

APPENDIX D
**SUMMARY OF FISH HABITAT
AND THE EFFECTS OF DEVELOPMENT
ON FISH HABITAT FOR SIX MAJOR AREAS OF THE
COLUMBIA RIVER BASIN**

(Prepared by
Environmental Research and Technology, Inc.
from Bryant and Parkhurst 1950,
Parkhurst 1950a, Parkhurst 1950b, Parkhurst 1950c)

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AREA 1: COLUMBIA RIVER BELOW BONNEVILLE DAM -- WASHINGTON SIDE

Walicut River (No Survey)

- o Lowermost stream entering the Columbia River; merely a slough.

Chinook Creek (1946 Survey)

- o Enters Columbia River at RM 6 and is 8 miles long.
- o Two tide gates prevented entrance of fish on incoming tide.
- o Many beaver dams and trash jams made salmon passage difficult at low water at the time of the survey.
- o Fall chinook and coho present when surveyed.

Deep River (1942 and 1946 Surveys)

- o Enters Columbia River at RM 20 and is 8 miles long.
- o Tide gates barred fish passage during flood tide.

Grays River (1936 and 1946 Surveys)

- o Enters Columbia River at RM 21 and is 16 miles long.
- o 8 to 10-foot cascade and falls formed a complete barrier to salmon at RM 13; steelhead could pass only during high water.
- o Chum, coho, fall chinook and steelhead present when surveyed.

Left Fork (1936 Survey)

- o Enters Grays River at RM 12.
- o Impassable to fish at RM 3 because of logging debris.
- o Chum and coho present when surveyed.

North Fork (1937 Survey)

- o Joins South Fork to form Grays River, and is 10.5 miles long.
- o 18-foot splash dam at RM 5 of North Fork was a total barrier to fish passage. Early spring steelhead present when surveyed.

- o Mitchell Creek (tributary of North Fork) had 6 and 7-foot falls 1,800 and 1,900 yards above the mouth that were difficult for fish to pass; spring steelhead present when surveyed; unnamed tributary to Mitchell Creek had impassable 40-foot log jam at RM 1. Left Fork of Mitchell Creek had a brush jam 600 yards above mouth that was probably passable.

South Fork (1937 Survey)

- o Joins North Fork to form Grays River and is 8 miles long.
- o Abandoned 40-foot splash dam 260 yards above mouth; no spill over dam at low water.
- o Impassable 15-foot falls at RM 4.
- o No runs of salmon or steelhead when surveyed.

Crooked Creek (1937 and 1946 Surveys)

- o Enters Columbia River at RM 22 and is 8 miles long.
- o 4-foot irrigation dam had no fish protective devices and formed a low water barrier.
- o Unused 6 to 8-foot power dam was 600 yards above irrigation dam on the North Fork.
- o Salmon (unknown species) present when surveyed.

Jim Crow Creek (1937 and 1946 Surveys)

- o Enters Columbia River at RM 30 and is 6 miles long.
- o 5 to 7-foot brush jams were only obstructions.
- o Coho, chum and steelhead present when surveyed.

Skamokawa Creek (1946 Survey)

- o Enters Columbia River at RM 34 and is about 7 miles long.
- o 6 to 8-foot log/brush jam in Wilson Creek tributary nearly impassable at RM 4.3.
- o 40-foot culvert where Elkhorn Creek entered Wilson Creek interfered with salmon migration.

- o Coho, chum and steelhead present when surveyed.

Alochomin (Elochoman) River (1935, 1936, 1937 Surveys)

- o Enters Columbia River at RM 38 and is 15 miles long.
- o West Fork joins East Fork to form Alochomin River at RM 15; watershed of West Fork completely logged off and burned, resulting in considerable damage to stream.
- o Chum, coho, and spring runs of steelhead present when surveyed.

East Fork

- o Log jam at RM 2.5 made fish passage difficult.
- o West bank eroded due to logging underway at time of survey.
- o Log jam in right branch was a complete barrier except at extreme high water.
- o Coho and steelhead present when surveyed.

Birnie Creek and Abe Creek

- o Small streams, approximately 2 miles long, enter Columbia River near Cathlamet, Washington; both blocked by falls near mouth and of no value to salmon or steelhead.

Mill Creek (1936 and 1946 Surveys)

- o Enters Columbia River at RM 53 and is 6 miles long.
- o 7-foot falls at RM 1.25 was barrier during low water.
- o Chum and steelhead present when surveyed.

Abernathy Creek (1936 and 1946 Surveys)

- o Enters Columbia River at RM 54 and is 13 miles long.
- o 10-foot falls at RM 3.5 complete barrier to salmon except at high water.
- o Small falls at RM 5.5 and 12.
- o Numerous log and brush jams made fish passage difficult.

- o Chum, coho and steelhead present when surveyed.

Cameron Creek (1936 and 1946 Surveys)

- o Enters Abernathy Creek at RM 0.25 and is 6 miles long.
- o 4 falls and several impassable log jams in lower mile; 4-foot falls at RM 1.5; impassable log jam and fall at RM 2.5.
- o Chum salmon present when surveyed.

Germany Creek (1936 and 1946 Survey)

- o Enters Columbia River at RM 56 and is 12 miles long.
- o Passable barriers included 3 low falls between RM 0-2 and 1 log jam at RM 1.5; major log jam at RM 6 was impassable.
- o Chum, coho and steelhead present when surveyed.

Falls Creek (1942 Survey)

- o Enters Columbia River at RM 57 and is 2 miles long.
- o Impassable 40-foot falls 200 feet above mouth.
- o No migratory fish present when surveyed.

Coal Creek (1936 Survey)

- o Enters Columbia River at RM 62 and is 14 miles long.
- o Impassable double falls (12 feet and 6 feet) at RM 3.2.
- o 3 falls 3 to 4 feet high formed low water barriers 1,300 to 2,400 yards upstream.
- o Chum and steelhead present when surveyed.

Cowlitz River (1937 Survey)

- o Enters Columbia River at RM 65 and is 130 miles long.
- o 8-foot falls just above the mouth was passable with difficulty.
- o Coho, fall chinook, steelhead, and spring chinook present when surveyed.

Coweman River (1936 and 1945)

- o Enters Cowlitz River at RM 1 and is 33 miles long.
- o Low falls at RM 5 and 12 hindered fish movement.
- o 9-foot falls at RM 20 was a low water barrier.
- o Abandoned 38-foot splash dam was total barrier at RM 23.5; similar dam at RM 25.5.
- o Fall chinook and coho present when surveyed.
- o Globe Creek had dam at RM 3.5.
- o Mulholland Creek had impassable 30-foot splash dam at RM 1.75; 11-foot falls above splash dam was a low water barrier; numerous debris jams; fall chinook present when surveyed.
- o Baird Creek had dam at RM 1.

Ostrander Creek (1936 Survey)

- o Enters Cowlitz River at RM 7 and is 10 miles long.
- o Irrigation dam at RM 1.6 had been low water barrier, but has been removed.
- o 3 cascades between RM 2.3 and 3 were low water barriers; 22 beaver dams (7 were low water barriers), and 10 log jams.
- o Coho and steelhead present when surveyed.
- o South Fork had 2-foot diversion dam with unscreened diversion flume 300 yards from mouth (diverted most of water from sawmill pond and domestic water supply); log and debris jam and 8-foot falls at RM 0.6; numerous beaver dams were low water barriers in upper portion.

Arkansas Creek (1937 Survey)

- o Enters Cowlitz River at RM 15 and is 2 miles long.
- o Coho, fall chinook, and steelhead present when surveyed.
- o North Fork had several brush jams and impassable log jam at RM 6.5; silt-laden from denuded hills from logging; coho and steelhead present when surveyed.

- o South Fork had 6 log/brush jams in lower 3 miles; coho and steelhead present when surveyed.
- o Monahan Creek had series of 3 cascade falls at RM 0.5 with combined height of 18 feet that was impassable to fish; coho present when surveyed.

Toutle River (1936 Survey)

- o Enters Cowlitz at RM 17 and is 52 miles long.
- o 2 small dams and log jam were low water barriers just below Spirit Lake (RM 52).
- o Log jam 300 yards above the mouth of Outlet Creek difficult to pass except during high water.
- o Chinook, steelhead and coho present when surveyed.
- o South Fork of the Toutle River had fall and spring chinook and steelhead present when surveyed.
- o Eighteen Creek and Twenty Creek were blocked by impassable falls 50 yards from mouths.
- o Whitten Creek was blocked by impassable 30-foot falls 250 yards from mouth.
- o Bear Creek was blocked by impassable 10-foot falls 460 yards from mouth.
- o Green River had lower 18 miles logged off; at RM 7 two falls were passable at low water with difficulty; at RM 20.5 a 12-15 foot falls was a total barrier; at RM 26 were 2 impassable 650-foot cascades. Fall chinook, coho, and steelhead present when surveyed.
- o On Devils Creek a 6-foot bedrock chute 360 yards above mouth was a low water barrier; coho and steelhead present when surveyed.
- o On Elk Creek 4 log jams and a 7-foot falls were passable with difficulty; impassable falls at RM 1.
- o On Miners Creek several log jams and cascades were passable with difficulty; salmon (unidentified species) and steelhead present when surveyed.

- o On Hoffstadt Creek an 8-foot falls at RM 6.8 was a low water barrier; at RM 13 series of falls in log-filled gorge was a total barrier.
- o On Bear Creek over 30 log and trash jams were possible barriers.
- o On Deer Creek at RM 2 a 25-foot falls was a total barrier.
- o On Castle Creek a log/debris jam 150 yards above mouth was a partial barrier to migratory fish; tangles of fallen trees in lower 3 miles; 30-foot falls at RM 3 was a total barrier; small falls 400 yards farther upstream were low water barrier.
- o On Coldwater Creek numerous log and brush jams were difficult for fish to pass; 6-foot falls 2 miles above mouth of South Fork; steelhead present when surveyed.
- o On Studebaker Creek series of log jams and falls formed a low water 25-foot barrier 100 yards above mouth; 3-foot log and boulder dam 560 yards upstream were low water barrier; a few coho present when surveyed.

Olequa Creek (1937 Survey)

- o Enters Cowlitz River at RM 22 and is 20 miles long.
- o Low falls at RM 5.2 and log/brush jam at RM 12.5 were difficult for fish to pass.
- o Formerly impassable 25-foot England Lumber Company dam (built in 1932?) at RM 15; in 1947 new fishway constructed.
- o Sawmill pollution and washings from a gravel crusher, raw sewage from towns Winlock and Vader (and indirectly from Ryderwood), refuse and drainage from farms and garbage dumps damaged quality of stream.
- o Chinook, coho, chum and steelhead present when surveyed.
- o On Campbell Creek a 6-foot dam diverted flow for Ryderwood water supply; sewage from Ryderwood and silt from a gravel crusher made lower 1.3 miles unfit for fish as well as lower 6 miles of Stillwater Creek.
- o Ferrier Creek blocked by swimming pool dam south of Winlock.

La Camas Creek (1937 Survey)

- o Enters Cowlitz River at RM 27 and is 22 miles long.

- o At RM 14.8 a 6-foot dam diverted water for the operation of a farm lighting plant; similar dam located 500 yards farther upstream; both were barriers to fish at low water.
- o Brush jam below the first dam.
- o Coho present when surveyed.
- o 6-foot dam at Ayell Creek was removed in 1947.

Salmon Creek (1937 Survey)

- o 35 miles long.
- o 25-foot impassable falls at RM 2 on Cedar Creek.
- o Logging operations nearly exterminated salmon runs prior to 1932.
- o Coho, steelhead and chinook present when surveyed.

Mill Creek (1941 Survey)

- o Enters the Cowlitz River at RM 56 and is 13 miles long.
- o 20-foot fall blocked all salmon runs about RM 1.
- o Coho present below falls

Winston Creek (1941 Survey)

- o Enters Cowlitz River at RM 59 and is 15 miles long.
- o Impassable 40-foot falls 250 yards above mouth.

Klickitat Creek (1941 Survey)

- o Enters Cowlitz River at RM 62 and is 3.5 miles long.
- o Series of impassable bedrock chutes and falls 6 to 14 feet in height blocked stream at RM 3.5
- o No salmon runs present when surveyed.

Tilton River (1936 Survey)

- o Enters Cowlitz River at RM 63.5 and is 26 miles long.

- o 3 difficult log jams between RM 12 and 16.
- o 10-foot power dam at RM 15.5 was blasted out in 1944.
- o Impassable 18-foot falls at RM 22.6.
- o Coho, fall chinook, winter steelhead and sea-run cutthroat present when surveyed.
- o Cinnabar Creek inaccessible to fish because of 75-foot falls at mouth.
- o Bear Canyon Creek and Alder Creek inaccessible because of cascades/steep gradient and windfall at mouths.
- o On North Fork several cascades and low falls were passable with some difficulty; 6-foot and 9-foot waterfalls in lower 2.5 miles; several log jams were partial barriers; coho and steelhead present when surveyed.
- o On Wallanding Creek a 12-foot falls was impassable at RM 0.75.
- o Rockies Creek was blocked by 10-foot falls/log jam 100 yards above mouth.
- o Jesse Creek was blocked by 20-foot falls 300 yards above the mouth.
- o Winnie Creek had impassable 18-foot falls 1,200 yards from mouth; log jam 700 yards farther upstream also possible total barrier.
- o Impassable falls and dam at RM 0.5 of Mines Creek.
- o Lumbering operations on the upper watershed of East Fork were beginning to fill stream with log jams and debris at the time of survey; impassable falls at RM 8; coho present when surveyed.
- o Several log jams and beaver dams on South Fork of the East Fork were passable with some difficulty; coho present when surveyed.
- o Nineteen Creek blocked at RM 0.75 by impassable 12-foot fall and log jam.
- o West Fork of Tilton River had impassable log jam at RM 5 of left branch and 8-foot impassable falls on right branch; logging operations in upper watershed, silting in lower 2 miles; coho and steelhead present when surveyed.
- o Snow Creek was blocked by 15-foot falls 250 yards above mouth; coho present when surveyed.

- o Eagle Creek was blocked by impassable series of falls at RM 1; coho present when surveyed.

Sulphur Creek (1941 Survey)

- o Enters Cowlitz River at RM 71 and is 6.5 miles long.
- o Impassable 12-foot bedrock chute at RM 1.7; 6-foot dam diverted water to planer mill.

Shelton Creek (1937 Survey)

- o Enters Cowlitz River at RM 78 and is 3.5 miles long.
- o Impassable 13-foot falls at RM 0.5.
- o Coho present when surveyed.

Landers Creek (1937 Survey)

- o Enters Cowlitz River at RM 18 and is 9 miles long.
- o Impassable 100-foot series of falls and log jams at RM 2.9.
- o Coho present when surveyed.

Rainey Creek (1936 Survey)

- o Enters Cowlitz River near RM 85 and is 10 miles long.
- o Log jam at RM 2.4 was considered a barrier; others at RM 5 and 8.
- o Coho present when surveyed.
- o North Fork had impassable falls at RM 0.8.
- o Lunch Creek had impassable 15-foot falls in lower mile; fall run of coho present when surveyed.

Goat Creek (1937 Survey)

- o Enters Cowlitz River at RM 89 and is 5 miles long.
- o 35-foot impassable falls 500 yards above mouth.
- o Coho present when surveyed.

Cispus River (1941 Survey)

- o Enters Cowlitz river at RM 92.5 and is 50 miles long.
- o Impassable 30-foot falls at RM 33.5.
- o Spring chinook, fall chinook, coho, steelhead present when surveyed.
- o On Quartz Creek bad log jam 1,000 yards above the mouth and RM 3; 6-foot falls was partial barrier; 10-foot falls at RM 2.75 was a total barrier.
- o Iron Creek had 30-foot impassable falls at RM 2.7.
- o Greenhorn Creek had impassable 60-foot falls at RM 2.
- o On Niggerhead Creek 5-foot falls at RM 3 was obstacle; 25-foot log jam at RM 3.3 was total barrier; impassable 25-foot falls at RM 5.25. Spring chinook, coho, fall chinook and steelhead present when surveyed.
- o McCoy Creek was blocked by 50-foot falls at RM 0.4.
- o On North Fork of Cispus River 25-foot series of falls at RM 6 were impassable; coho, fall chinook and steelhead present when surveyed.
- o East Canyon Creek blocked by impassable 40-foot falls 300 yards from mouth.
- o On Adams Creek 15-foot falls topped with drift logs were total barrier to fish.

Silver Creek (1936 Survey)

- o Enters Cowlitz River at RM 100 and is 7 miles long.
- o 2 impassable falls 12 feet and 22 feet in height at RM 2.6.

Mill (Miller) Creek (1936 Survey)

- o Enters Cowlitz River at RM 108 and is 2.5 miles long.
- o Impassable 30-foot falls at RM 0.5.

Silver Creek (1937 Survey)

- o Enters Cowlitz River at RM 105 and is 12 miles long.

- o A low dam at RM 1.8 diverted water to small power plant; normally no spill over the dam; slats spaced 2.5 inches apart did not effectively screen down-stream migrants at the time of survey.
- o Impassable 20-foot falls at RM 2.7; coho and steelhead present when surveyed.
- o East Fork blocked by impassable 50-foot log jam 0.25 miles upstream.

Davis Creek (1936 Survey)

- o Enters Cowlitz River at RM 11 and is 6 miles long.
- o Impassable 20-foot falls at RM 2.
- o Coho and steelhead present when surveyed.

Kilborn Creek (1936 Survey)

- o Enters Cowlitz River at RM 112.2 and is 5 miles long.
- o Impassable 35-foot falls at RM 0.75.
- o Coho and steelhead present when surveyed.

Garret Creek (1936 Survey)

- o Enters Cowlitz River at RM 114 and is 2.5 miles long.
- o Impassable 12-foot falls at RM 0.5.

Burton Creek (1936 Survey)

- o Enters Cowlitz River at RM 115 and is 3.5 miles long.
- o Impassable cascades at RM 1.3.
- o East Fork had coho present when surveyed.

Willame Creek (1937 Survey)

- o Enters Cowlitz River at RM 118 and is 8.5 miles long.
- o Impassable 30-foot falls at 825 yards upstream.

Smith Creek (1936 Survey)

- o Enters Cowlitz River at RM 119.3 and is 10 miles long.
- o 20-foot impassable falls at RM 1.

Johnson Creek (1936 Survey)

- o Enters Cowlitz River at RM 120 and is 12 miles long.
- o Impassable log jam at RM 1.5; 30-foot log jam at RM 2 was probably impassable to fish; 15-foot falls and log jam at RM 4.3 was impassable; coho and steelhead present when surveyed.

Skate Creek (1937)

- o Enters Cowlitz River at RM 123 and is 14 miles long.
- o Several 6 to 7-foot rubble dams at RM 2.3 were impassable at low water.
- o Steelhead and coho present when surveyed.

Butter Creek (1937 Survey)

- o Enters Cowlitz River at RM 125.5 and is 10 miles long.
- o Impassable 30-foot falls at RM 1.5.
- o Coho fingerlings present when surveyed.

Lake Creek (1937 Survey)

- o Enters Cowlitz River at RM 126 and is 5 miles long.
- o 25-foot falls at RM 1.9 were impassable.
- o Coho and steelhead present when surveyed.

Coal Creek (1936 Survey)

- o Enters Cowlitz River at RM 127.6 and is 6 miles long.
- o Impassable 75-foot falls at RM 0.75.

Purcell Creek (1936 Survey)

- o Enters Cowlitz River at RM 129.5 and is 2.5 miles long.

- o Impassable 60-foot falls at RM 0.3.
- o Coho present when surveyed.

Clear Fork of the Cowlitz River (1937 Survey)

- o Joins Ohanapecosh to form Cowlitz River and is 16 miles long.
- o Lower 1.5 miles had falls, above which salmon had never been reported.
- o Two tributaries blocked at mouths by impassable falls.
- o State of Washington installed racks near the mouth to secure chinook salmon for artificial propagation.
- o Steelhead, coho and chinook present when surveyed.

Ohanapecosh River (1937 Survey)

- o 15.5 miles long.
- o Log hatchery dam 12 feet high 700 yards above the mouth; State Department of Fisheries installed hatchery racks 180 yards upstream to take spring and fall chinook and steelhead eggs.
- o Spring and fall chinook, coho and steelhead present when surveyed.

Owl Creek and Fish Pond Creek (Not Surveyed)

- o Short streams enter Columbia River near RM 68; 30-foot falls at RM 1.25 of Owl Creek.
- o Chum and coho present when surveyed.

Kalama River (1936 Survey)

- o Enters Columbia River at RM 75 and is 42 miles long.
- o In 1936, 13,000 fish taken at RM 1 from run of 20,000 for hatchery purposes; in 1940, racks moved farther upstream.
- o Power dam (Puget Sound Power and Light Co.) at RM 11; 12-foot natural falls between intake and return; improved fish ladder in 1944, but ineffective.
- o High fall (Kalama Falls) at RM 35.
- o Fall chinook, winter steelhead and chum present when surveyed.

Two Unnamed Tributaries

- o Enter Columbia River at RM 77.5 and 79; a few coho and chum salmon present when surveyed.

Rock Creek, Speelyai Creek, and Burris Creek (No Survey)

- o Small creeks enter Columbia River between RM 81 and 83.

Lewis River (1936 Survey)

- o Enters Columbia River at RM 85 and is 90 miles long.
- o 240-foot Ariel Dam, built in 1931, at RM 20; downstream migrants pass over spillway.
- o Washington State Department of Fisheries operated a fish trap at the dam; fry reared at Cougar Creek and elsewhere; rest of fish trapped were lifted over dam to Lake Merwin (Ariel Reservoir) to proceed to natural spawning areas above the dam.
- o Coho, fall chinook, steelhead, spring chinook, and chum present when surveyed.

East Fork of Lewis River (1936 and 1937 Survey)

- o Enters Lewis River at RM 5 and is 42 miles long.
- o 14-foot Lucia Falls was total barrier to salmon at RM 21; steelhead could ascend at high water.
- o 700 yards above Lucia Falls were 24-foot falls; 8-foot and 9-foot falls at RM 24 and 24.5 were low water barriers.
- o 4 falls 3-9 feet high were at RM 26-27.
- o Horseshoe Falls was 18 feet high at RM 28.5; 2 log jams at RM 31.
- o 16-foot Sunset Falls at RM 31.5 was a total barrier to fish.
- o Coho, fall chinook, summer run of steelhead present when surveyed.
- o 5-foot falls at RM 1 on Rock Creek may be barrier at low water; spring and fall runs of steelhead present when surveyed.
- o On Copper Creek an 18-foot falls 60 feet above mouth was impassable.

Cedar Creek (1937 Survey)

- o Enters Lewis River at RM 16.5 and is 20 miles long.
- o Good run of coho salmon reported at the time of the survey.
- o State operated fish rack 500 yards above mouth in the past.
- o 22-foot mill dam built in 1876 at RM 2.25 was removed in 1946; ineffective fish ladder built in 1905.
- o Beaver dams and brush jams at RM 9, and a highway culvert above RM 12 made fish passage difficult.

Salmon Creek (1936 Survey)

- o Enters Columbia River at RM 94 and is 22 miles long.
- o 3 beaver dams and 3 log jams near RM 8 were low water barriers; silted-in areas in lower stream due to farming and gravel crushers.
- o Impassable brush jam 340 yards above mouth of Mill Creek, which enters Salmon Creek at RM 6.
- o Coho, fall chinook, chum and steelhead present when surveyed.

Washougal River (1935 Survey)

- o Enters Columbia River at RM 121 and is 36 miles long.
- o Fires in 1902, 1927, 1929 resulted in reduced stream value; afterwards, upper portion closed to public.
- o Formerly 3 Cotterell Power Co. dams blocked fish runs on lower river; 1 washed out, other 2 were low water barriers in spite of fish ladders; remaining 2 were removed in 1944 and 1947.
- o Salmon Falls at RM 17.5 was 8 feet high and difficult for salmon to pass at lower water.
- o 25-foot falls at RM 30 was a total barrier to salmon and possibly steelhead.
- o In the 6 miles above falls (RM 30-36) were 8 falls and cascades, 7 to 15 feet high.
- o Chief detriment to stream at the time of the survey was sulphite effluent from Camas paper mills at stream mouth.

- o Steelhead, fall chinook, coho present when surveyed.

Lacamas Creek (1937 Survey)

- o Enters Washougal River at RM 1 and is 16 miles long.
- o Impassable 70-foot falls at RM 0.75 and 30-foot Camas Papermill Dam at RM 1.25.

Little Washougal River (1935 Survey)

- o Enters Washougal River at RM 4.5 and is 13 miles long.
- o Abandoned 18-foot mill dam at RM 11 was a low water barrier to all fish and high water barrier except for steelhead.
- o 4-foot Camas Water Supply Co. dam at RM 11.25 upstream; most of flow diverted here through unscreened flume.
- o Coho and steelhead present when surveyed.

Canyon Creek (1937 Survey)

- o Enters Washougal River at RM 12 and is 4 miles long; 2 impassable 15-foot falls at mouth.

West Fork (1935 Survey)

- o Enters Washougal river at RM 13 and is 23 miles long.
- o Impassable 18-foot falls at RM 5.5.
- o Steelhead present when surveyed.
- o Impassable 9-foot falls 1,000 yards above mouth of Texas Creek.

McCloskey Creek (1937 Survey)

- o Enters Washougal River at RM 16.5
- o Steelhead present below 8 to 10-foot falls near mouth at time of survey.

Dougan Creek (1937 Survey)

- o Enters Washougal River at RM 21 and is 3.5 miles long.

- o Series of impassable falls just above mouth.

Stebbins Creek (1936 Survey)

- o Enters Washougal River at RM 24 and is 6 miles long.
- o Impassable falls at RM 1.7.
- o Steelhead present when surveyed.

Gibbons Creek, Walton Creek, and St. Cloud Creek (Not Surveyed)

- o Small tributaries enter Columbia River between 2 and 7 miles above Washougal, Washington.

Duncan Creek (1937 Survey)

- o Enters Columbia River 1 mile above Skamania, Washington.
- o Steelhead and chum present when surveyed.

Woodward Creek (1937 Survey)

- o Enters Columbia River 1 mile above Skamania, Washington.
- o Steelhead and chum present when surveyed.

Hardy Creek (1937 Survey)

- o Enters Columbia River 3 miles above Skamania, Washington.
- o Rodney Falls at RM 0.75 was possible total barrier.

Hamilton Creek (1937 Survey)

- o Enters Columbia River 4 miles above Skamania, Washington.
- o 8-foot impassable falls at RM 3.7.
- o Steelhead present when surveyed.

Blue Lake Creek (No Survey)

- o Enters Columbia River 4 miles above Bonneville Dam.

AREA 2: COLUMBIA RIVER BETWEEN BONNEVILLE DAM AND ITS CONFLUENCE WITH THE SNAKE RIVER -- WASHINGTON SIDE

Rock Creek (1936 Survey)

- o Enters Columbia River at RM 151 and is 14 miles long.
- o Series of 7 falls with 65-foot drop at RM 1 and one 25-foot fall above.
- o 2 log jams and 2 beaver dams were difficult for fish to pass in lower 7 miles.
- o Chinook and steelhead present when surveyed.

Nelson Creek and Carson Creek (1937 Survey)

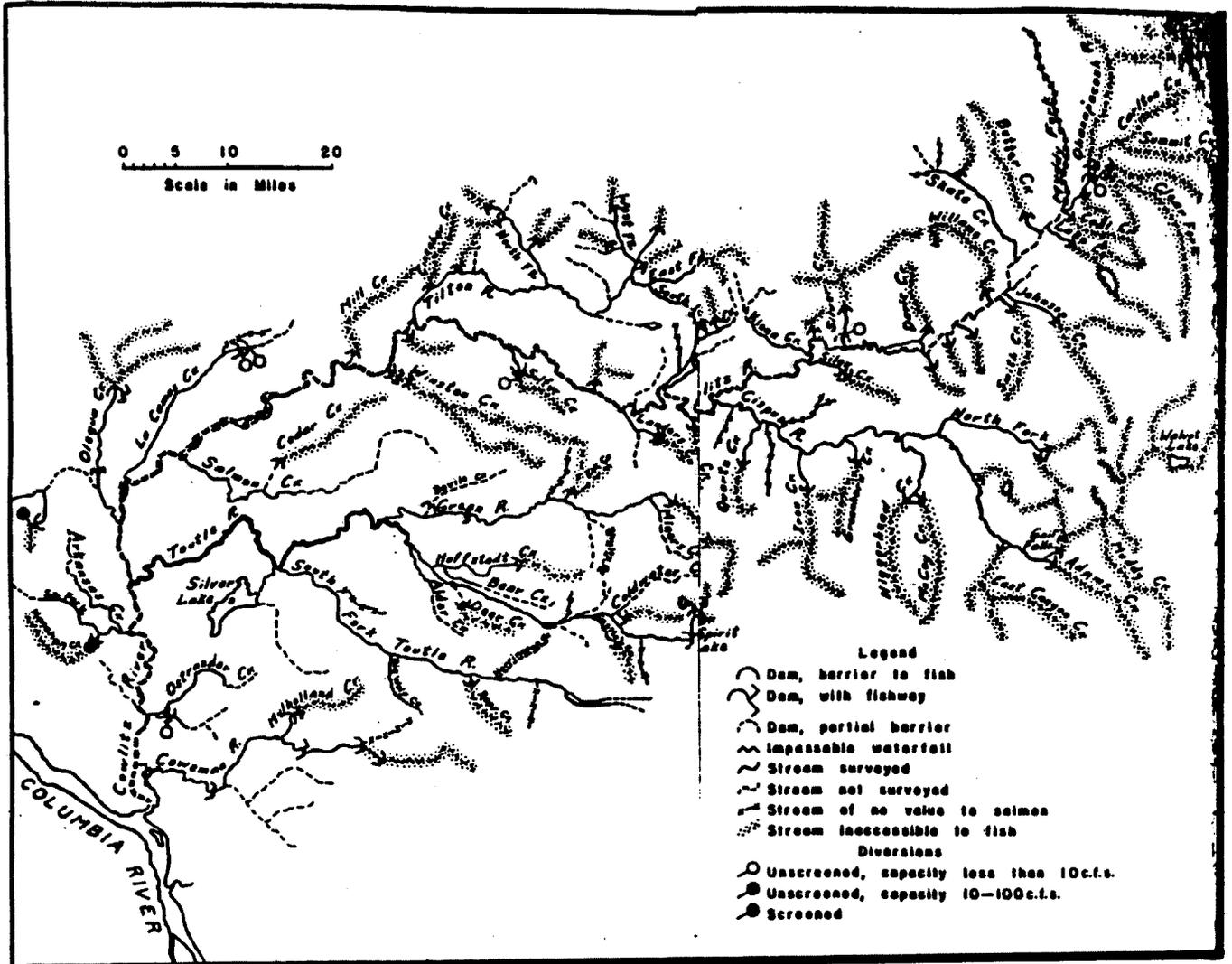
- o Enter Columbia River at RM 152 and 154.
- o Falls near mouth.
- o No salmon present when surveyed.

Wind River (1935, 1936, 1940 Survey)

- o Enters Columbia River at RM 155 and is 32 miles long.
- o Backwater from forebay of Bonneville Dams flooded lower 1.5 miles at the time of the survey; ponding covers former spawning area and state holding and racking site.
- o At the time of the survey, hatchery crew racked stream just above Bonneville backwater to secure spawning stock of fall chinook.
- o 3 falls (3 to 5 feet, 12 to 15 feet, 12 feet) at RM 3.7 impassable to salmon ; ineffective channel blasted in 1936.
- o 8-foot Carson Lumber Co. mill dam at RM 14 was removed in 1947.
- o Steelhead in spring and fall chinook present when surveyed.

Little Wind River (1937 Survey)

- o Enters Wind River at RM 1.9 and is 65 miles long.
- o Several log jams filled in with gravel in lower 1.8 miles.



Cowlitz River Basin

- o 8-foot falls at RM 1.5 was a salmon barrier and difficult for steelhead.

- o Steelhead present when surveyed, but no salmon.

Bear Creek (1935 Survey)

- o Enters Wind River at RM 4.3 and is 7 miles long; 18-foot falls near mouth.

Panther Creek (1935, 1936, 1937 Surveys)

- o Enters Wind River at RM 4.3 and is 13 miles long.

- o 4 falls (5 to 10 feet high) near RM 9 were low water barriers.

- o Several log jams.

- o Steelhead present when surveyed.

- o South Fork had 15-foot falls near mouth and was inaccessible.

- o 3 impassable log jams 600 yards above mouth of Cedar Creek; reported to be excellent steelhead stream prior to 1933 when timber was cut along stream.

Trout Creek (1936 Survey)

- o Enters Wind River at RM 10 and is 10 miles long.

- o 20-foot concrete dam with a fish ladder at RM 2 was abandoned in 1944.

- o 4-foot dam with screened intake just above concrete dam with adequate fish ladder installed in 1941.

- o Steelhead present when surveyed.

Tyee Springs Creek

- o Enters Wind River at RM 15; Carson hatchery (USFWS) greatly enhanced value of stream (as of 1946) as a fish producer.

Trapper Creek (1935, 1937 Survey)

- o Enters Wind River at RM 18 and is 6 miles long.

- o Debris jams made passage difficult at RM 1 at the time of the survey.

- o Steelhead present when surveyed.

Fall Creek

- o Enters Wind River at RM 21 and is 9 miles long.
- o Impassable falls at RM 1; watershed had been burned over and stream scoured at time of survey.

Collins Creek and Dog Creek (1937 Survey)

- o Enter Columbia River at RM 155 and RM 157.
- o Both blocked by impassable falls within RM 1.
- o No salmon present when surveyed.

Little White Salmon River (1936 Survey)

- o Enters Columbia River at RM 162 and is 18 miles long.
- o Salmon hatchery at mouth.
- o Impassable 37-foot falls at RM 1.75.
- o Backwaters from Bonneville Dam extended to within 0.5 miles of falls, covering spawning areas.
- o Chinook, steelhead, sockeye, and coho present when surveyed.

Spring Creek

- o Enters Columbia River at RM 167 and is about 100 yards long.
- o Hatchery established in 1902.
- o Fall chinook present when surveyed.

White Salmon River (No Survey)

- o Enters Columbia River at RM 176 and 177.
- o Impassable falls for salmon, but probably not steelhead near mouth.
- o No salmon present when surveyed.

Klickitat River (1938 and 1942 Surveys)

- o Enters Columbia River at RM 180 and is 95 miles long.
- o 5 falls (4 to 14 feet) and narrow gorge near RM 2.
- o Several cascades and 2 log jams above West Fork.
- o 4 small irrigation dams at RM 10 to 13; diversions were not screened at the time of the survey.
- o Large runs of spring chinook reported 30 years prior to survey.
- o Spring steelhead present when surveyed.
- o Silver Creek tributary had impassable falls near mouth.

Little Klickitat River (1938 Survey)

- o Enters Klickitat River at RM 30 and is 35 miles long
- o Numerous cascades and low falls; 10-foot falls at RM 5 was complete barrier at low water.
- o Spring Creek was inaccessible to fish because of 35-foot falls near mouth.

Outlet Creek (1942 Survey)

- o Enters Klickitat River at RM 38 and is 9 miles long.
- o 50-foot falls at RM 1; abandoned sawmill dam at RM 3.5.
- o Much of stream water diverted for irrigation.
- o No salmon present when surveyed.

Hellroaring (Big Muddy) Creek (1942 Survey)

- o Enters Klickitat River at RM 51 and is 10 miles long.
- o Usually turbid with glacial silt.
- o Wooden dam diverted part of flow to irrigation ditch
- o No salmon present when surveyed.

Deschutes River (1942 Survey)

- o Enters Columbia River 15 miles above The Dalles, Oregon, and is 245 miles long.

Section 1 -- Mouth to Squaw Creek (RM 0 to 136)

- o The only obstruction, Sherar Falls, 15 feet high, at RM 45, had been provided with a good fishway by the Oregon Fish Commission; falls was the site of an important Indian fishery.
- o Indian and sport fishing accounted for 500 to 1,000 chinook salmon and steelhead trout annually at the time of the survey.
- o Oregon Fish Commission operated a rearing station at Oak Spring, 4 miles downstream from Maupin, where several hundred thousand chinook salmon were reared and released annually. Oregon Game commission operated a trout hatchery at the same site.
- o Spring chinook and spring and fall steelhead present when surveyed.

Section 2 -- Squaw Creek to the North Canal Dam at Bend, Oregon (RM 136 to 173.5)

- o Steelhead Falls, about 15 feet high, 4 miles above the confluence of Squaw Creek and the main Deschutes River; fishway was blasted in the bedrock, but at the time of observation it was impassable.
- o Big Falls, 30 feet high, 3.5 miles above Steelhead Falls; a fair 9-step fishway, but was impassable at times because of a lack of water. These falls marked the upstream limit of migration of chinook salmon and steelhead trout under natural conditions.
- o Cline Falls, 11 miles above Big Falls, had a drop of 30 feet plus an additional 3 feet created by a wooden splash dam across the crest; the fishway was in a state of disrepair.
- o North Canal Dam was a concrete structure 30 feet high; a broken-down fishway at the center of the dam made it a barrier to fish; diversions removed so much flow that only 15 to 20 cfs spilled over the dam during the period of March to November.
- o No salmon or steelhead present when surveyed.

Section 3 -- North Canal Dam to Benham Falls (RM 173.5 to 187.5)

- o 2 canals (80 and 300 cfs) diverted water at the North Canal Dam (RM 173.5).

- o A third large canal, built by the U.S. Bureau of Reclamation, diverted about 1,000 cfs at this point for agricultural development at the time of the survey.
- o Deschutes County Municipal Improvement District dam, 7 feet high, was located in the City of Bend. It was concrete and had a 6-step fishway. From 60 to 80 cfs was diverted at the dam to supplement the Tumalo project feed canal.
- o Pacific Power and Light Company dam was 1/4 mile above the county dam. It was about 15 feet high and had a poor fishway.
- o Shevlin-Hexon lumber mill dam was located about 1 mile above the Pacific Power and Light Company dam. It was of wooden construction, about 6 feet high, and had a good fishway.
- o Scanlon-Brooks lumber mill dam, located a short distance farther upstream, was similar to the Shevlin-Hexon dam.
- o Central Oregon Irrigation Canal diverted from 350 to 400 cfs midway between Bend and Lava Island Falls; the Arnold Canal diverted from 60 to 70 cfs.
- o 3 falls were not serious barriers.

Section 4 - Benham Falls to Pringle Falls (RM 187.5 to 216)

- o No obstructions or diversions.
- o No salmon present when surveyed.

Section 5 - Pringle Falls Source (RM 216 to 245)

- o Inaccessible to salmon because of the obstructions above Squaw Creek as well as the impassable Wickiup Dam (1913), 90 feet high, about 8 miles above Pringle Falls.

- o Crane Prairie Dam (1940), 35 feet high, 12 miles above Wickiup Dam,

Buck Hollow Creek (1942 Survey)

- o Enters Deschutes River at RM 44.
- o Dry in late summer.
- o No salmon present when surveyed.

White River (1942 Survey)

- o Enters Deschutes River at RM 47.5 and is 50 miles long.
- o Blocked by a series of 2 falls totaling 180 feet in height about RM 2.5
- o Falls surmounted by a power dam 6 feet high used to divert water to the Pacific Power and Light Company plant in the gorge below falls.
- o Chinook salmon present when surveyed.

Bakeoven Creek, Wapinitia Creek and Nena Creek (1942 Survey)

- o Became completely dry in summer; no salmon present when surveyed.

Warm Springs River (1942 Survey)

- o Enters Deschutes River about 30 miles above Maupin, Oregon, and is 48 miles long.
- o 2 small dams interfered with the upstream migration of fish; flashboard-type structure, 5.5 feet high, at RM 8 with a poor, loose rock spillway that made the structure impassable during low water; log-crib dam 3 feet high located a short distance above the road bridge at HeHe.
- o Greater part of the chinook salmon run entering Warm Springs River proceeded to Beaver Creek to spawn; creek had no natural or artificial obstructions and none of its water was diverted.
- o Indians caught from 50 to 100 chinook salmon from the river each year at the time of the survey.
- o Only dam on Mill Creek was a single log, 3 feet in diameter, and was easily passable. This dam diverted from 10 to 15 cfs into a large unscreened irrigation ditch.
- o Falls on Mills Creek blocking the ascent of fish to Trout Lake was blasted out in 1939.

Trout Creek (1942 Survey)

- o Enters Deschutes River 3 miles above Warm Springs River and is 40 miles long.
- o In late summer the lower stream section is sometimes dry.

- o 12 diversions from the stream in the Willowdale Valley and an equal number in the Ashwood Valley; small, temporary dams were placed across the stream at each of the points of diversion. None of these dams were barriers to fish, but none of the diversions were screened.
- o Only permanent dam on the stream was the Hiline Canal Dam 10 miles above Willowdale; this flashboard type structure, 6 feet high, was a barrier when the flashboards were in place.
- o Large runs of steelhead trout entered this stream 35 years before survey, but none were present when surveyed.
- o Trout Creek had no salmon present when surveyed.

Shitike Creek (1942 Survey)

- o Enters Deschutes River 8 miles above Trout Creek and is 33 miles long.
- o 60-foot falls blocked the stream at RM 10.
- o A few low passable dams and small unscreened irrigation diversions occurred in the vicinity of the Indian Agency.

Metolius River (1942 Survey)

- o Enters Deschutes River 13 miles above Shitike Creek and is 40 miles long.
- o No natural obstructions in the stream.
- o Dams of ranches in the lower section, as well as the few small dams in the upper area, were all passable to fish.
- o Small amounts of water were diverted by wing dams, paddle wheels, and pumps into unscreened ditches and pipelines for small-scale irrigation, stock watering, and domestic use.
- o Sockeye salmon formerly ascended to Suttle Lake. Chinook salmon spawned in the upper section, while steelhead trout used suitable areas all along the stream. Runs in 1940 were the largest in the previous 20 years.
- o Chinook and steelhead present when surveyed.

- o Jack Creek was blocked by 2 dams, the upper appeared to be impassable at all times; a log and flash board structure dam about 3 feet high at RM 0.5 was impassable at the time of examination; second dam at RM 2.5 was log-crib construction with a center flash board section about 3 feet high and a wooden downstream apron about 15 feet long. Diversions for both dams were unscreened.
- o 2 small dams on Lake Creek were impassable except when the flash board was out.
- o Concrete power dam, 4 feet high, on Lake Creek may have been responsible for the disappearance of the sockeye salmon run. The spillway had a 15-inch flashboard that was impassable except under very favorable circumstances. The 3-step fishway was too small for large fish and was blocked at the upper end by a stationary screen. Two rotary screens prevented the escapement of fish from the lake to the creek. The diversion to the small power plan was screened.

Crooked River (1942 Survey)

- o Enters Deschutes River 3.5 miles northwest of Culver, Oregon, and is 115 miles long.
- o 5 large diversions near Prineville, Oregon, and numerous small ones in the 80-mile section between Prineville and the headwater streams.
- o None of the dams were passable during low water stages in connection with these diversions.
- o Pacific Power and Light Company power plant at RM 2.5.
- o Runs of chinook salmon and steelhead trout formerly entered the stream, but steelhead present when surveyed.
- o On McKay Creek there were 5 small diversions in the upper part of the stream and most of the water near the mouth was diverted into the Ochoco Irrigation Canal during the summer.
- o Ochoco Creek was blocked by a dam 110 feet high 6 miles above Prineville; at times this lower section was completely dry.
- o North Fork was blocked at RM 12 by a falls 20 to 25 feet high.
- o In Beaver Creek, chinook and steelhead present when surveyed.

Squaw Creek (1942 Survey)

- o Enters Deschutes River 4 miles below Steelhead Falls.
- o 10 dams and diversions on this creek above Sisters, Oregon. In the summer, diversions took the entire stream flow, leaving a 3-mile section near Sisters dry. None of the dams had spillways, and all were barriers during low water; none of the diversions were screened.
- o No salmon or steelhead present when surveyed.

John Day River (1942, 1944 Surveys)

- o Enters Columbia River 33 miles above The Dalles, Oregon, and is 227 miles long.
- o A large gold dredge was operating on the river about 21 miles below Prairie City near Mt. Vernon and was moving slowly downstream in 1942. It had torn up 10 miles of river bottom above this point, where the stream bed was transformed into numerous conical mounds of gravel tailings 8 to 12 feet high. Vast areas were rendered unsuitable for salmon spawning.
- o All gold mining activities in the John Day River system were suspended during the war; by 1944 normal stream action had cleaned silted areas, making them again suitable for spawning.
- o Dredging proceeded intermittently for about 25 years and contributed to the depletion of the salmon runs in the river.
- o Only permanent barrier was the West Coast Power and Light Company dam 3 miles above Prairie City; 6 feet high, had no fishway, and was a barrier to upstream migration except perhaps for a few steelhead. Approximately 60 cfs was diverted at this point for the generation of electric power. The diversion was not screened.
- o Between Prairie City and Dayville were 11 major diversions and numerous small ones. None of the diversions were provided with screens at the time of the survey. All of the dams in connection with these diversions were of temporary construction; while these structures were in place they were barriers to both upstream and downstream migrants.
- o Large runs of salmon and steelhead 25 or 30 years ago (1920 to 1925); 1944 steelhead run was heaviest in a decade.

North Fork (1942, 1944 Surveys)

- o Enters John Day River at Kimerley, Oregon, and is 84 miles long.