APPENDICES

APPENDIX A

HISTORY OF NICOLAI-WICKIUP WATERSHED

Prepared by Jim Bergeron and the Nicolai-Wickiup Watershed Council

Appendix A

History of the Nicolai-Wickiup Watershed

Geology

The geological form of the Nicolai-Wickiup watershed came about as a result of the Columbia River floods that occurred as the last glacier was melting. Repeated damming of the upper river by the action of glaciers and floods as the dams were destroyed scoured out the present channel and formed the valley. The watershed is made up of the small streams that flow down that south side slope into the present Columbia. The abundant rainfall led to a mature drainage system with well cut river valleys throughout the slope with few wetlands.

Indians

The Native Americans have lived along the river for at least 10,000 years. The population was denser than most hunter-gatherer populations due to the abundance of salmon. Salmon allowed a supply of food to be relatively easily gathered and stored that carried the tribes throughout periods when food was scarce.

Since the main food source was the river little modification was done to the land, unlike other places where clearing of the ground was often done through annual burning.

The villages were mostly along the big river and the streams were used as special fishing places where salmon were concentrated at falls and rapids. Fish traps probably were used in many of the streams.

The forests were made up of large old growth Douglas Fir with a mix of other trees in certain places. Spruce occurred in the lowlands and in tidal areas. Cedar occupied rocky areas. Alder came in where fires had burned and along the streams.

Settlement

European settlement began with the occupation of Astoria in 1811. The first settlers took land claims in the watershed during the 1840s. Henry Hunt's sawmill on Hunt creek dates from 1844. The logs were taken from the hills surrounding the millsite with oxen[Cumtux Vol. 2, no.3 Page 9]. George Hunts claim was dated November 18, 1848. The first land claims were probably

taken up for the timber. Early logging was by hand, rolling the logs to the Columbia or the creeks and floating them to the mills. In 1880 about ten million board feet of timber was taken out of the Knappa area [Daily Astorian article undated].

In 1880 the Riddle farm was established a few miles south of Svensen. Mrs. Riddle kept a daily diary for many years thereafter. She reported on October 22, 1893 her family took 51 dog salmon, probably from Bear Creek, and used them for fertilizer on the garden. The next evening they took 125 more. By the time they quit she had buried 306 salmon for fertilizer. Loggers from a nearby camp began logging their claim in 1885. She reported a flood in Bear Creek in 1887 that closed the trail to Svensen. Another flood in 1890 helped to move logs caught by low water. These logs were moved on the small streams by the use of splash dams in some streams but apparently not in the Knappa-Svensen area. A Cumtux article reports that in 1892 there were a series of small log drives that started 12 miles upstream on Big Creek. Such drives were held in following years as well. In 1890 the Oregon Supreme Court ruled that portions of streams above mean high tide were not navigable [Cumtux vol.2 no. 3, page10-11].

In 1901 Masten's logging camp was constructed near Mary's Creek. In 1904 a fire south of Svensen burned over much of the area.

Logging

Oxen and horses soon joined the handloggers and were the height of technology until just before the turn of the century. Then steam power wasintroduced into logging. The first technique was ground logging with the steam donkey engines pulling logs along the surface where they often caught against stumps and other snags [Undated Astoria Budget article]. The first steam donkey used in the county was constructed by a Mr. Chitwood in 1889 from a ships steam winch. He used it in the Youngs River area [Cumtux vol. 2 no. 2, page 11]. As engines of greater power were developed high lead logging began. This technique utilized limbed standing trees, spar trees, as sources from which to pull logs. Since the logs were pulled through the air much of the time they had less tendency to be snagged. However this type of logging required an area completely clear for the cable so all trees, even those with no economic value, had to be cut [Astorian Budget undated]. The trees along streams were removed and logs were pulled across them. The trenches running up and downhill due to the skidding encouraged erosion. Logging debris often ended up in the stream where it created very large jams, sometimes completely blocking salmon runs.

Railroads

With the steam power came the logging railroads. Soon almost every stream valley had a railroad running from the Columbia River to its headwaters and sometimes across the hills to other watersheds[1933 Clatsop County map]. Mary Riddle mentions a railroad near Svensen in 1908[Cumtux, Vol.4, page 30]. The combination of steam donkeys and railroads allowed the logging of areas far removed from the Columbia River. Culverts and punchon under the rail bed often blocked fish passage into tributaries.

A survey in 1913 found 16 billion board feet of timber in Clatsop County [Astorian Budget undated]. In those days much of the timber of species other than fir was not counted as it had little value. If later techniques had been used it is thought that the amount would have been at least 25 billion board feet. The assessed valuation of all timber in the county in 1920 was 18 million dollars. By 1948 it was 1.3 million. The value had fallen due to the removal of old growth and the lowering of the value of the standing timber in general. The logged land was deemed to have no value. The only regeneration was due to natural seeding and that was held back by repeated fires. The land soon became tax delinquent and much was repossessed by the county. By 1932 the county owned slightly more than 100,000 acres. The depression had contributed to the low land values [Astorian Budget undated].

A bright spot was the actions of Crown Zellerback, a logging company with the foresight to develop “perpetual forestry” at the turn of the century. That company bought up much of the logged lands and replanted.

In 1937 a county committee was set up to decide what should be done with the logged over lands. The prevailing idea was to use them for grazing. Work was begun with the Oregon State University Experimental Farm to find the best grasses to plant and to evaluate various farming techniques. After years of study it was found that the lands were best used to grow trees.

The late 1930s brought the Oregon State Forestry into the picture and an agreement was made for the state to manage the lands for timber with a sharing of the profits with various county-taxing districts.

Fisheries

In 1938 Bonneville Dam was completed and a count could be taken of many fish at the fish ladders. Statistics were kept and published for all fish that run into the river. The numbers of Coho that entered the river in 1938 were estimated at 300,000. They declined fairly regularly to about 50,000 in 1959 [Status Report Columbia River Fish Runs and Fisheries 1938-1997, June 1997]. With the introduction of the Oregon Moist Pellet in the early 60s the hatchery system became more successful and Coho numbers entering the river rose to an average of about 650,000 in the late 60s and early 70s [Duncan Law, personal communication]. They then began a decline probably due to increasing fishing pressure in the ocean to below 400,000 in the early eighties. After the early 90s numbers again rose due to cutbacks of fishing in the ocean.

Chum numbers estimated to enter the Columbia River varied from 150,000 to over 400,000 in the early 40s then declined to very low numbers by 1960. They have remained at low numbers.

With the successes of the hatchery system for Cohoes in the early 60s ocean fisheries were managed to take as many fish as possible without harming wild stocks. The Columbia River fisheries, both sport and commercial, were imposed on top of the ocean take and at times exceeded 90% of the adult stock. Such a take could be sustained by hatchery runs but drove wild fish to extinction in the lower Columbia. Only late running wild stocks continue to exist in isolated pockets within the Columbia and its tributaries.

Big Creek

Big Creek was called Tallasqua by the local Indians and continued to be called that by settlers until about the 1940s when the present name was accepted. It flows into the Columbia about 15 miles above Astoria. The main stream is about 11.5 miles long and has a drainage area of 37 square miles. The first 1\2 mile above the Columbia is a spruce tidal wetland. The next two and one half miles pass through flat lowland which in recent years has been pastureland being replaced by housing developments. Upriver from the hatchery, which is located at the three-mile mark, is the canyon where the river drops rapidly and is swift and rocky. Above the first bridge the canyon widens and the stream slows somewhat and has more riffles and pools. A number of tributaries enter the stream from the West Side. The first is Little Creek, which enters near the mouth and flows along the west side of the lower valley paralleling the main stream. Mill Creek,

which serves as a water source for the hatchery enters near there. The others, Pigpen, Mud, Coon and Elk creek, enter above the main canyon.

Logging of the Big Creek area began shortly after 1850 when settlers took land claims. The cut reported in the 1880 census was 10 million board feet from the Knappa area. Big Creek was used to float logs with a twelve-mile drive reported in 1882, although they apparently occurred in other years as well. (Cumtux, vol. 2, No. 3)

In 1925 seventeen and a half acres about 3 miles upstream from the Columbia were purchased by L. W. Hickey who was then the resident manager of the Oregon Fish Commission's Klatskanine hatchery. He later added 1 1\2 acres purchased from the Big Creek Logging Company. He built and operated a trout hatchery at the site[Alder Patch newslertter, Sept. 1980].

In 1938 the Oregon Fish Commission leased the property from Hickey and Clifford Ritter and family moved to the site. He searched the river for a better hatchery site but settled on that area. The hatchery was constructed during 1939 and in 1940 the land purchased by the Columbia River Packers association with the understanding it would be purchased by the OFC when they had the money. They completed the transaction in 1941. Many local people helped with the construction of the hatchery and other facilities which continued over many [Alder Patch newsletter, Sept. 1980].

There were occasional reports of fish runs, surveys, and other operations done on the creek. An August 1949 report by Paul Zimmer, fish management biologist, mentions a huge logjam about 1\2 mile above the fish hatchery that stopped salmon. He saw a number of spring salmon in the deep hole below the jam. He reported that the upper stream had many other jams and that the loggers had pushed logs and debris into the streambed. In some cases the logjams were so big that the stream had been diverted and in other cases the water running over the jams created waterfalls impassable to fish. A culvert at Pigpen with a 4-foot fall was a barrier to fish entering that stream[Unpublished Oregon Fish Commission Reports].

A 1950 report mentions Coho continuing to pass the hatchery to the upper creek in January. There was a fish ladder at the water supply dam. In 1951 much work was done on the creek by hatchery personal to insure the passage of fish into the Coon and Mud Creeks At that time Coho, Chinook, steelhead, cutthroat and chum were reported to run in the creek with chum spawning in Mill creek. The 1950 report on stream clearance mentions logs left in the creek for pool formation and hiding places for fish. A bulldozer was used for stream clearance. When

finished the project had cleared 8 miles of the main stream and 2.0, 1.6, 2.0, and 2.0 miles respectively of Pigpen, Mud, Coon, and Elk Creeks for a total of 17 miles. The salmon had not been able to go much above the intake dam before that.

In 1952 plans were announced to expand the hatchery and develop a new water supply. There were also problems that year with the construction of the new highway 30. Gravel was dredged from the creek for the roadbed and unscreened pumps were used to withdraw water.

During that year surveys suggested repairs of fish passage facilities at the hatchery rack and diversion dam. There was also concern expressed about an area in the main Big Creek channel between Coon and Elk Creek called the chute that was impassable to fish at high flows.

The St. Helens Pulp and Paper Company finished logging in the upper valley in 1952. They had logged down to the stream banks and left a lot of debris in the stream [unpublished Oregon Fish Commission Reports].

Surveys of spawners during the 50s counted Coho and Chum in most of the late fall trips along tributaries such as PigPen and Mud creeks. Chum spawners were allowed into Mill Creek.

In 1977 timber was cut around the hatchery to let in the light. A few years before that the creek had been declared a Wild Stream eliminating the transplanting of fish above the hatchery. Anadramous fish were stopped at the hatchery. When that was done the hatchery had fewer problems with fish diseases.

Gnat Creek

Gnat Creek is about twenty miles above Astoria. The creek is about nine miles long and has a drainage of 22 square miles. The stream has its source in large springs on the hills sloping toward the Columbia River. It has a reputation for stability without flooding. (1953 Reconnaissance Report for Gnat creek Weir). The creek flows into the Columbia through Blind Slough. The mile upstream of Blind Slough is a tidal swamp. For about three miles above tidewater the stream, paralleling highway 30, has spawning gravel and rearing pools. There is an 8 to 10 foot cascade at the upper limit of this segment. Major tributaries of Gnat Creek include Supply Creek, Rock Creek, And Big Noise below the highway bridge and Manary Creek above.

By 1933 a railroad had been constructed from Blind Slough up the creek valley to haul logs.

A 1952 survey of the system reported Chinook, Silver, and Chum Salmon and Steelhead and Cutthroat trout spawning runs into the creek. In that same year a survey of the system was

done to locate a site for a fish weir to be used in a study of Fall Chinook. Gnat Creek was felt to be a typical lower Columbia River Chinook spawning stream. One of the main reasons for the weir was to study natural spawning and the success of hatchery fingerling releases. During the first year 75 Fall Chinook were tagged and a peak of 143 Silvers were counted passing the weir during one day. The weir was located at the confluence of Gnat and Rock Creeks in 1955. It was made of wood with a rock fill in the center of the stream.

The stream had to be cleared of debris before the weir could be constructed. In 1953 Al Washburn and crew started clearing Gnat Creek under a contract with the forest service. They were to remove some mature green timber and all dead timber, standing or down, within 200 feet of the creek. They were to clear out larger log jams and remove all debris 14 inches and over in diameter and twelve feet or more in length from the stream bed and deposit it above the high water level. Recommendations were made to clear most areas below the highway as well.

A 1958 fish survey reported salmon 400 yards above the mouth of Manary creek. The upper limit for fish passage was a dam formed by a cave in of an old bridge about 2.1 miles above the highway. Salmon were observed near the shingle mill and all the way down to the highway bridge.

About 1985 IHN infected the hatchery and wild spawners in the creek. The fish were poisoned with Rotenone as a preventative measure. An overdose killed fish as far downstream as Blind Slough. Shortly thereafter the cascades above the hatchery were altered by blasting the lower section to increase the steepness and create a block to Anadramous passage.

Bear Creek

Bear Creek originates about eight miles south of the town of Svensen and flows in a northerly direction. It enters Svensen Slough inside of Svensen Island. Tidewater extends about 3\4 mile up the stream from the Columbia. At about mile 1.5 the stream divides into Little Bear flowing from the west and Big Bear coming from a more easterly direction. The water diversion dam of the city of Astoria is about three miles above the split and has been a total blockage to fish since 1890. There is a 4 1\2 foot 60 degree falls about one and one half miles below the water supply dam. The falls probably blocks fish at low flows but allows passage at high flows. A 1951 survey found small Coho at the foot of the dam.

The tidewater area and main stem of Bear Creek pass through a broad flat valley with a moderate fall. There are a series of riffles and pools. There are no tributaries in that area. The

Big Bear fork passes through farmland in its first 3\4 mile then enters forest land, owned and managed by a large timber company in the upper reaches. The valley below the forest land and some above owned by individuals is becoming more urbanized. Little Bear flows through small farms and individual owner forest land for about one mile then through land managed by a big timber operator.

The lower parts of Bear Creek were settled in the 1850s. Mary Riddle reports that her family settled two miles south of Svensen in 1880. (Cumtux Vol. 4, No. 4) She describes a flood near their property in Bear Creek in January of 1887. On October 22, 1893 her family took 51 Chum Salmon, probably from Bear Creek, and returned the next night and took 125 more. A forest fore burned much of the area near their home in 1884 and another even bigger occurred in 1910. By 1933 a railroad was in operation with a spur running along Big Bear Creek[1933 Clatsop County map].

Fish surveys done in the 1950s reported both Chums and Silvers in the stream. Mrs. Levi Huhta stated that many salmon come up the creek depending on the volume of water. Mrs. J. R. Boyle who lived one mile up Little Bear saw Chum Salmon come upstream every year but did not know how far they went.

A December 17, 1951 survey found 13 dead and 4 live Silvers in the first half mile below the dam. Nineteen live and sixteen dead Silvers and two dead Chums were seen between Little Bear and the Svensen road crossing. Most of these surveys reported beaver dams across the creek.

Ferris Creek

Ferris Creek flows into Svensen Slough about 1\2 mile upriver from the mouth of Bear Creek. Highway 30 crosses the creek about 1\2 mile above the Columbia and the old Highway crosses about 1\4 mile above that. The area downstream of Old Highway 30 is a grassy wetland that floods at very high tides. The open grassy areas along the creek continue about 1\4 mile above the highway. Hillcrest Loop Road crosses the stream about .8 of a mile above the Old Highway Bridge.

Little Ferris creek enters the main stream about .4 mile above the Old Highway Bridge. This tributary is crossed by Conroy road 1\4 mile above Ferris Creek. The flow of the main stream was measured at 8 C.F.S. on December 15, 1951 at .3 mile above the Old Highway. The

flow was 2.5 C.F.S. at the Hillcrest crossing. Gravel occurred in the main stem from about .1 mile above the Old Highway and in Little Ferris. The survey reported 14 Coho and 12 Trout. A 1954 survey found 10 Coho and 1 Chum in the main stream and 6 Coho in Little Ferris. A 1954 survey noted 5 Coho in Ferris creek and 1 in Little Ferris. A Mr. Erkkila stated that the stream was fairly alive with salmon during the 1940s but numbers had decreased in the past several years.

Mary's Creek

Mary's Creek flows into Svensen Slough 100 yards west of the mouth of Bear Creek south of the downstream end of Svensen Island. The Old Highway 30 crosses at about 1\2 mile from the river. The tide penetrates about another two hundred yards upriver from the Old Highway Bridge. Downstream of the bridge the channel meanders with sharp turns through a tidal swamp.

The stream source is springs along the sandstone ridge that lies between that stream and the Walooski. The ridge carries the pipeline road. Since there is no rock source the bed of the stream consists of fine sand and mud with wood debris. After a steep fall near the ridge the valley has a gradual and shallow slope and a flat bottom. The stream meanders back and forth and is bordered with many grass-covered wetlands. There are a few places where the valley narrows greatly. Beaver dams are usually numerous but have been scarce during the 1990s.

A November 24, 1954 survey of 1\3 mile above the Old Highway Bridge recorded 64 Chum salmon. Landowners observed a very few Coho during the 1980's and none during the 1990's. A hatch box was operated producing Coho in about 1989.

Fertile Valley Creek or Hall's Creek

Fertile Valley Creek also known as Hall's Creek flows into the Columbia River just south of Knappa Docks. There are no roads or trails that follow the stream. Highway 30 crosses the stream two miles south of the Columbia. A dam about 100 yards north of the highway has blocked fish since at least 1951. The Game Commission at one time apparently approved the dam but if any fish passage was constructed it has been washed out when the water carved a passage west of the structure.

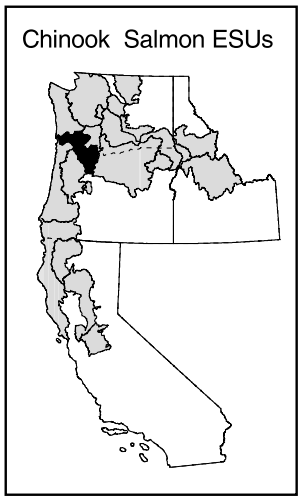
A December 16, 1951 survey reported pea size gravel in the first 50 yards below the dam but mud, silt, and fine sand in the remainder of the creek downriver. Better gravel occurred

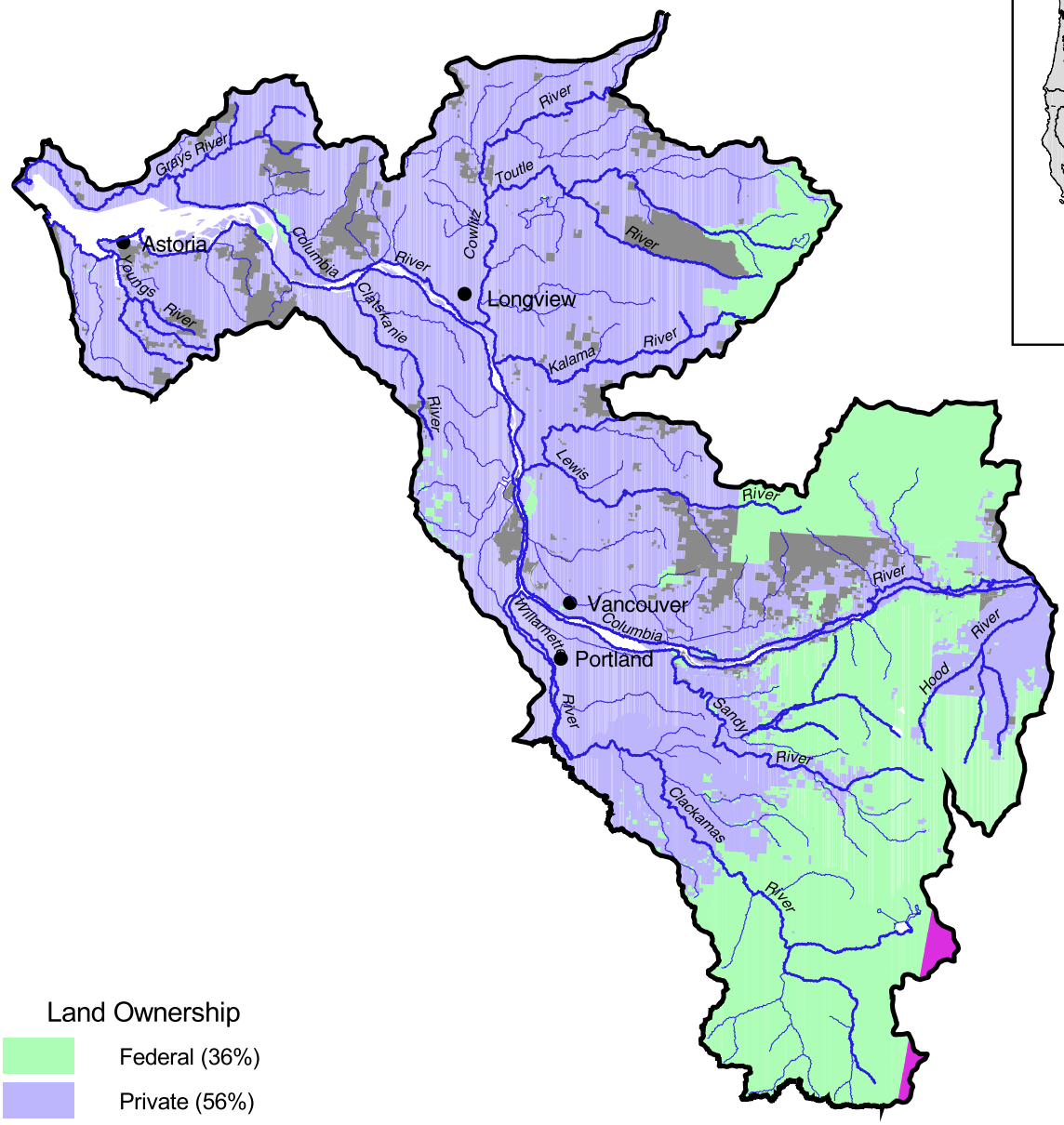
above the highway. Three dead Coho and one dead 17 1\2 inch Cutthroat were observed below the dam. River flow was 3 C.F.S. The stream was considered to be of sleight value to salmonids but might be more important if the dam were made passable.

APPENDIX B

SALMONID ESUs

LOWER COLUMBIA RIVER
CHINOOK SALMON ESU





Land Ownership

- Federal (36%)
- Private (56%)
- State/Local (7%)
- Tribal (1%)

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Scale:

10 0 10 20 30 Miles

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MAP DATE: 3/9/99

CREATED BY D.A.
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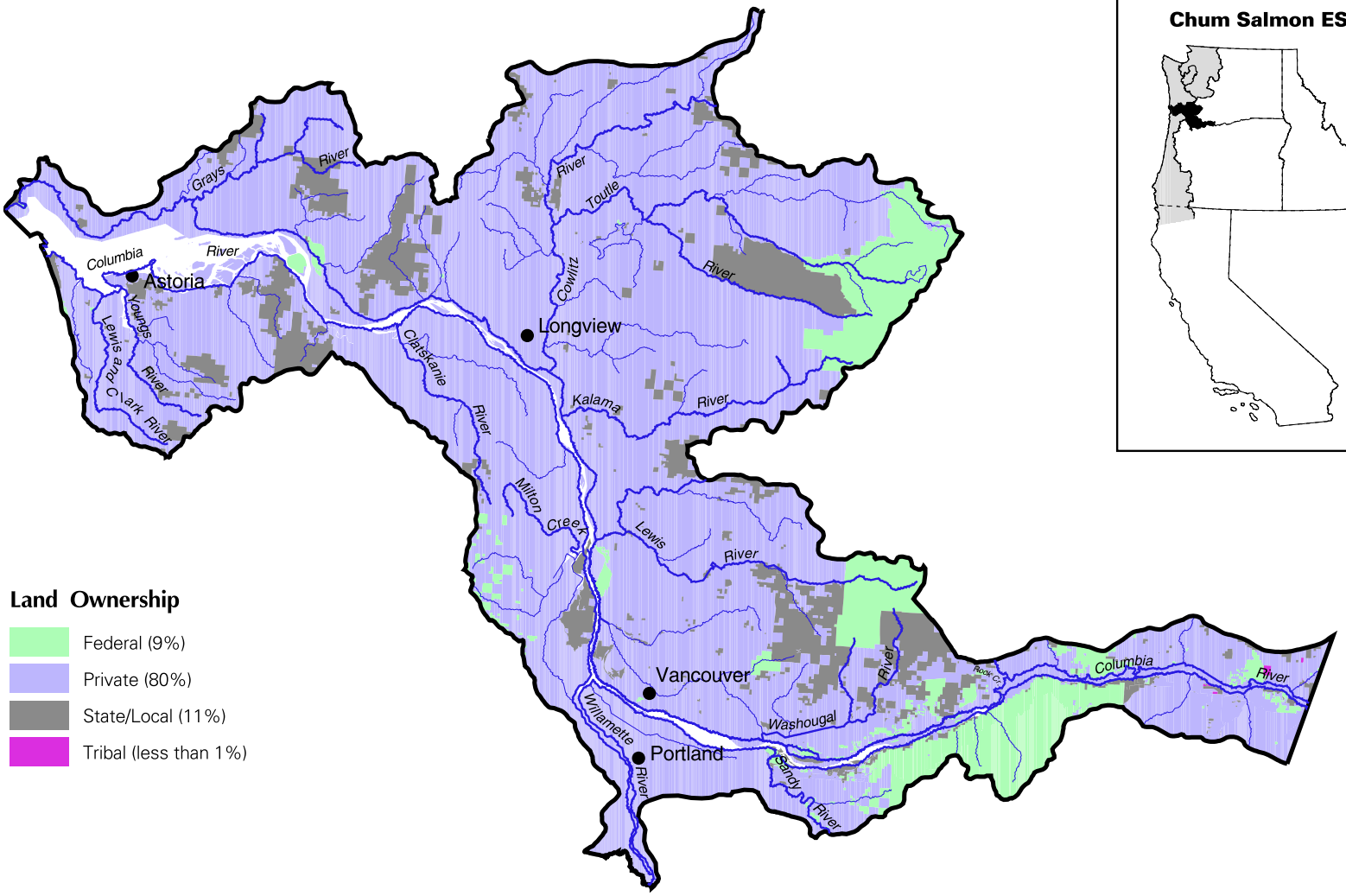
Note: Map is for general reference only.

COLUMBIA RIVER CHUM SALMON ESU



Land Ownership

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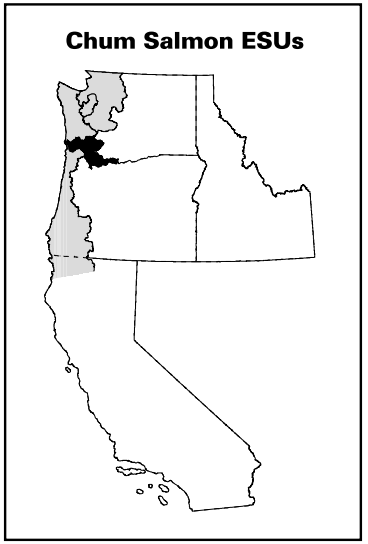
- Private (80%)
- State/Local (11%)
- Tribal (less than 1%)



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Scale:

5 0 5 10 15 Miles

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MAP DATE 2/23/99

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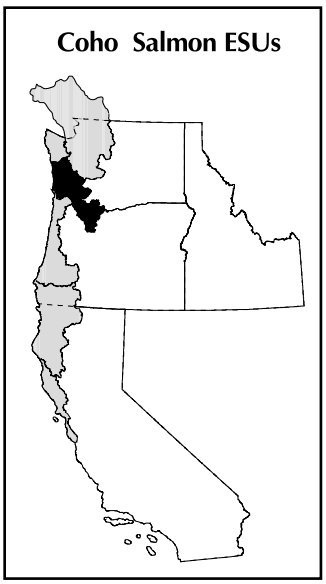
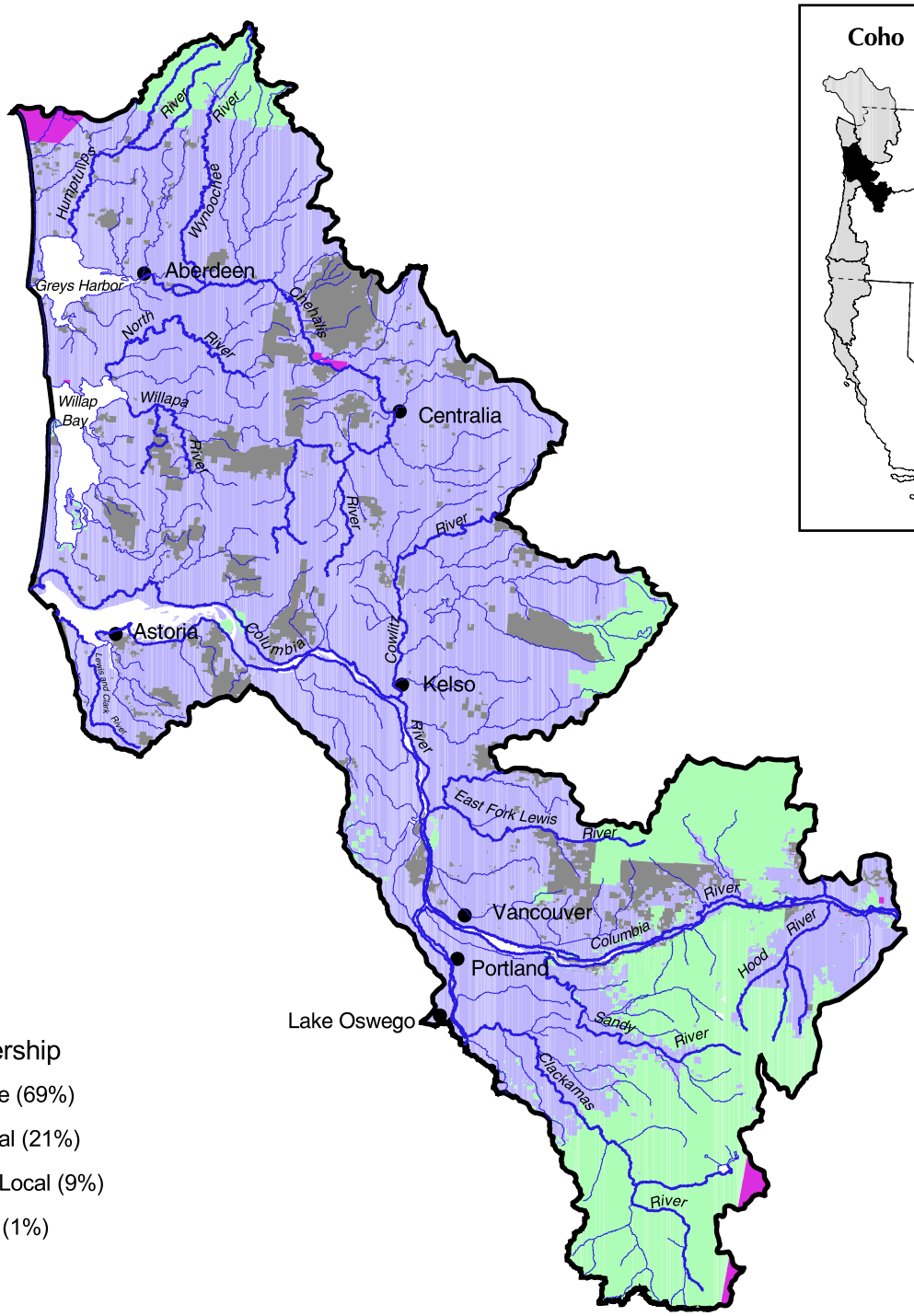
Note: Map is for general reference only.

SOUTHWEST WASHINGTON / LOWER COLUMBIA RIVER COHO SALMON ESU





Land Ownership

- Private (69%)
- Federal (21%)
- State/Local (9%)
- Tribal (1%)

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Scale:
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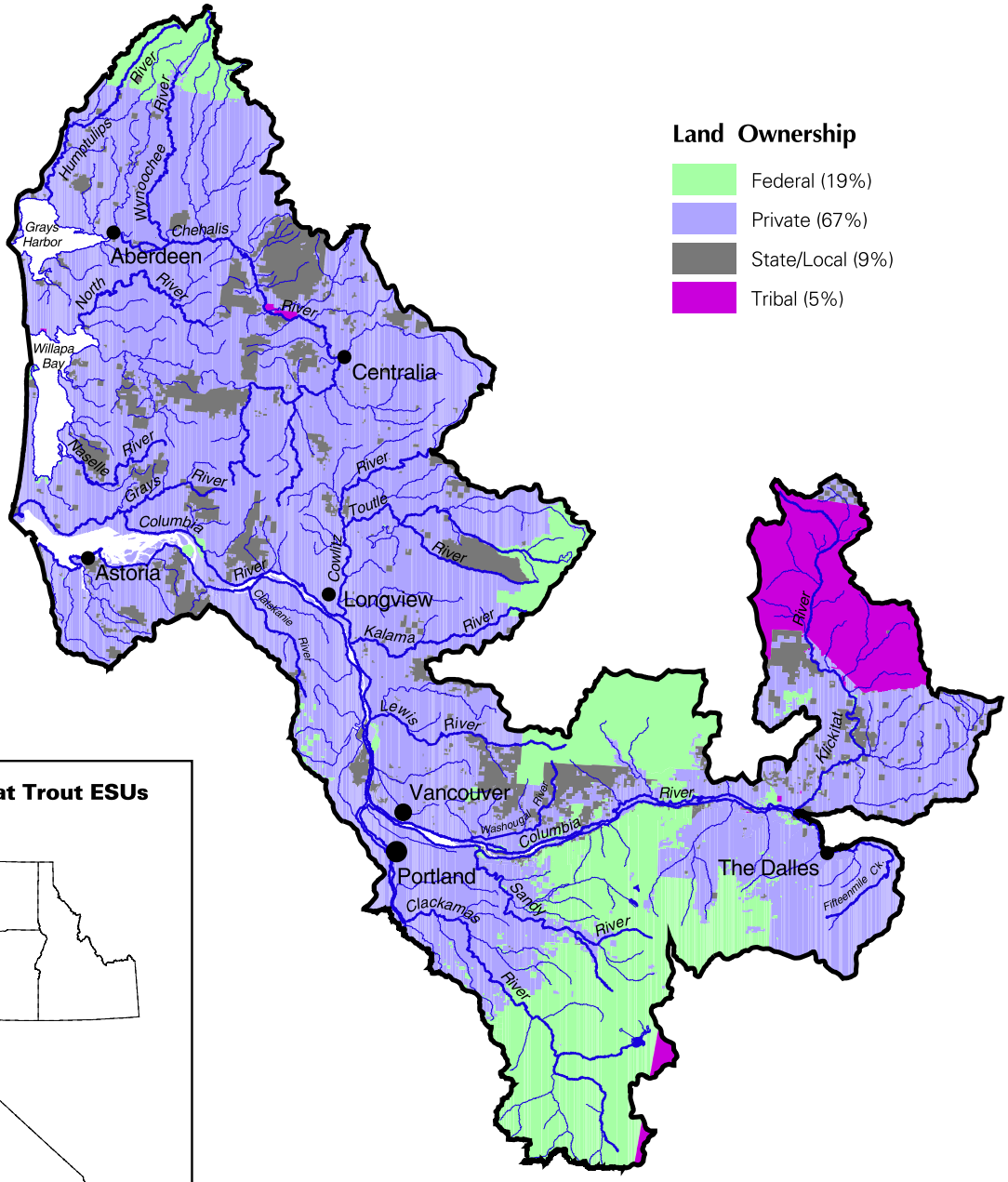
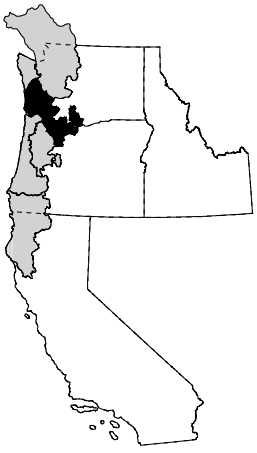
Note: Map is for general reference only.

SOUTHWESTERN WASHINGTON/COLUMBIA RIVER CUTTHROAT TROUT ESU



Cutthroat Trout ESUs



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Scale:

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MAP DATE: 2/24/99

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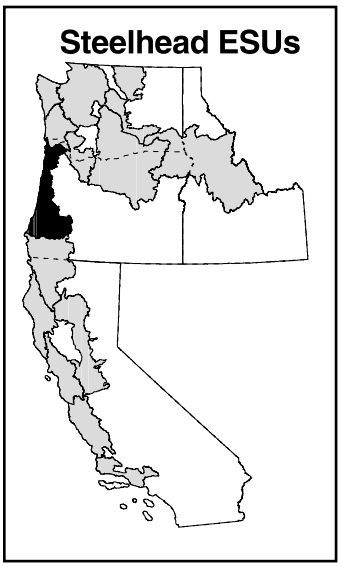
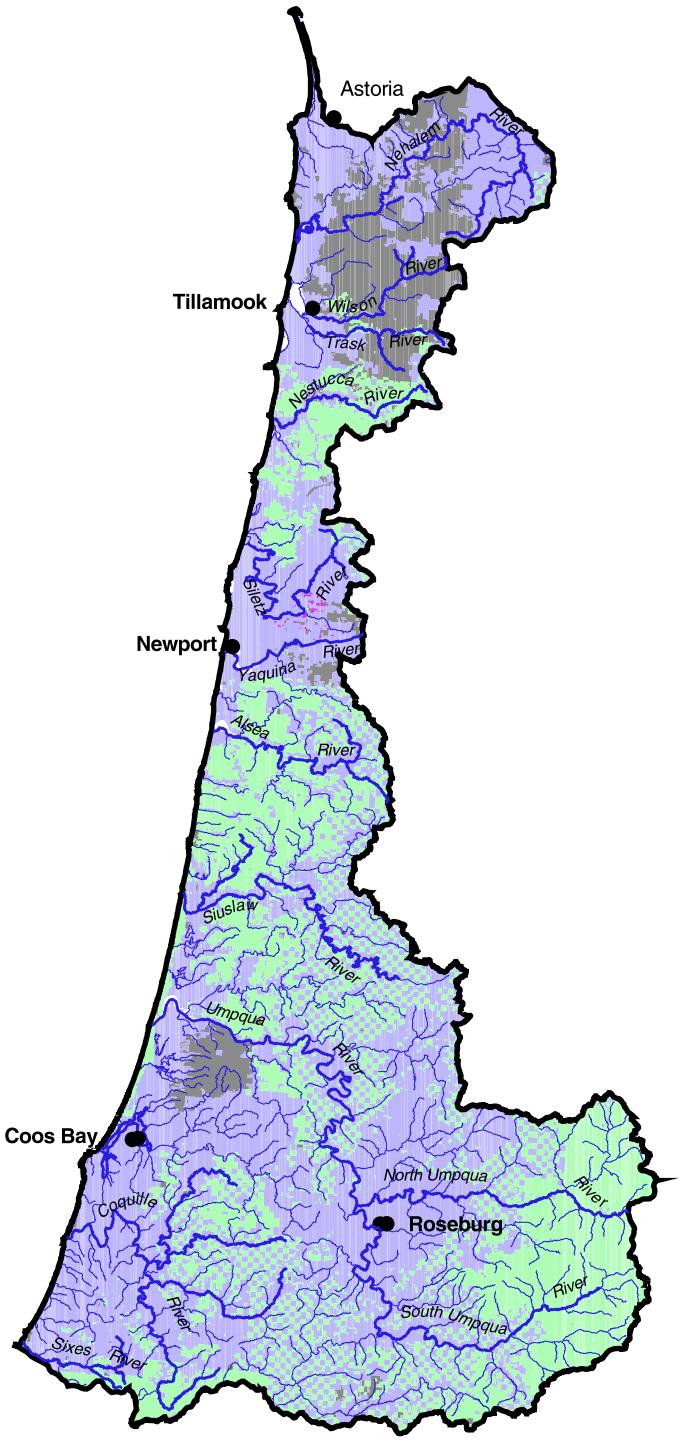
Note: Map is for general reference only.

OREGON COAST STEELHEAD ESU





Land Ownership

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- State/Local (8%)
- Tribal (less than 1%)

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SCALE:
10 0 10 20 Miles
10 0 10 20 Kilometers

MAP DATE2/17/99

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