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LAKE WASHINGTON BASIN
Water Resource Inventory Area 08

The drainage system of the Lake Washington basin is comprised of all waters funneling into Lake Washington and hence through Lake Union and the Salmon Bay waterway to Puget Sound at Shilshole Bay. These stream areas include principally the Cedar River system, the Sammamish River system, and eight smaller streams entering Lake Washington independent of either the Cedar or Sammamish rivers. These smaller independent streams include Lyon, McAleer, Thornton, Juanita, Mercer Slough, Coal, May, and one unnamed creek. The Lake Washington drainage basin contains 470 identified streams providing approximately 700 linear miles of rivers, streams, and tributaries plus independent streams. Virtually all of the basin's drainage areas provide suitable spawning and rearing characteristics for the many anadromous and resident fishes common to the area. Also, this drainage has a significant influence on the estuarine and marine ecology near its confluence with Puget Sound.

To clearly describe the watersheds contained within the Lake Washington basin it is necessary to categorize them into three systems; the Cedar, the Sammamish, and the independent Lake Washington drainages.

The Cedar River originates in relatively high mountain country of the Cascade Range near Stampede Pass. It flows generally west-northwest for nearly 50 miles to its confluence with the southern end of Lake Washington at Renton. The upper ten miles of this stream cut through narrow valleyed, steep sloped, and heavily forested mountain terrain. Here it is typically a mountain-type stream containing numerous rapid and cascade areas and few pool-riffle sections. Below this, the next 9 miles contain two man-made storage reservoirs, Chester Morse and Cedar Lake, whose waters spread over the moderately broad valley floor. Below Cedar Lake, downstream to the Seattle City Water diversion dam at about river mile 21 near Landsburg (a distance of 14 miles), the Cedar courses through a relatively shallow and broad valley, densely forested with mixed conifer and deciduous growth. This section contains numerous gentle gradient stretches with many pool-riffle areas, and is considered highly suitable for fish spawning and rearing. Below the diversion dam, which presents a total barrier to upriver migration, the Cedar River flows some five miles to Maple Valley through a somewhat narrow, moderately steep sloped, densely forested valley interspersed with summer home developments. This stretch presents only intermittent areas having pool-riffle character, with numerous semi-rapid and large boulder sections. Below the town of Maple Valley the lower thirteen miles of river meander over a shallow, relatively broad valley containing increasing summer home and urbanization developments. The lower three miles of stream move through an intensely industrialized area. Below Maple Valley the Cedar maintains predominantly a pool-riffle character, providing excellent spawning and rearing conditions for both anadromous and resident fishes. Principal Cedar River tributaries contributing significant flow and accessibility for anadromous fish include Rock and Downs creeks, one unnamed creek, and possibly Peterson Creek. Total accessible stream area provided by this system is approximately 28 linear miles.

PHOTO 08-1. The ship canal provides anadromous fish access between Puget Sound and Lake Washington tributaries.

The Sammamish River complex includes Lake Sammamish and its principal tributaries, Issaquah, Tibbetts, and Laughing Jacobs creeks; and the Sammamish River and its tributaries, Big Bear, Bear, North, and Swamp creeks. Of the Lake Sammamish tributaries, Issaquah Creek provides the greatest amount of pool-riffle stream area which is highly suitable for fish spawning and rearing. This stream heads in the moderately steep, heavily forested foothill slopes near Hobart and meanders generally north some twelve miles to Lake Sammamish. Along its course, cleared farm lands and deciduous thickets intermittently border the stream along with increasing urban development. The other Lake Sammamish tributaries have similar characteristics; however, their accessible lengths are much shorter. The Sammamish River runs north and west from the north end of Lake Sammamish twelve miles to the north end of Lake Washington exhibiting predominant characteristics of sluggish flow and heavy bottom siltation. The surrounding terrain consists mainly of cleared, level farm land with an increasing number of urbanization projects. Some rearing potential exists along this stretch; however, the river's most useful purpose is for anadromous fish transportation water. Each of the tributary streams entering the Sammamish River flows over mostly gentle gradients and contains numerous pool-riffle sections of high quality for fish utilization. The terrain surrounding these streams contains intermittent cleared farm lands, occasional dense deciduous thickets, and increasing urbanization. Total accessible stream length provided by the Sammamish River drainage complex is approximately 122 linear miles.

The smaller basin streams draining into Lake Washington have mostly moderate gradients and contain intermittent sections of good quality fish production area. However, the majority of these streams are located in areas already heavily populated or experiencing rapid urbanization.

This is increasingly limiting these streams' total fish production capacity. Total accessible stream area provided by these independent drainages is approximately 20 linear miles.

Inventory and Distribution

Three of the Pacific salmon utilize the aforementioned drainages within the Lake Washington basin. These include chinook, coho, and sockeye salmon. Anadromous game fish utilizing the basin include steelhead and sea-run cutthroat trout. Chinook salmon are known to utilize principally the Cedar River and the larger tributaries entering the Sammamish River drainage. All accessible streams receive each of the other species inhabiting the basin.

Chinook Salmon — Chinook salmon populating the Lake Washington basin are generally classified as the fall variety. These fish utilize much of the accessible stream area on the Cedar River and sections of the larger Lake Sammamish tributaries including Issaquah and Big Bear creeks. The occurrence of chinook spawning in other basin drainages is minimal since each of these streams exhibits very low flows during the adult migration and spawning period.

Juvenile chinook salmon rear throughout the entire accessible length of the mainstem Cedar River and in each of the tributaries utilized by spawning adults. In addition, important rearing occurs within Lake Sammamish, the Sammamish River, and Lake Washington waters. Lake Union, Salmon Bay, and Shilshole Bay are critical areas for all juvenile fish migrating from the Lake Washington system to Puget Sound.

Adult chinook salmon enter the Lake Washington drainages beginning early in July and continue into early November (Table 08-1). Spawning generally commences in early to mid-September and is usually completed by late November. Following egg incubation and subsequent fry emergence, the juvenile chinook characteristically remain in the river system for approximately three months before migrating seaward from early March to early July.

Based on spawning ground survey information, it is estimated that the chinook salmon escapements to Lake Washington drainage spawning grounds have ranged from 8,300 to 15,200 fish for the period 1966 to 1971, averaging about 11,500 annually. In addition to natural production, the Washington Department of Fisheries operates a hatchery on Issaquah Creek propagating this species. Here, as many as 7,000 adult chinook have been handled at the racks during this time period. Also, some chinook are produced and released from the University of Washington hatchery; however, their numbers are probably insignificant at this time.

Coho Salmon — Virtually all accessible streams in the basin are utilized to some extent by coho salmon. Principal spawning areas include portions of the Cedar River and its tributaries Rock, Downs, and one unnamed creek; Sammamish River drainages including Issaquah, Tibbetts, Laughing Jacobs, Evans, Big Bear, Bear, North, and Swamp creeks; and each of the eight independent Lake Washington drainages.

Rearing coho salmon can be found in nearly every accessible tributary stream within the basin, as well as in Lake Sammamish and Lake Washington. Again, very critical areas for these young fish exist in Lake Union and the Salmon Bay waterway, in addition to the basin's estuary waters.

Adult coho salmon have been observed in the Lake Washington basin as early as mid-August with the run continuing into November. Spawning generally commences in late October and continues into late December. Following fry emergence the juvenile coho characteristically remain within the system for more than a year before migrating seaward. This migration usually occurs between early March and early July; however, some coho smolts may be found throughout the year.

Based principally on spawning ground information, it is estimated that annual coho escapements to the Lake Washington drainages have ranged from 15,800 to 59,300 fish for

Timing of salmon fresh-water life phases in Lake Washington-Cedar Basin WRIA 08