead smolt releases began even though winter steelhead adult passage at North Fork has declined.

Most Recent Findings

Nothing new.

Actions

The late trout opener implemented in 1990 will protect the investment in summer steelhead hatchery smolts released in

the upper drainage.

We are rearing 40,000 summer steelhead in net pens at North Fork Reservoir for release in April, 1992.

Other actions proposed in the management plan which could be implemented in the future include:

If sterilization is successful, it should be used on this stock.

A creel survey and the trap at Faraday Dam should be used to further investigate the amount of natural production of summer steelhead that is occurring.

Increase the potential average annual sport catch of summer steelhead to 7,000 fish. Maximizing harvest would reduce competition among summer steelhead and other species.

To extent possible, release summer steelhead smolts in areas outside of important areas for winter steelhead. Release summer steelhead smolts in the mainstem Collawash, mainstem Clackamas below the Big Bottom area, and in the mainstem below River Mill Dam.

**Current
Assessment**

Our summer steelhead program on the Clackamas River is extremely popular with anglers. Adult returns from smolt releases continues good and the catch rate is good. Our Public Advisory and Technical Advisory Committees for our subbasin plan are happy with the program.

However, we are concerned about competition from summer steelhead with wild stocks in the basin.

Table 10. Subbasin harvest, run size, and escapement of summer steelhead by run year in the Clackamas River and its tributaries.

Stream	Run Year												Average	
	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1979-90	1984-90
Lower Clackamas River														
Clackamas River	5,092	3,382	5,001	3,986	4,300	2,011	2,585	1,330	2,049	2,050	4,035	2,121	3,162	2,362
Deep Creek	4	0	3	0	4	0	0	0	0	0	0	0	1	0
Eagle Creek	34	42	39	0	81	0	0	4	0	0	0	0	14	1
Upper Clackamas River														
Clackamas River <i>a/</i>							7,185	3,784	4,846	4,060	4,437	2,681	-	4,499
Collawash R.	487	266	466	561	417	45	508	206	0	0	0	0	264	119
Hot Spr. Fk.	9	26	69	47	112	17	116	73	0	0	0	0	45	32
Subbasin Harvest	5,626	3,716	5,578	4,594	4,914	2,073	10,394	5,397	6,895	6,110	8,472	4,802	5,714	7,013
North Fork Dam Count	4,120	4,358	5,803	4,714	4,138	1,948	11,062	5,549	7,422	4,444	7,750	3,951	5,438	6,696
Clackamas Catch (L)							2,585	1,334	2,049	2,050	4,035	2,121	NA	2,363
Estimated Run <i>b/</i>							13,647	6,883	9,471	6,494	11,785	6,072	NA	9,059
Est. Escapement <i>c/</i>							3,253	1,486	2,576	384	313	1,270	NA	2,047
Assoc. Smolt Release <i>d/</i>	160,842	188,911	194,557	182,022	156,934	153,686	129,749	153,288	170,354	152,899	158,932	161,708	149,065	154,488
Smolt to Adult							10.5%	4.5%	6.5%	4.3%	7.4%	3.8%	NA	5.9%

a/ The mainstem was listed under one stream code prior to 1984. Run size estimates are not possible for those years.

b/ Estimated run is North Fork Dam count + lower river harvest. It does not include escapement to lower river tributaries.

c/ Estimated escapement is total run estimate - total catch. It does not include escapement to lower river tributaries.

d/ Associated smolt release is that from 2 years prior to the run. For example the smolt releases for 1975-76 harvest year occurred in 1973.

District	Lower Willamette
Basin	Sandy River
Species	Summer Steelhead
Status	Stable

Previous Assessment

Historical accounts describe fish in the Sandy system which may have been summer steelhead.

Summer steelhead were introduced to the Sandy River in 1975.

A total of 75,000 Skamania Foster stock is released annually into streams of the upper subbasin.

Natural production is neither desired or expected.

An extremely popular sport fishery has developed for summer steelhead in the Sandy system.

The annual sport catch averaged 5,002 fish for run years 1980-81 through 1989-90. Catch estimate in 1984-85 was over 10,000 fish (see Table 11).

Concern has been expressed that summer steelhead may escape to reproduce naturally and subsequent competition with winter steelhead juveniles may be detrimental to wild stocks.

Harvest is estimated at about 75% of the adults that return to the subbasin.

Smolts are released into tributaries of the upper Sandy to target the returning adults to areas of high angler effort.

Most Recent Findings

Volunteers from the Mt. Hood Independent Steelheaders examined PGE film from the camera at Marmot Dam in an effort to determine the percent of wild fish in the runs passing over the

dam. From samples of summer steelhead where the adipose fins are visible, they came up with 8.25 percent unmarked fish in 1988 and 7.3 percent unmarked during the 1989 migration.

Actions

Several actions are proposed in the subbasin plan.

Natural production of summer steelhead needs to be evaluated in the Sandy basin through a creel program or better counting facilities at Marmot Dam.

If sterilization is successfully developed, it should be used on the program on the Sandy.

Current Assessment

At the present time, a popular and successful fishery is established. Adult returns from our smolt releases are excellent and the catch rate is very good. Members of our PAC and TAC groups for our subbasin plan were all in favor of this program.

Our concern is, what effect is the summer steelhead having on other species and races of fish.

Table 11. Summer Steelhead sport catch in the Sandy Subbasin. Introductions in the subbasin began in 1975 (ODFW Salmon and Steelhead Catch Data).

RUN YEAR	BULL RUN RIVER	SANDY RIVER	SALMON RIVER	SUBBASIN TOTAL
1977-78	8	458	1,793	2,259
1978-79	95	900	1,154	2,149
1979-80	417	821	1,569	2,807
1980-81	129	2,699	2,201	5,029
1981-82	2	1,981	2,246	4,229
1982-83	9	2,579	2,479	5,067
1983-84	10	1,073	1,516	2,599
1984-85	21	3,920	6,368	10,309
1985-86	27	2,304	2,962	5,293
1986-87	0	1,704	1,509	3,213
1987-88	20	2,313	2,422	4,755
1988-89	125	3,557	3,021	6,703
1989-90	6	1,809	1,012	2,827
AVERAGE	67	2,009	2,327	4,403

District Lower Willamette
Basin Henry Hagg Lake
Species Rainbow Fingerling
Status Declining Production

Previous Assessment Hagg Lake has been managed for a rainbow trout fishery since it was filled in 1975.

Both fingerling and catchable rainbow are used in the program.

Angler success has been good, especially early in the season and in fall.

Angler use is very high; estimated at 200,000 - 250,000 anglers per year.

The trout program was doing well until several species of warmwater fish were introduced illegally.

Largemouth bass, smallmouth bass, and bullheads did not impact the trout fishery seriously.

Yellow perch, however, are creating serious problems for the trout. The perch population exploded and trout angler success is declining rapidly.

Gillnet samples are showing a dramatic increase in the perch catch and dramatic decline in rainbow.

Washington County and our department are getting calls wanting more trout stocked.

Perch numbers continue to increase and the size is decreasing so few anglers are interested in perch fishing.

The county plans to expand facilities at the lake to include camping so they can attract more people.

Most Recent Findings A statistical creel program has been completed at the lake and results are being reviewed.

Actions No actions yet.

Current Assessment Creel survey will provide information necessary to make management decisions to improve trout and warmwater fisheries at Hagg Lake.

Management actions to be considered include:

1. Discontinue fingerling rainbow releases and increase stocking of catchable rainbow. Introduce walleye as a predator to reduce perch population and allow perch to grow to a catchable size. Walleye would also provide another desirable fish for anglers.
2. Discontinue rainbow fingerling releases and increase catchable rainbow stocking. Allow commercial fishing on perch to reduce numbers and allow remaining perch to grow to catchable size.
3. Chemically treat reservoir and start over with trout program.

Review of Hatchery Fish Use

Lower Willamette District

1. Name or description of program:
Big Creek Winter Steelhead

2. Water body:
Clackamas River

3. Species and race; lot number:
Winter Steelhead, Big Creek; 13.

4. Brood stock history:
The Big Creek stock was developed in the 1960s to provide an early fishery in December and January prior to the arrival of later returning native stocks. For this purpose, adults from the native Big Creek stock were selected that exhibited the earliest run timing and maturity.

5. Facilities used:
Adults are collected and spawned at Big Creek Hatchery. Incubation and rearing occurs at Gnat Creek Hatchery. Smolts are hauled to the Clackamas River and released directly into the stream (no acclimation at present).

6. Eggs and fish produced:
Only smolts reared for the Clackamas River.

7. Objectives:
The objective in the past was to provide a good early winter steelhead fishery in December and January on the lower Clackamas River.

Recently, we developed an objective for the winter steelhead fishery on the lower Clackamas for our Management Plan.

"Increase the potential average annual harvest of winter steelhead in the subbasin to 8,000 fish (2,000 in Eagle Creek and 6,000 in the mainstem of the Clackamas River, above and below River Mill Dam)."

When the objective in the plan was developed, the combined harvest for the lower Clackamas and Eagle Creek averaged approximately 6,400 winter steelhead (hatchery and naturally produced stocks). An average annual harvest of 8,000 fish represents a 20% increase in angler harvest.

8. Describe the program:

Big Creek winter steelhead smolts were first released into the lower Clackamas River in 1964. At present, we release 140,000 smolts annually at approximately five fish per pound at seven sites on the lower 23 miles of river (mouth to River Mill Dam). The smolts are released from mid April to early May.

9. Success in meeting objectives:

The only way we can evaluate the success of this program at the present time is with periodic creel surveys and catch card estimates. Catch card estimates are not a good method because they include other hatchery stocks and wild fish.

Until the past few years when adult returns began declining, we considered the program quite successful. Our creel surveys found angler success good and catch card estimates showed good numbers of steelhead caught during the early part of the season (Table 12 and 13).

10. Constraints in meeting objectives:

The Big Creek stock is not performing up to expectations the last two or three years. Adult returns are declining and anglers are unhappy. Potential problems causing the poor returns could be, as we discussed at our meeting on January 22, 1992, warming of the lower Willamette causing smolt loss from disease, poor ocean conditions, or marking loss.

Anglers complain that the Big Creek fish mature too rapidly once they enter the river. They also complain that the Big Creek stock don't return as early as they did in the past.

Need comprehensive creel survey to determine contribution of the various stocks (lower mainstem and Eagle Creek).

11. Biological feasibility:

May be difficult to meet compliance with WFMP on lower Clackamas with large number of Big Creek and Eagle Creek adults returning to the main-stem and straying into tributaries.

12. Cost-effectiveness:

Was a very good program for many years and we still feel it is sound.

13. Overview:

We should continue program and try to solve problems.

Table 12.

Clackamas River - Winter Steelhead Returns
November 1 - February 28

BROOD YEAR	RELEASE YEAR	SPORT CATCH	RUN YEAR <u>a/</u>	NUMBER RELEASED	SIZE	RELEASE DATE	MARK
1990	1991	- -	1993	140,439	5.5	4/17-22	AD
				30,071 <u>b/</u>	5.4	4/22	RVRM
1989	1990	- -	1992	156,475	5.6	4/25-5/9	AD
				31,819 <u>b/</u>	5.9	4/23	RV
1988	1989	- -	1991	135,180	5.6	4/10-13	NM
				29,693 <u>b/</u>	6.0	4/24-25	NM
1987	1988	3,103	1990	139,938	6.1	4/19-25	
				63,522 <u>b/</u>	6.1	4/7	
1986	1987	3,001	1989	179,045	5.2	4/20-22	
				35,869 <u>b/</u>	6.3	4/30	
1985	1986	3,738	1988	153,425	5.1	4/24-5/13	
				41,203 <u>b/</u>	5.7	5/13-14	
1984	1985	3,183	1987	144,010	5.0	5/10-24	
1983	1984	2,925	1986	148,017	6.0	4/6-5/15	
1982	1983	5,341	1985	164,662	5.3	4/15-5/18	
1981	1982	3,400	1984	65,737	5.6	4/26-5/3	
1980	1981	2,718	1983	111,791	5.7	4/29-5/16	
1979	1980	2,752	1982	96,613	6.5	4/10-24	
1978	1979	3,834	1981	116,253	6.4	4/10-18	
1977	1978	4,836	1980	137,291	5.2	5/10-17	
1976	1977	2,398	1979	113,305	6.4	4/26-5/4	
1975	1976	3,293	1978	99,916	6.5	4/15-20	

a/ Year run terminates.

b/ Numbers of Eagle Creek stock reared at Clackamas Hatchery and released into Clackamas River.

Table 13. Winter Steelhead Punchcard Estimates
Clackamas and Sandy Rivers
November 1 - February 28

RUN YEAR <u>a/</u>	CLACKAMAS RIVER	PERCENT OF RELEASE	SANDY RIVER	PERCENT OF RELEASE
1990	3,103	1.5	7,145	3.3
1989	3,001	1.4	6,770	3.2
1988	3,738	1.9	7,524	3.5
1987	3,183	2.2	6,594	3.4
1986	2,925	2.0	3,933	2.0
1985	5,341	3.2	8,672	4.1
1984	3,400	5.2	5,099	4.3
1983	2,718	2.4	5,124	2.6
1982	2,752	2.8	6,607	3.6
1981	3,834	3.4	5,536	4.5
1980	4,836	3.5	9,190	4.3
1979	2,398	2.1	5,211	3.0
1978	3,293	3.3	9,266	4.9

a/ Year run terminates.

Review of Hatchery Fish Use

Lower Willamette District

1. Name and description of program:

Eagle Creek Winter Steelhead

2. Water body:

Eagle Creek

3. Species and race; lot number:

Winter Steelhead, Eagle Creek Stock; 19.

4. Brood stock history:

Eagle Creek National Fish Hatchery developed its winter steelhead stock from late-run native Clackamas stock and early-run Big Creek stock. Releases of Clackamas stock and Big Creek stocks began with the 1957 and 1965 broods, respectively. Native Clackamas broodstock was collected in Delph Creek and Eagle Creek. Big Creek stock eggs were obtained from Big Creek Hatchery through 1974.

5. Facilities used:

Adults are collected and spawned at Eagle Creek Hatchery. Incubation and rearing to smolt size occurs at the same station. The smolts are released from the hatchery into Eagle Creek.

6. Eggs and fish produced:

Smolts are reared for release into Eagle Creek. Other Eagle Creek stock juvenile steelhead are also released into Eagle Creek.

Fingerling steelhead are transferred to Clackamas hatchery for the Eagle Creek stock smolt program for the Sandy and Clackamas Rivers.

7. Objectives:

Our winter steelhead objective in the Clackamas Plan includes Eagle Creek as follows:

"Increase the potential average annual harvest of winter steelhead in the subbasin to 8,000 fish (2,000 in Eagle Creek and 6,000 in the main-stem of the Clackamas River) above and below River Mill Dam."

8. Describe the program:

Releases of Clackamas stock and Big Creek stock began with the 1957 and 1965 broods. At present, they release about 150,000 smolts annually. The smolts are released into Eagle Creek at 6-10 fish per pound in late April or early May. Also, in 1991 the hatchery reared an additional 40,000 smolts for acclimation in our net pens in the Oregon City Lagoon. These smolts were released into the lagoon during late April, 1991. ECNFH is rearing an additional 40,000 for acclimation and release at the lagoon in 1992.

9. Success in meeting objectives:

The only way we can evaluate the success of their program at present is with catch card estimates and adult returns to the hatchery. Catch estimates for the Clackamas include other stocks, but estimates for Eagle Creek should be primarily Eagle Creek fish. Average catch estimate on Eagle Creek for the past five years (85-86 season to 89-90) is 943 fish. Adult returns to the hatchery averaged 551 fish for the past five years (1986-90) (See Table 14).

10. Constraints to meeting objectives:

Eagle Creek Hatchery has improved the size of their winter steelhead smolts the past two years (some groups released at six fish per pound-- Table 15). It appears that the hatchery needs to continue their effort to increase winter steelhead smolt size.

Rearing steelhead smolts to a desirable size is hampered by their cold water supply.

11. Biological feasibility:

Adults return to a collection facility at the hatchery (helps prevent straying).

We have a problem with the release of fry and pre-smolts into Eagle Creek to compete with other stocks rearing in the creek and the lower mainstem.

12. Cost-effectiveness:

It would appear they need a better adult return to make it a sound investment.

13. Overview:

I think they should continue the program with a more dedicated effort to increase the size of the steelhead smolts they release.

Table 14. Annual Winter Steelhead Harvest estimates for Eagle Creek and adult returns to Eagle Creek National Fish Hatchery, 1981-90.

RUN YEAR	EAGLE CREEK HARVEST	ECNFH ADULT RETURNS
1980-81	1,231	367
1981-82	1,502	705
1982-83	1,301	636
1983-84	2,077	1,431
1984-85	1,870	1,288
1985-86	1,115	502
1986-87	590	555
1987-88	788	667
1988-89	1,066	587
1989-90	1,156	443
AVERAGE:		
1980-85	1,596	885
1985-90	943	551
1980-90	1,270	718

Table 15. Winter Steelhead releases into Eagle Creek from Eagle Creek National Fish Hatchery, 1982-91.

RELEASE YEAR	STOCK	FRY	PRESMOLT	SMOLT	#/lb.
1982	Eagle Cr.	0	0	100,796	7
1983	Eagle Cr.	118,692	0	113,098	7
1984	Eagle Cr.	0	0	99,758	8
1985	Eagle Cr.	0	50,400	95,669	11
1985	Eagle Cr.	-	-	<u>58,080</u>	16
1985	-	-	-	153,749	-
1986	Eagle Cr.	0	0	156,144	7
1987	Eagle Cr.	0	0	85,461	7
1987	Eagle Cr.	-	-	<u>83,951</u>	8
1987	-	-	-	169,412	-
1988	Eagle Cr.	0	309,902	155,422	7
1989	Eagle Cr.	30,700	0	15,911	37
1989	Eagle Cr.	-	-	67,835	7
1989	Eagle Cr.	-	-	46,220	7
1989	Eagle Cr.	-	-	<u>18,834</u>	43
1989	-	-	-	148,800	-
1990	Eagle Cr.	601,602	74,546	23,306	6
1990	Eagle Cr.	-	-	78,167	6
1990	Eagle Cr.	-	-	22,510	11
1990	Eagle Cr.	-	-	<u>45,342</u>	6
1990	-	-	-	169,325	-
1991	Eagle Cr.	0	0	167,040	7

Review of Hatchery Fish Use

Lower Willamette District

- 1. Name or description of program:**
Clackamas Spring Chinook
- 2. Water body:**
Clackamas River
- 3. Species and race; lot number:**
Spring chinook, Willamette Stock; 19.
- 4. Brood stock history:**
The first few years we used Willamette stock. At present, we only use eggs from adults returning to Clackamas Hatchery.
- 5. Facilities used:**
Adults are collected and spawned at Clackamas Hatchery. Eggs for the fall release are shipped to Oxbow Hatchery for incubation in warmer, disease free water. In April, they are returned to Clackamas Hatchery for rearing to smolt size. Eggs for the spring release are shipped to Marion Forks for incubation in colder, disease free water. Early rearing occurs at Marion Forks and South Santiam Hatcheries prior to returning them to Clackamas in November for rearing to smolt size.
- 6. Egg and fish produced:**
Smolts and a small number of eggs for STEP.
- 7. Objectives:**
Current objectives in the Clackamas Plan are:
 - "Increase the average annual run size in the Clackamas Subbasin to 12,4000 spring chinook salmon."
 - "Increase the average annual passage of adult wild spring chinook salmon over North fork Dam to 2,900 wild fish."
 - "Increase the aerage annual harvest to 5,000 spring chinook salmon in the Clackamas Subbasin."

8. Describe the program:

The current spring chinook hatchery program began in 1978 (smolts released at proposed Clackamas Hatchery site). Approximately 1.05 million smolts are now released annually. Smolts are released in the spring and fall from the hatchery into the river at about nine fish per pound.

However, not all smolts will be released from the hatchery in 1992. A total of 50,000 Clackamas smolts are acclimating in net pens in the Oregon City Lagoon and will be released at that site. Another 30,000 Clackamas smolts are being acclimated in net pens at River Place Marina on the lower Willamette River and will be released at the site.

9. Success in meeting objectives:

A creel survey by Columbia River Management to estimate total catch, passage of spring chinook over North Fork Dam, and the return of adults to Clackamas Hatchery are all used to determine success of the program.

The program has been quite successful. We have not reached the objectives in the plan, but came close this past year with primarily hatchery fish (see Table 16).

10. Constraints to meeting objectives:

Some disease problems at Clackamas Hatchery.

11. Biological feasibility:

This program is doing real well. However, we are replacing the native stock with hatchery fish. The objectives we are meeting are primarily with hatchery fish.

12. Cost-effectiveness:

Very sound hatchery spring chinook program.

13. Overview:

We should continue program. Need to determine how to meet compliance with WFMP.

Table 16 a/. Estimated Clackamas Spring Chinook runs into the Willamette River (thousands of fish), 1981-91 b/.

Component	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	10-Yr. Avg.	1991
Lower Clackamas Sport Catch	2.3	2.5	4.5	4.3	2.5	3.9	3.2	2.7	2.9	4.7	3.4	3.8
Escapement above North Fork	3.2	3.1	2.7	2.8	1.8	2.0	2.3	3.1	2.9	3.4	2.7	4.7
Escapement below North Fork	0.6	0.2	0.8	0.6	0.7	0.6	1.0	0.2	0.6	0.5	0.6	0.5
Numbers returning to Clackamas Hatchery	1.1	0.6	1.9	2.5	0.9	0.8	1.0	1.3	0.9	1.9	1.3	2.8
Numbers returning to Eagle Creek Hatchery	0.8	0.9	0.5	1.0	0.7	0.7	1.8	1.4	1.3	0.9	1.0	0.1
Total entering Clackamas	8.0	7.3	10.4	11.2	6.6	8.0	9.3	8.7	8.6	11.4	9.0	11.9
Lower Willamette Sport Catch	2.2	2.9	4.7	3.7	2.5	2.5	2.7	2.7	2.7	3.2	3.0	5.6
Total entering Willamette	10.2	10.2	15.1	14.9	9.1	10.5	12.0	11.4	11.3	14.6	12.0	17.5

a/ Table prepared by Columbia River Management

b/ Jack salmon included.

Review of Hatchery Fish Use

Lower Willamette District

- 1. Name or description of program:**
Tualatin Coho Program
- 2. Water body:**
Tualatin River
- 3. Species and race; lot number:**
Coho Salmon, Big Creek stock.
- 4. Brood stock history:**
Early run lower Columbia coho.
- 5. Facilities used:**
Adults are collected and spawned at Big Creek Hatchery. Incubation and rearing occurs at Big Creek. Smolts are trucked to the upper Tualatin River and released directly into the stream.
- 6. Eggs and fish produced:**
Smolts only reared for Tualatin River.
- 7. Objectives:**
The coho released into the Tualatin River are financed by the Bureau of Reclamation as mitigation for lost coho habitat above Scoggins Dam on Scoggins Creek. The original objective, we believe, was to return 400 adult coho back into Scoggins Creek.

Recently, we developed an objective in the Tualatin River Management Plan as follows:

"Provide a potential annual harvest of 1,200 and 900 coho salmon in ocean and Columbia River fisheries, respectively, to mitigate for production losses resulting from Scoggins Dam."

The potential harvest objective is based on the release number, and on estimates of fishery harvest rates and smolt to adult survival.

8. Describe the program:

The mitigation smolts were first released into the Tualatin system in 1975. At present, we release 60,000 early run coho smolts annually at one site on the Tualatin River near Cherry Grove. The smolts average about fifteen fish per pound and are normally released early in May.

9. Success in meeting objectives:

We have been releasing smolts to compensate for lost habitat, but have no good way to determine what we are accomplishing. Coho released in the Tualatin contribute to commercial and sport fisheries in the ocean and Columbia River, but the magnitude of this contribution is unknown. Sport harvest of coho in the Tualatin is quite low. From 1979 through 1990 the average estimated sport catch was thirteen fish per year. Also, the estimated coho harvest was zero in eight of those years.

10. Constraints to meeting objectives:

Adult coho returns from smolts stocked in the Tualatin are low. Studies at Scoggins Dam showed only 0.135% of coho smolts released from 1975 through 1977 broods returned to the release site as adults.

Smolts moving downstream encounter some problems including the un-screened Lake Oswego Canal and Willamette Falls.

11. Biological feasibility:

Natural production of non-indigenous coho in the subbasin is not desirable because of potential competition with cutthroat and steelhead.

12. Cost-effectiveness:

Releasing the smolts in the upper Tualatin appears to be a poor investment.

13. Overview:

We probably should not continue releasing the coho smolts in the upper Tualatin River.

The recommended action in our Preferred Alternative from the Tualatin River Plan reads as follows:

"Negotiate with the Bureau of Reclamation to release the smolts

produced for Scoggins Dam compensation at sites in the Willamette River below Willamette Falls. Some of the compensation might also be negotiated toward enhancement of flows or habitat for cutthroat and steelhead. Coho smolts will no longer be released in the subbasin, and returns will benefit fisheries outside the subbasin."