

# 2000 VOLUNTEER SALMON WATCHER PROGRAM in the LAKE WASHINGTON WATERSHED

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Sammamish Watershed Forum  
Bellevue Stream Team  
Snohomish County Surface Water Management  
Cities of Issaquah, Kirkland, Renton, Seattle, and Woodinville

Alternate formats are available upon request by contacting  
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## EXECUTIVE SUMMARY

In 1996, the Bellevue Stream Team, King County Water and Land Resources Division, the Muckleshoot Indian Tribe, the Snohomish County Surface Water Management Division, and the Washington Department of Fish and Wildlife began a jointly coordinated volunteer spawning survey program in the Lake Washington Watershed (all waters draining through the Ballard Locks). In 1997, the program evolved into the Salmon Watcher Program as it is today and has been conducted annually since. The purpose of the program is to document the distribution of spawning adult salmon throughout the basin via an active public outreach and education program, and subsequently consolidate all the information into a single resource (this report). These data can be used by policy makers and the public to improve how streams are managed, to protect salmon and trout species, and to enhance their habitat.

For the 2000 program, 106 volunteers surveyed 122 sites on 52 streams throughout the Lake Washington Watershed from late August 2000 to early February 2001. Because volunteers collect the data in this program, the agencies are able to obtain information from far more locations than would otherwise be possible. However, data in this report should be used with the following limitations in mind:

- (1) Volunteer expertise in locating and identifying fish species varied from very high to very low;
- (2) Coverage of streams by volunteers was by no means complete; therefore, fish distribution information is not complete;
- (3) Volunteers view stream sites for relatively brief periods of time during the spawning season;
- (4) Determination of survey sites was based on volunteer availability and site accessibility (and some survey locations change from year to year, even on the same creek);
- (5) Spawning fish can be difficult to see and therefore may have passed through reaches undetected; and
- (6) Volunteer data indicate only where minimum fish distributions extend to, but do not indicate reaches where fish are definitively absent (in other words, the data confirms fish presence, but does not confirm absence).

Volunteers observed the following species: sockeye, chinook, coho, steelhead, kokanee, chum, and trout (rainbow or cutthroat). The following results were compiled from data obtained within the previously mentioned limitations of these surveys: (1) Sockeye had the widest distribution throughout the watershed (21 streams) and were seen in the greatest numbers by far; (2) Sockeye, chinook, and coho were all observed in the same six basins; (3) Kokanee were seen in four basins, including the three north basins and East Lake Sammamish; and (4) Chinook, coho, and kokanee together made up only 3.8% of fish observed, whereas sockeye made up 94.2%.

Maps included in this report have been published on the Internet, and can be found using the hyperlinks on this web page: <http://dnr.metrokc.gov/wlr/waterres/salmon/maps.htm>

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## ACKNOWLEDGEMENTS

Thanks to the dedicated volunteers for spending many hours in cold and wet weather to collect the information for this report—sometimes for the fifth year in a row, and sometimes without ever seeing a fish. Without the volunteers there would be no data, no maps, no report. They help make a positive difference here in the Northwest, not only by reporting fish species, but they are also the eyes and ears of the streams, reporting blockages and illegal and other suspect activities. A *huge* Thank You!

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## INTRODUCTION

The Salmon Watcher Program is a volunteer program that originated in 1996 to observe adult fall spawning salmonids in the Lake Washington Watershed. The Salmon Watcher Program recruits and trains volunteers to identify and watch for spawning salmon throughout the Lake Washington Watershed (all waters draining through the Ballard Locks; Figure 1). In 2000, the Bellevue Stream Team, King County Water and Land Resource Division, Snohomish County Surface Water Management, and the cities of Issaquah, Kirkland, Renton, Seattle, and Woodinville actively participated in the Salmon Watcher Program.

The Salmon Watcher Program was initiated to expand on current efforts undertaken by resource agencies to document the distribution of spawning salmon in the Lake Washington Watershed Water Resource Inventory Area (WRIA 8). Prior to the Salmon Watcher Program, salmon spawning observations were being reported to individual agencies. These data were not easily accessible or pro-actively shared with other agencies in WRIA 8 or the public. The Salmon Watcher Program became the centralized effort for making these data readily available for all interested parties. Salmon Watcher volunteers annually collect information on the presence of spawning salmonids, including chinook, coho, sockeye, kokanee (resident form of sockeye), and chum salmon, and steelhead and resident trout species. Data of this type become more important as salmonids in the region, such as Puget Sound chinook, are listed under the Endangered Species Act. Volunteers in this program survey the basins that make up the Lake Washington Watershed: the Bear Creek, Cedar River, East Lake Washington, West Lake Washington, Issaquah Creek, North Lake Washington, and West Lake Sammamish basins. Some volunteers also survey streams in some Puget Sound drainages. The volunteer Salmon Watcher Program does not place emphasis on a particular species of salmon, although it does focus on fall spawning species (sockeye, coho, fall chinook, and kokanee) rather than spring spawners (steelhead, spring chinook, and cutthroat trout).

The second purpose of the Salmon Watcher Program (in addition to expanding local agencies' knowledge of the distribution of spawning salmon in the region) is to actively engage the public in doing something helpful for the streams in their watershed. Because volunteers do this work, this task is accomplished with reduced resources, and the watersheds' residents can become involved and educated at the same time. Further, interactions with agency personnel foster positive relationships between the public and government agencies. With monetary and temporal constraints of agency personnel, much of the data collected in this effort could not be collected otherwise.

**Figure 1. Lake Washington Basins surveyed for the 2000 Salmon Watcher Program (see insert).**

## METHODS

Volunteers<sup>1</sup> are recruited annually to observe fish in streams throughout the Lake Washington Watershed<sup>2</sup> from stationary locations at banks, bridges, and decks. The 106 volunteers (106 individuals, pairs, or groups, totaling 166 people plus one classroom) who surveyed in the Lake Washington Watershed and the 36 volunteers (36 individuals, pairs, or groups, totaling 42 people) who surveyed streams outside the Lake Washington Watershed are listed in Table 1.

**Table 1. Volunteer observers for the 2000 volunteer Salmon Watcher Program.**

Ann Aagaard	Tom Dailey	Kay Koitzsch
Carla Aiwohi	Barbara Dickson	Lyn Kratz
Dennis Anderson	Scott Dungan	Jeff Laufle
Russ Atkins	Bill Dunlap	June Lauritzen
Barney, Nick, Maureen Baker	Bob and Gary Emerson	Chuck Lennox
Cal Bannon	George Fair	Ardis, Bob, & Brian Lilleness
Kent Barber	Lauralyn Feetham	Ginny Lodwig
Sharon Barker	Kevin Finney	Steve Long
Ed Barnes	Steve Fisher	Barbara Lynum
Cathleen Barry	Mary Ellen Flanagan	Beth Malloy
Jo Anne Bedlington	Gail Fraser	Stephanie Mandina
Brooke Best	Linda Gammill	Mary Manous
Gregory Bianchi	David Godfrey	Doris McHenry
Shirley Biccum	George Hadley	Jim McRoberts
Maureen Birrell	Rena Hamburger	Susan Meyer
Mamie & Chuck Bolender	Jim Hearn	Megan Miller
Bard Boston & Rowena Lau	Jim Hearsey	Ryuji Mitsuoka
Ruth Boyle	Sam Hicks	Jean & Ken Moriyama
Karen Brooks	Hlavacek Family	Anne Mullan
Angie Brown	Susan Holmes	Allyson Nilssen
Lynda Brunk	Erica Horton	Diane North
Kevin Burcham	John & Harry Howell	Dean Overton
Sean Carleton	Cassandra Ingalls	J. Owenby
Ron and Diana Carnell	Hugh Jennings	Randy Patterson
Janet Charnley	Bob Johnson	Scott & Lonnie Pavey
Janeene Chilcoat	Cathy Johnson	Carolyn Peterson
Jennifer Chin	Barbara Jurgens	Lance Peterson
Mona Ching	Heather Kennedy	Mark Phillips
Norm Christiansen	Holly Kent	Sarah Phillips
Sharon Citti	Ann Keverline	Tom Piekarski
Don Clark	JoAnn Kirkpatrick	Laurie Reed
Bruce Clifton	Rainer Kirschner	Joanne & Mike Rex
Kathy Cooper	Cheryl Klinker	Miyoko Rokumoto & Harry Blevins
Maureen Corlas & Mark Simonson	Gretchen Knipshild and George &	Adrienne Ross
Nancy Daar	Emily Leickly	Sandy Ryan

<sup>1</sup> “Observers” and “volunteers” are henceforth defined as individuals, pairs, or groups who surveyed at a given location.

<sup>2</sup> In this document, the Lake Washington Watershed means all waters draining through the Ballard Locks. Elsewhere this area may also be called the Lake Washington Basin. Further, in this report the subbasins of the Lake Washington Watershed are referred to as basins (e.g., Issaquah Creek Basin).

**Table 1. Cont.**

Dick Schaetzel	Mary Stewart	Terry Walsh
Zack Seavernc	John Storz	Doug Weber
Brad Shaffer	Phil Sullivan	Irv Weisser
Melissa Shaffer	David & Jessica Swart	Jennifer Weissman
Lisa Sheets	Jose & Donna Layden- Felix	Emily Williams
Kathryn Sheldon	Patrick & Errol Sweeney-Easter	Maggie & Brian Windus
Patty Shelton	Amber Taylor	Woodridge Elementary
Sherry Family	Victor Taylor	Chris Wong
Diane Slota	Inge Theisen	Wayne E. Woulf
Warren Smith	K. Terry Thorsos	Connie Wurm
Chris Southwick	Sachia Tinsley	Janis Young
Susan & Jim Sproull	Tina Totis-Yeager	Kate Zandanel
Dorothy & Jerry Stansberry	Art & Elsa Vetter	

Survey locations were prioritized by staff from each cooperating jurisdiction based on the need for information, and sites were surveyed based on volunteer availability. Volunteers were assigned to stream locations near their homes or customary walking places whenever possible. Not all sites watched were prioritized by agency staff; some sites were watched because of the close proximity to a volunteer's home. Volunteers were instructed to stay on public property (bridges, parks, etc.) unless they gained permission from the landowners to enter private property or the survey location was on their own property.

## **Volunteer Training**

Agency staff held four training sessions in 2000. A field training was also held for trained volunteers at a stream site with a variety of spawning fish species (in Bear Creek). Additionally, Snohomish County, the City of Seattle, and Friends of the Hylebos Wetlands held separate training sessions. Snohomish County began county-wide volunteer salmon surveys in 1999 and held training sessions accordingly; they traded data with King County that was collected for the streams draining into the Lake Washington Watershed (North, Swamp, and Little Bear creeks systems; see Sammamish River Tributaries below). Seattle's additional training session focused on Fauntleroy Creek and was partially facilitated by Friend of Fauntleroy Creek. Friends of the Hylebos Wetlands, based out of Federal Way, Washington, focused on Hylebos Creek.

All volunteers were shown a slide presentation and taught to identify adult spawning salmon species. The slide show was also placed on King County's web site so volunteers could review it at their convenience. During the training sessions, volunteers were asked to sign up for a site to survey that was easily accessible from their home or work location. They were given salmon identification materials, including color adult species identification cards and spawner timing charts. Volunteers were taught how to fill out and return data forms.

**Figure 2. Sites in the Lake Washington Basins surveyed by Salmon Watcher volunteers in 2000 (see insert).**

## **Data Collection and Analysis**

Surveys were conducted between August 30, 2000, and February 5, 2001; most surveys were concluded by the end of December 2000. For the 2000 salmon spawning season, volunteers were asked to watch at their survey sites for 15 minutes twice per week. In prior years of the survey, volunteers were asked to survey for salmon at least twice a week and spend at least 10 minutes observing at each location for adult spawners (prior to 1998, volunteers were asked to survey only once per week). Actual survey frequency and duration varied greatly among volunteers: the average survey frequency was biweekly but varied from almost every day to once per month.

Volunteers counted all live and dead fish they observed. (If a volunteer surveyed the same site more than one time on the same day, the highest count was used.) Unidentified fish were also counted, and described when possible. For the 2000 spawning season, one new column of data was added to the data collection sheet: volunteers were asked to collect was how many citizens they came into contact with during their streamside duties. All data were recorded onto field data forms (Appendix C), which observers mailed to King County personnel on a monthly basis. Staff entered the data into an Access database, then survey locations and fish species identified at each location were entered into a Geographic Information System (GIS) using ArcView 3.1. Survey data are organized by basin and presented below in the Results section. Data include stream name and state stream numbers, as assigned by Williams et al. (1975), corresponding stream sites (with Site ID and river mile), dates of surveys, number of surveys, number of surveyors, and number of each species observed. Raw data are presented in the appendices in the back of this report.

## **Quality Assurance/Quality Control**

Several means were used to assure that the data collected from volunteers were accurate and consistent during all phases of the program. As one precautionary measure, volunteers were provided with training by fish experts: data included in this report were collected by volunteers who attended one of the training sessions for the 2000 season (most but not all returning volunteers attended a training session in 2000). Volunteers were provided with laminated fish identification cards and a packet of training materials with fish identification information in it. Repetitious as well as additional fish identification materials were placed on the Internet. Contact persons (fish experts) were made available to volunteers to answer questions and verify species identification when necessary; volunteers were encouraged to call upon these experts if they were unsure of species identification. As a final measure, staff of the cooperating jurisdictions screened and processed the data sheets and the information was checked multiple times for accuracy following data entry.

Because of the limitations of data usage from a volunteer program such as this (Limitations of Volunteer Data in the Discussion below) and despite quality control measures, the data are intended to be used only to make preliminary evaluations of the distribution of spawning salmonids in the Lake Washington Watershed (and some nearby drainages). These data cannot be used to infer population structure or size.

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## RESULTS

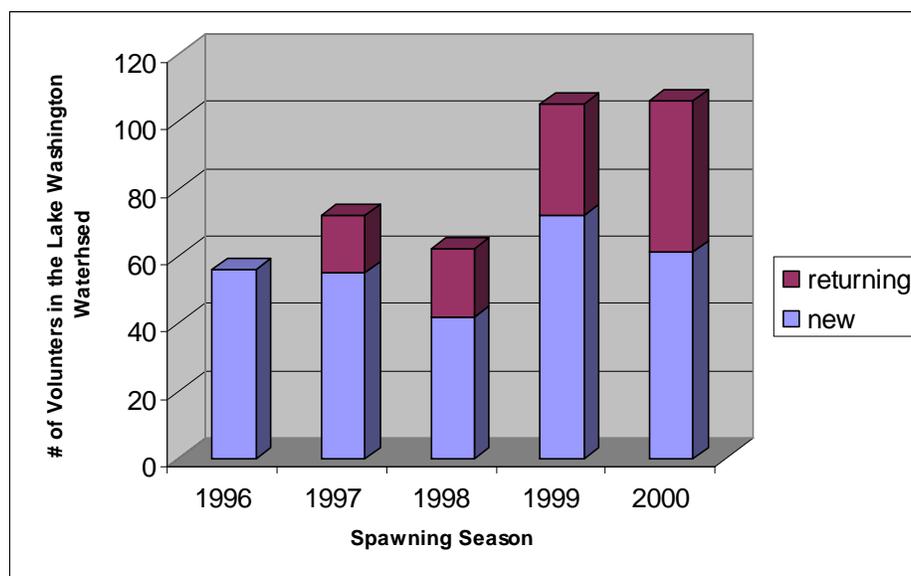
The streams surveyed in the Lake Washington Watershed were grouped into the following basins: Big Bear Creek, Cedar River, East Lake Washington, Issaquah Creek, North Lake Washington (split into North Lake Washington tributaries and Sammamish River tributaries), West Lake Sammamish, and West Lake Washington (Figure 1). In 2000, a total of 121 sites on 52 streams were surveyed in the Lake Washington Watershed by 106 Salmon Watcher Program volunteers. Results are presented below in basin groupings. Maps are presented for each basin and depict observations of sockeye, coho, chinook, and kokanee identified during the survey. Chum and trout species were not mapped.

Additionally, streams were surveyed in some Central Puget Sound drainages, including Boeing, Pipers, Longfellow, Fauntleroy, Miller, and Des Moines creeks. Data for Central Puget Sound Drainages may be found in Appendix A.

In previous Salmon Watcher Program reports (Ostergaard 1998; Vanderhoof et al. 2000; Vanderhoof 2001), the unique Site ID numbers that correspond with each survey site were not reported. In order to differentiate between survey sites, river mile designations (RM) were used previously. However, because ascertaining an accurate river mile for a site is sometimes difficult, and different sources of RM data present differing measurements, a site's RM may change over time as measuring techniques are refined and possible mistakes are corrected. Site ID numbers are included in this report alongside the RM. A site, with its unique ID, will always have the same data associated with it, regardless of refined RMs.

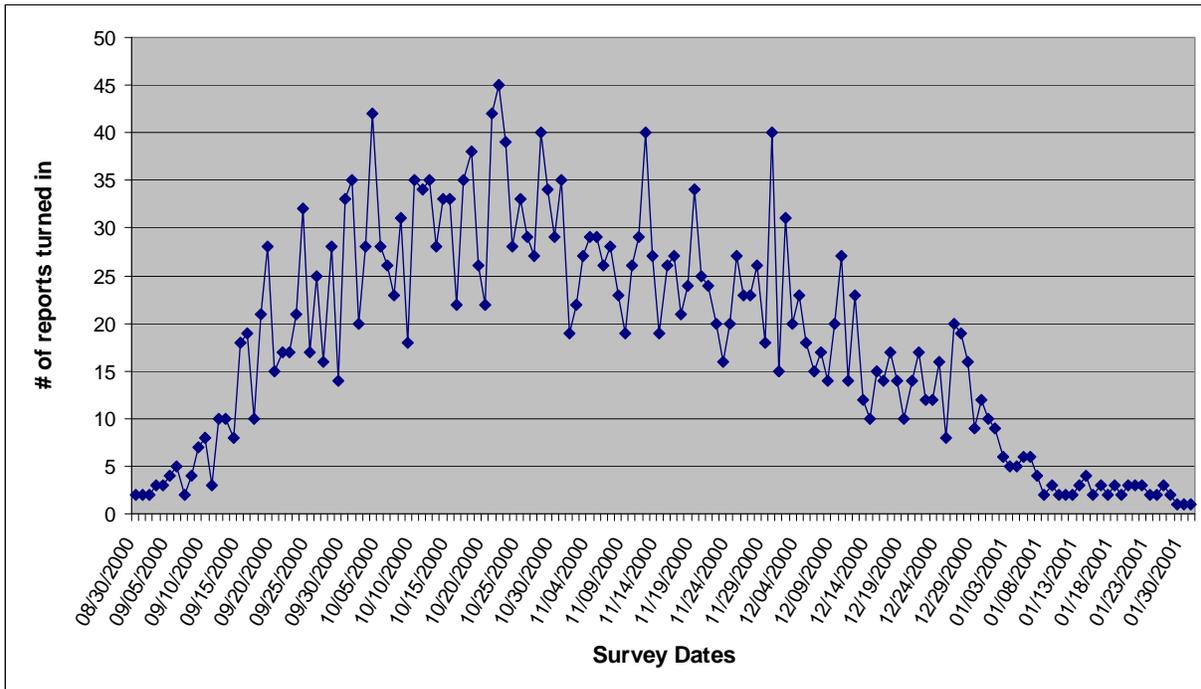
In 2000, 45 out of 106 volunteers (42.45 percent) in the Lake Washington Watershed were returnees (Figure 3). Of the 45 returnees, a total of 6 volunteers have surveyed every year of the program and 4 more have been involved with the program since it began in 1996 but did not survey one season during either 1997 or 1998.

**Figure 3. Number of new and returning volunteers surveying in the Lake Washington Watershed for each year of the Salmon Watcher Program.**



Volunteers watched from the end of August 2000 until the beginning of February 2001. Because some training sessions were not held until mid-September, many volunteers did not begin watching until mid to late September. Volunteers were asked to watch at their sites until the end of December; some stopped watching sooner and some continued watching into 2001 (Figure 4).

**Figure 4. The number of reports turned in from throughout the Lake Washington Watershed each day from August 30, 2000, until February 5, 2001.**



## Big Bear Creek Basin

Volunteers surveyed 18 sites in 8 streams in the Big Bear Creek Basin (Figure 2). From 1 to 8 sites were watched per stream, and the total number of surveys ranged from 1 to 78 per site (Table 2). Each site was monitored by either 1 or 2 volunteers. Raw survey data for each stream are presented in Appendix C.

Salmonids were found in four of the eight streams observed in Big Bear Creek Basin. The most common salmonid species observed by volunteers was sockeye, which was found in Big Bear Creek (in the greatest quantity) and Cottage Lake Creek. Chinook and kokanee were also seen in those two creeks. Coho were seen in Big Bear Creek, Mackey Creek, Cottage Lake Creek, and an unnamed tributary to Bear Creek. No adult spawners were observed in Struve, Daniel's, or Rutherford creeks, or in Tributary 0127 to Cottage Lake Creek.

**Table 2. Stream number, site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers<sup>3</sup>, and previous years the sites were watched for each stream surveyed in the Big Bear Creek Basin for the 2000 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
Big Bear Creek	080105	65	2.7	9/26	1	1	1997, 1998, 1999, 2000
		290	3.2	9/25 – 9/30	2	1	1997, 2000
		101	4.9	10/2 – 12/24	28	2	1997, 1998, 1999, 2000
		89	6	9/3 – 12/30	78	2	1998, 1999, 2000
		136	7.4	9/9 – 11/18	18	1	1998, 1999, 2000
		2	8.3	9/8 – 11/18	19	1	1996, 1997, 1998, 1999, 2000
		81	9	9/3 – 10/28	12	1	1998, 1999, 2000
		69	9.25	9/9 – 12/17	28	1	1998, 1999, 2000
Tributary		90	0.2	9/9 – 12/30	31	1	1998, 1999, 2000
Cottage Lake Cr.	080122	391	1.2	9/15 – 10/21	10	1	2000
		105	1.3	9/9 – 10/29	15	1	1998, 1999, 2000
		292	1.6	9/21 – 11/19	14	2	1997, 2000
		50	2.2	9/16 – 12/31	29	1	1997, 1999, 2000
Tributary 0127	080127	168	0.1	9/26 – 11/28	13	1	1999, 2000
Daniel's Creek	080122	165	1.2	9/19 – 12/1	9	1	1999, 2000
Mackey Creek	080115	15	0.5	9/21 – 12/31	30	2	1996, 1997, 1998, 1999, 2000
Rutherford Creek	080110	317	0.6	10/4 – 10/25	7	1	1997, 2000
Struve Creek	080131	32	0.5	9/9 – 10/29	9	1	1998, 1999, 2000

### Uppermost Sightings

The most upstream point surveyed in Big Bear Creek was river mile (RM) 9.25, NE 179<sup>th</sup> St. Chinook were seen in Big Bear Creek up to RM 9.25 (Table 3) and at the uppermost point surveyed in Cottage Lake Creek: RM 2.2, at the Tolt pipeline crossing at Avondale Road. Coho were also seen at the uppermost points observed in both of these streams. Sockeye were observed at all sites watched in both Big Bear Creek and Cottage Lake Creek. Kokanee were seen in Big Bear Creek up to RM 6.0, NE 133<sup>rd</sup> Street, and in Cottage Lake Creek up to RM 1.6, between NE 141<sup>st</sup> and NE 142<sup>nd</sup>. The observations of

<sup>3</sup> "Volunteer," when used in this context, is defined as an individual, pair, or group of people who observed a stream site for adult spawning salmonids at a given time on a given date.

sockeye, coho, chinook, and kokanee in the Big Bear Creek Basin determined from volunteer surveys in are shown in Figure 5.

**Figure 5. Observations of salmonids in the Big Bear Creek Basin (see insert).**

**Timing of Salmon Runs**

The lengthiest observed runs were the coho runs in Cottage Lake Creek and Big Bear Creek, where coho were spotted over a period of 77 and 75 days, respectively (from September 30 to December 16 and from September 27 to December 11, respectively). Sockeye runs in these creeks lasted a similar length of time, from September 3 to November 11 (72 days) in Big Bear Creek and from September 9 to November 11 (63 days) in Cottage Lake Creek. Sockeye were observed on the first day of surveys in both Big Bear and Cottage Lake creeks. Chinook were observed over a 40-day period in Big Bear Creek and over a 60-day period in Cottage Lake Creek. Kokanee were observed over a 21-day period in Big Bear Creek and over a 40-day period in Cottage Lake Creek.

**Table 3. Site ID, RM, and fish counts (live and dead<sup>4</sup>) with dates seen at each stream surveyed in the Big Bear Creek Basin for the 2000 spawning season.**

Stream	Site ID	RM	Chinook	Coho	Sockeye	Kokanee	Trout	Unidentified
<b>Big Bear Creek</b>	65	2.7	1 (9/26)	-	-	-	-	-
	290	3.2	-	-	174 (9/25)	-	-	-
	101	4.9	-	11 (10/18 - 11/4)	463 (10/2 - 11/8)	5 (10/3 - 10/18)	-	11 (10/24 - 12/24)
	89	6	15 (9/9 - 10/19)	5 (9/27 - 10/18)	1789 (9/7 - 11/14)	1 (9/27)	1 (9/15)	3 (9/19 - 11/28)
	136	7.4	16 (9/27 - 11/11)	10 (10/18 - 11/11)	573 (9/9 - 11/11)	-	-	-
	2	8.3	6 (9/27 - 10/8)	17 (10/22 - 11/4)	467 (9/8 - 11/4)	-	-	-
	81	9	1 (10/6)	-	236 (9/3 - 10/28)	-	-	-
	69 <sup>5</sup>	9.25	6 (10/9 - 10/11)	44 (10/22 - 12/11)	386 (9/9 - 10/30)	-	-	-
<b>Summary</b>			45 (9/9 - 10/19)	87 (9/27 - 12/11)	4088 (9/3 - 11/14)	6 (9/27 - 10/18)	1 (9/15)	14 (9/19 - 12/24)
<b>Tributary</b>	90	0.2	-	9 (10/29 - 11/30)	-	-	3 (11/11 - 11/30)	-
<b>Cottage Lake Cr.</b>	391	1.2	-	-	65 (9/19 - 10/21)	6 (9/15 - 9/19)	3 (9/23 - 9/28)	4 (9/19)
	105	1.3	30 (9/12 - 10/25)	1 (10/18)	137 (9/9 - 10/29)	5 (10/1 - 10/25)	-	4 (9/27 - 10/29)
	292	1.6	23 (9/30 - 11/11)	2 (11/4)	170 (9/21 - 11/11)	1 (10/7)	-	23 (9/21 - 11/11)
	50	2.2	6 (9/21 - 10/7)	5 (9/30 - 12/16)	83 (9/16 - 10/15)	-	-	43 (10/3 - 11/4)
<b>Summary</b>			59 (9/12 - 11/11)	8 (9/30 - 12/16)	455 (9/9 - 11/11)	12 (9/15 - 10/25)	3 (9/23 - 9/28)	74 (9/19 - 11/11)
<b>Tributary 0127</b>	168	0.1	-	-	-	-	-	-
<b>Daniel's Creek</b>	165	1.2	-	-	-	-	-	-
<b>Mackey Creek</b>	15	0.5	-	42 (10/29 - 12/31)	-	-	-	2 (10/29 - 11/19)
<b>Rutherford Creek</b>	317	0.6	-	-	-	-	-	-
<b>Struve Creek</b>	32	0.5	-	-	-	-	-	-
<b>Big Bear Creek Basin Summary</b>			104 (9/9 - 11/11)	146 (9/27 - 12/31)	4543 (9/3 - 11/14)	18 (9/15 - 10/25)	7 (9/23 - 11/30)	90 (9/19 - 12/24)

<sup>4</sup> Some dead fish may have been counted more than one time and included in the total counts.

<sup>5</sup> Some fish counts may not be accurate because volunteer sometimes gave a total count and percentage estimates of live vs. dead instead of reporting exact numbers counted.

## Cedar River Basin

Volunteers surveyed 9 streams in the Cedar River Basin in 2000 (Figure 2). From 1 to 4 sites were watched per stream, and the total number of surveys ranged from 7 to 120 per site (Table 4). Each site was monitored by either 1 or 2 volunteers. Raw survey data for each stream are presented in Appendix D.

Sockeye were found in the Cedar River, Rock Creek, Taylor Creek, and an unnamed tributary to the Cedar River. Chinook were observed in the Cedar River and in Rock Creek, and coho were seen in Taylor Creek, Rock Creek, and an unnamed tributary to the Cedar River. No adult spawners were observed in Madsen Creek, Peterson Creek, Walsh Lake Diversion, Tributary 0327 to Taylor Creek, or Tributary 0340 to Rock Creek.

**Table 4. Stream number, site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers, and previous years the sites were watched for each stream surveyed in the Cedar River Basin for the 2000 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
Cedar River (Cavanaugh Pond <sup>6</sup> )	080299	203	1.6	9/4 – 12/9	13	1	1999, 2000
		204	1.8	9/12 – 12/4	18	1	1999, 2000
		207	5.3	9/4 – 12/24	17	1	1999, 2000
		139	6.4	11/19 – 2/5/01	28	1	1996, 1997, 1998, 1999, 2000
Tributary, unnamed		403	0.4	9/17 – 11/26	10	1	2000
Madsen Creek	080305	156	0.2	9/11 – 12/26	22	1	1999, 2000
Peterson Creek	080328	25	1.5	9/5 – 12/31	18	1	1996, 2000
Rock Creek	080338	49	1.3	9/25 – 1/26/01	96	1	1998, 1999, 2000
		154	0.4	9/25 – 1/26/01	120	2	1999, 2000
		437	1.6	8/31 – 12/31	43	1	2000
Tributary 0340	080340	96	0.1	9/21 – 10/27	7	1	1998, 2000
Taylor Creek	080320	129	1.2	9/1 – 1/6/01	119	2	1998, 1999, 2000
		71	1.8	9/24 – 1/6/01	88	2	1998, 1999, 2000
Tributary 0327	080327	87	2	9/26 – 1/6/01	62	1	1998, 2000
Walsh Lake Diversion	080341	40	1.1	9/21 – 10/27	7	1	1996, 2000

### Uppermost Sightings

Sockeye and chinook were both observed at the uppermost site surveyed in the Cedar River: RM 9.3, Jones Road bridge (Table 5.). Sockeye were also observed at the uppermost sites surveyed in Rock Creek (RM 1.6) and Taylor Creek (RM 1.8); however, chinook were only observed at the lowest point surveyed in Rock Creek (RM 0.4). Coho were seen at the uppermost site surveyed in Rock Creek. The observations of sockeye, chinook, and coho in the Cedar River Basin determined from volunteer surveys are shown in Figure 6.

<sup>6</sup> Towards the end of the spawning season, surveyors in Cavanaugh Pond reported that there were “too many dead to count.” Dead fish counts were estimated very conservatively by King County staff based upon the numbers that were provided. Therefore, these carcass counts are only a rough estimate and may be very conservative and/or may contain multiple counts of the same dead fish.

**Figure 6. Observations of salmonids in the Cedar River Basin (see insert).**

**Timing of Observed Salmon Runs**

The observed sockeye run in the Cedar River was 154 days. Sockeye were observed for the first time in the Cedar River on September 4, the first day of surveys at RM 9.3 and the earliest day of surveys on the Cedar; because only four fish were counted that day, it is likely the Cedar River sockeye run started very near this date. Only one live sockeye was observed on the last day of surveys in the Cedar River, February 5, 2001.

Coho were observed in Rock Creek from November 24 until January 20, 2001 (a run length of 57 days). Coho were observed on only one day, October 26, in Taylor Creek.

Chinook were observed at two sites along the Cedar River: six fish were seen on September 20 at site 204, RM 1.8, and two fish (one live and one dead) were seen on December 2 at site 207, RM 5.3. Only two other chinook were reported in the Cedar River Basin—both in Rock Creek at RM 0.4 during the first two days of November.

**Table 5. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the Cedar River Basin for the 2000 spawning season.**

Stream	Site ID	RM	Chinook	Coho	Sockeye	Unidentified
Cedar River	203	1.6	–	–	197 (9/19 – 12/9)	21 (9/10 – 11/22)
	204	1.8	6 (9/20)	–	928 (9/20 – 12/4)	14 (9/20 – 11/8)
	207	5.3	2 (12/2)	–	301 (9/4 – 12/9)	33 (9/10 – 12/24)
Cavanaugh Pond <sup>7</sup>	139	6.4	–	–	9800 (11/19 – 2/5/01)	–
	<i>Summary</i>		8 (9/20 – 12/2)	–	11,226 (9/4 – 2/5/01)	68 (9/10 – 12/24)
Tributary, unnamed	403	0.4	–	1 (11/3)	41 (9/27 – 11/26)	5 (11/11)
Madsen Creek	156	0.2	–	–	–	–
Peterson Creek	25	1.5	–	–	–	–
Rock Creek	49	1.3	–	–	81 (10/30 – 1/13/01)	–
	154 <sup>8</sup>	0.4	2 (11/1 – 11/2)	21 (11/24 – 1/20/01)	1165 (10/14 – 1/20/01)	29 (10/14 – 1/14/01)
	437	1.6	–	2 (12/21)	24 (10/22 – 12/31)	–
<i>Summary</i>			2 (11/1 – 11/2)	23 (11/24 – 1/20/01)	1,270 (10/14 – 1/20/01)	29 (10/14 – 1/14/01)
Tributary 0340	96	0.1	–	–	–	–
Taylor Creek	129	1.2	–	1 (10/26)	133 (9/28 – 12/21)	–
	71	1.8	–	–	43 (10/7 – 11/25)	2 (10/21 – 11/5)
<i>Summary</i>			–	1 (10/26)	176 (9/28 – 12/21)	2 (10/21 – 11/5)
Tributary 0327	87	2	–	–	–	–
Walsh Lake Diversion	40	1.1	–	–	–	–
<b>Cedar River Basin Summary</b>			10 (9/20 – 12/2)	25 (10/26 – 1/20/01)	12,713 (9/4 – 2/5/01)	104 (9/10 – 1/14/01)

<sup>7</sup> Towards the end of the spawning season, surveyors in Cavanaugh Pond reported that there were “too many dead to count.” Dead fish counts were estimated very conservatively by King County staff based upon the numbers that were provided. Therefore, these carcass counts are only a rough estimate and may be very conservative and/or may contain multiple counts of the same dead fish.

<sup>8</sup> One of the two volunteers moved around and watched at several nearby locations, and all fish tabulated are counted toward this site.

## East Lake Washington Basin

Volunteers surveyed 11 streams in the East Lake Washington Basin in 2000 (Figure 2). Surveys took place from August 30 to December 31. From 1 to 6 sites were watched per stream, and the total number of surveys ranged from 3 to 38 per site (Table 6). Each site was monitored by from 1 to 3 volunteers. Raw survey data for each stream are presented in Appendix E.

Salmonids were found in 5 of the 11 streams surveyed (Table 7). Sockeye were the most commonly seen species in the East Lake Washington Basin. They were observed in May Creek, Kelsey Creek, and West Fork Kelsey Creek. Chinook were observed in May Creek and Kelsey Creek, and coho were seen in those two streams as well as Richards Creek.

Two chum were reported in Mercer Slough. The volunteer called a King County staff member and described in detail the fish; the descriptions and the time of year led the staff member to conclude the fish were chum, although the siting was unusual.

**Table 6. Stream number, site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers, and previous years the sites were watched for each stream surveyed in the East Lake Washington Basin for the 2000 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
Boren Creek	080287	279	0.5	9/5 – 12/28	21	1	1999, 2000
Coal Creek	080268	46	0.8	10/8 – 11/8	6	1	1997, 1998, 1999, 2000
Cochran Springs Cr.		197	0.15	10/15 – 12/17	9	1	2000
Forbes Creek	080242	100	0.2	9/15 – 12/27	33	1	1998, 2000
		194	0.9	9/15 – 11/30	18	1	2000
Goff Creek	080264	280	1.3	10/9 – 12/24	7	1	1999, 2000
Kelsey Creek	080259	13	2	9/28 – 12/24	13	2	1996, 1997, 1998, 1999, 2000
		124	2.4	9/18 – 12/27	24	2	1997, 1998, 1999, 2000
		120	3	10/6 – 10/26	3	1	1997, 1998, 1999, 2000
		45	5	9/16 – 12/27	26	1	1997, 1999, 2000
		214	6	10/11 – 12/27	20	1	1997, 1999, 2000
May Creek	080282	409	6.3	10/11 – 12/27	21	1	2000
		393	0.2	8/30 – 12/27	38	1	2000
		432	0.5	10/21 – 12/2	10	1	2000
		429	1.2	10/18 – 11/11	5	1	2000
Mercer Slough	080259	394	1.3	9/16 – 10/25	9	1	2000
		118	1.7	9/13 – 12/24	33	1	1997, 1998, 1999, 2000
Richards Creek	080261	75	0.4	9/18 – 12/27	21	1	1998, 1999, 2000
		27	0.7	9/18 – 12/27	32	3	1997, 1998, 1999, 2000
		28	1.3	9/28 – 12/24	13	2	1996, 1998, 1999, 2000
Valley Creek	080266	122	0.1	9/15 – 12/27	21	1	1997, 1999, 2000
		220	0.6	10/23 – 11/27	9	1	1999, 2000
		221	0.8	9/19 – 12/22	37	2	1999, 2000
West Fork Kelsey Cr.	080264	95	0.8	10/1 – 12/31	27	1	1997, 1998, 1999, 2000
		414	0.9	9/19 – 9/30	4	1	2000
		73	1	9/4 – 11/30	20	1	1998, 2000
Yarrow Creek	080252	134	0.3	9/18 – 10/18	8	1	1998, 1999, 2000

### **Uppermost Sightings**

Sockeye were observed in Kelsey Creek to RM 3 (Kelsey Creek Farm), the third most upstream of six sites watched in Kelsey Creek. Sockeye were seen at the uppermost site watched in May Creek, RM 1.3 (crossing of NE 31<sup>st</sup> Street). In West Fork Kelsey Creek, sockeye were seen at RM 0.8, the lowest of three sites watched in that stream. Chinook were observed in Kelsey Creek to RM 3 and in May Creek to RM 0.5. Coho were seen to RM 2.4 in Kelsey Creek, to RM 0.5 in May Creek, and to RM 0.7 in Richards Creek—none of which were the upstream-most sites watched. The observations of sockeye, chinook, and coho in the East Lake Washington Basin determined from volunteer surveys are shown in Figure 7.

### **Figure 7. Observations of salmonids in the East Lake Washington Basin (see insert).**

### **Timing of Salmon Runs**

Not including trout, the lengthiest observed run was of the sockeye, which were observed in the basin from October 10 to December 26 (77 days). The sockeye observed in December were at RM 0.2 in May Creek; all other sockeye were observed on or before November 18. Chinook were seen only during October in the East Lake Washington Basin, from October 10 to 26. The four coho reported were observed during a 20-day period from mid-October through early November.

**Table 7. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the East Lake Washington Basin for the 2000 spawning season.**

Stream	Site ID	RM	Chinook	Coho	Sockeye	Chum	Trout	Unidentified
<b>Boren Creek</b>	279	0.5	-	-	-	-	-	-
<b>Coal Creek</b>	46	0.8	-	-	-	-	-	-
<b>Cochran Springs Cr.</b>	197	0.15	-	-	-	-	-	-
<b>Forbes Creek</b>	100	0.2	-	-	-	-	-	-
	194	0.9	-	-	-	-	-	-
<b>Goff Creek</b>	280	1.3	-	-	-	-	-	-
<b>Kelsey Creek</b>	13	2	-	-	-	-	2 (10/18)	-
	124	2.4	-	1 (10/18)	15 (10/13 – 11/7)	-	1 (9/18)	-
	120	3	2 (10/26)	-	1 (10/26)	-	-	-
	45	5	-	-	-	-	-	-
	214	6	-	-	-	-	-	-
	409	6.3	-	-	-	-	-	-
<i>Summary</i>			2 (10/26)	1 (10/18)	16 (10/13 – 11/7)	-	3 (9/18 – 10/18)	-
<b>May Creek</b>	393	0.2	2 (10/10)	-	62 (10/10 – 12/26)	-	-	1 (10/12)
	432	0.5	2 (10/22)	2 (10/28 – 11/4)	30 (10/22 – 11/18)	-	4 (10/30 – 11/4)	5 (11/4 – 12/1)
	429	1.2	-	-	20 (10/18 – 11/4)	-	-	-
	394	1.3	-	-	4 (10/14 – 10/25)	-	-	1 (10/22)
<i>Summary</i>			4 (10/10 – 10/22)	2 (10/28 – 11/4)	116 (10/10 – 12/26)	-	4 (10/30 – 11/4)	7 (10/12 – 12/1)
<b>Mercer Slough</b>	118	1.7	-	-	-	2 (10/21)	-	11 (10/4 – 11/24)
<b>Richards Creek</b>	75	0.4	-	-	-	-	4 (10/16 – 12/27)	-
	27	0.7	-	1 (11/7)	-	-	3 (10/23 – 12/4)	1 (11/12)
	28	1.3	-	-	-	-	-	-
<i>Summary</i>			-	1 (11/7)	-	-	7 (10/16 – 12/27)	1 (11/12)
<b>Valley Creek</b>	122	0.1	-	-	-	-	-	-
	220	0.6	-	-	-	-	-	-
	221	0.8	-	-	-	-	-	-
<b>West Trib. Kelsey</b>	95	0.8	-	-	4 (10/23 – 10/27)	-	-	-
	414	0.9	-	-	-	-	-	-
	73	1	-	-	-	-	-	-
<b>Yarrow Creek</b>	134	0.3	-	-	-	-	-	-
<b>East Lake WA. Basin Summary</b>			6 (10/10 – 10/26)	4 (10/18 – 11/7)	136 (10/10 – 12/26)	2 (10/21)	14 (9/18 – 12/27)	12 (10/4 – 11/24)

## Issaquah Creek Basin

Four sites along three streams were surveyed in the Issaquah Creek Basin in 2000 (Figure 2). Surveys took place from September 6 to December 12. From 1 to 2 sites were watched per stream, and the total number of surveys ranged from 20 to 30 per site (Table 8). Each site was monitored by 1 volunteer. Raw survey data for each stream are presented in Appendix F.

Salmonids were reported in all three streams observed: East Fork Issaquah, Issaquah, and Tibbetts creeks. Chinook, coho, and sockeye were all seen in Issaquah Creek. Sockeye were also seen in East Fork Issaquah and Tibbetts creeks.

**Table 8. Stream number, site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers, and previous years the sites were watched for each stream surveyed in the Issaquah Creek Basin for the 2000 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
East Fork Issaquah Cr.	080183	6	3.2	9/16 – 11/28	20	1	1996, 1997, 1999, 2000
Issaquah Creek	080178	59	3.3	10/11 – 1/1/01	22	1	1997, 1998, 2000
		52	5.8	9/6 – 12/12	30	1	1998, 1999, 2000
Tibbetts Creek.	080169	108	0.2	9/6 – 12/3	24	1	1998, 1999, 2000

### Uppermost Sightings

Chinook, coho, and sockeye were all observed at both sites watched in Issaquah Creek—RM 3.3, Clark Street Bridge, and RM 5.8, SE 113<sup>th</sup> Street (Table 9). Sockeye were found at the only sites surveyed in East Fork Issaquah Creek (RM 3.2) and Tibbetts Creek (RM 0.2). The distributions of chinook, coho, and sockeye in the Issaquah Creek Basin determined from volunteer observations are shown in Figure 8.

**Figure 8. Observations of salmonids in the Issaquah Creek Basin (see insert).**

### Timing of Salmon Runs

Chinook were recorded in Issaquah Creek over a period of 42 days, from October 10 until November 21. The first observations of coho were similar—October 12—but final observations were January 1, 2001 (they had the lengthiest observed run at 81 days). Sockeye was the only species observed in all three streams surveyed; their observed run lasted 42 days and was almost identical to chinook's, but began one day later.

**Table 9. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the Issaquah Creek Basin for the 2000 spawning season.**

Stream	Site ID	RM	Chinook	Coho	Sockeye	Unidentified
East Fork Issaquah Creek	6	3.2	–	–	179 (10/1 – 11/28)	4 (10/1 – 10/29)
Issaquah Creek	59	3.3	14 (10/11 – 11/2)	197 (10/19 – 1/1/01)	88 (10/11 – 11/6)	28 (10/11 – 12/4)
	52	5.8	9 (10/10 – 11/21)	42 (10/12 – 12/12)	43 (10/14 – 11/21)	8 (10/5 – 11/21)
<i>Summary</i>			23 (10/10 – 11/21)	239 (10/12 – 1/1/01)	131 (10/11 – 11/21)	36 (10/5 – 12/4)
Tibbetts Creek.	108	0.2	–	–	1 (10/21)	–
<b>Issaquah Basin Summary</b>			23 (10/10 – 11/21)	239 (10/12 – 1/1/01)	132 (10/11 – 11/21)	36 (10/5 – 12/4)

## North Lake Washington Tributaries

The North Lake Washington Tributaries are those streams flowing into the north end of Lake Washington (Denny, McAleer, and Thornton creeks and the Sammamish River). Volunteers surveyed 33 sites in 13 streams in 2000 (Figure 2). From 1 to 8 sites were watched per stream, and the total number of surveys ranged from 1 to 63 per site (Table 10). The majority of surveys began in September and concluded in December. Each site was monitored by from 1 to 3 volunteers. Raw survey data for each stream are shown in Appendix G.

**Table 10. Stream number, site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers, and previous years the sites were watched for each stream surveyed in the North Lake Washington Tributaries for the 2000 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
Denny Creek	080080	5	0.1	9/14 – 11/28	33	3	1996, 1997, 2000
		426	0.11	9/17 – 10/30	12	1	2000
Juanita Creek	080230	389	0	9/21 – 12/7	41	2	2000
		68	0.2	10/5 – 12/29	21	1	1998, 2000
		12	0.5	9/15 – 12/5	24	2	1996, 2000
		195	0.65	9/16 – 12/22	16	1	2000
		411	0.7	9/20 – 12/10	59	1	2000
		196	1.4	9/16 – 12/28	38	2	2000
		412	1.5	9/18 – 12/28	32	1	2000
		390	1.6	9/15 – 12/27	27	1	2000
Simonds Trib.	080236	107	2.7	9/19 – 11/28	10	1	1998, 2000
Totem Lake trib. 0235	080235	424	0.1	10/10 – 12/28	27	1	2000
Little Brook Creek	080039	419	0	10/15 – 1/28/01	16	1	2000
Lyon Creek	080052	427	0	9/13 – 12/5	13	1	2000
Maple Leaf Creek	080033	191	0.2	9/24 – 1/1/01	30	2	1996, 1999, 2000
		192	0.7	9/13 – 12/29	37	2	1999, 2000
McAleer Creek	080049	266	0.8	9/18 – 12/12	19	2	1999, 2000
		56	1.1	9/10 – 12/12	22	1	1997, 1998, 1999, 2000
		314	1.6	9/18 – 9/22	2	1	1997, 2000
Sammamish River	080087	392	6.8	9/20 – 12/23	12	1	2000
		270	8.7	9/24 – 11/26	15	1	1999, 2000
Trib 0141 to Samm R.	080141	352	0.2	9/15 – 12/28	27	1	1999, 2000
		353	0.3	9/16 – 12/30	27	1	1999, 2000
		355	0.35	9/16 – 12/30	27	1	1999, 2000
Trib to Trib 0141		354	0	10/15	1	1	1999, 2000
Thornton Creek	080030	183	0.1	9/14 – 12/28	63	2	1997, 2000
		184	0.2	9/13 – 11/30	29	2	1999, 2000
		91	0.3	9/13 – 10/28	6	1	1998, 1999, 2000
		186	1	9/13 – 12/12	39	2	1997, 1999, 2000
		385	1.2	9/24 – 12/10	20	1	2000
		187	1.3	9/24 – 1/1/01	13	1	2000
		416	5	10/4 – 10/13	6	1	2000
Trib 0143 to Lk. Samm.	080143	423	0.1	10/3 – 12/29	23	1	2000

Salmonids were found in 8 of the 13 streams surveyed in the North Lake Washington Tributaries. Sockeye was the most commonly seen species, and were observed in the Sammamish River and McAleer, Juanita, Lyon, and Thornton creeks and Tributary 0143 to Lake Sammamish. Chinook and coho were both seen in the Sammamish River, McAleer Creek, and Thornton Creek. Kokanee were seen in Juanita Creek and one of its tributaries, Totem Lake Tributary. The most salmonids in the North Lake Washington tributaries were observed in the Sammamish River. No salmonids were seen in Denny Creek, Little Brook Creek, Simonds Tributary, nor some smaller tributaries to the Sammamish River.

## **Uppermost Sightings**

Chinook were observed in the Sammamish River at the uppermost point surveyed, at RM 8.7 (near NE 124<sup>th</sup> St.) (Table 11). Coho and sockeye were also seen up to RM 8.7. Chinook, coho, and sockeye were only seen as far as RM 1.1 (Perkins and 2600 block) in McAleer Creek, though the uppermost survey site was at RM 1.6. Sockeye were observed up to RM 1.3 in Thornton Creek (NE 110<sup>th</sup> St. & 35th Ave. NE); coho were seen as far as RM 1.2; and chinook were only seen at RM 0.2 (dead end at NE 93<sup>rd</sup> St.). Kokanee were observed at the only site watched in Totem Lake Tributary (RM 0.1). Kokanee and sockeye were observed as far as RM 1.4 (NE 129<sup>th</sup> Pl.) in Juanita Creek. Sockeye were observed at the mouth of Lyon Creek. The distribution of chinook, coho, sockeye, and kokanee in the North Lake Washington Tributaries determined from volunteer observations in 2000 are shown in Figure 9.

**Figure 9. Observations of salmonids in the North Lake Washington Tributaries (see insert).**

## **Timing of Salmon Runs**

Chinook were observed from mid-October until early December in McAleer Creek and from the end of September until mid-October in the Sammamish River. The observed sockeye run in McAleer Creek began October 19 and concluded December 12. Sockeye and coho were observed only at the end of September in the Sammamish River. Coho were first seen during mid-October in McAleer Creek and Thornton Creek, but were observed much later in McAleer Creek (until the end of December, versus early November in Thornton Creek). Kokanee were only observed in Juanita Creek and in its tributary 0235 (Totem Lake Tributary), and those observations were from mid-October until the end of December.

**Table 11. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the North Lake Washington Tributaries for the 2000 spawning season.**

Stream	Site ID	RM	Chinook	Coho	Sockeye	Kokanee	Trout	Unidentified
Denny Creek	5	0.1	-	-	-	-	-	-
	426	0.11	-	-	-	-	-	-
Juanita Creek	389	0	-	-	-	-	-	-
	68	0.2	-	-	-	-	-	-
	12	0.5	-	-	-	-	1 (9/16)	-
	195	0.65	-	-	-	-	-	-
	411	0.7	-	-	9 (10/28 - 12/9)	-	-	3 (11/28 - 12/9)
	196	1.4	-	-	7 (10/5 - 10/8)	19 (10/15 - 12/26)	-	4 (10/15 - 10/22)
	412	1.5	-	-	-	-	-	-
	390	1.6	-	-	-	-	-	-
<i>Summary</i>			-	-	16 (10/5 - 12/9)	19 (10/15 - 12/26)	1 (9/16)	7 (10/15 - 12/9)
Simonds Trib.	107	2.7	-	-	-	-	-	-
Totem Lake trib. 0235	424	0.1	-	-	-	14 (10/10 - 11/22)	-	4 (10/17 - 10/26)
Little Brook Creek	419	0	-	-	-	-	-	-
Lyon Creek	427	0	-	-	16 (9/13 - 10/31)	-	-	-
Maple Leaf Creek	191	0.2	-	-	-	-	-	2 (11/3 - 12/17)
	192	0.7	-	-	-	-	-	-
McAleer Creek	266	0.8	-	6 (10/19 - 10/28)	45 (10/10 - 11/29)	-	-	-
	56	1.1	8 (10/18 - 12/6)	3 (11/30 - 12/12)	18 (10/14 - 10/31)	-	-	7 (10/18 - 12/6)
	314	1.6	-	-	-	-	-	-
<i>Summary</i>			8 (10/18 - 12/6)	9 (10/19 - 12/12)	63 (10/10 - 11/29)	-	-	7 (10/18 - 12/6)
Sammamish River	392	6.8	-	3 (9/30)	5 (9/30 - 10/22)	-	-	-
	270	8.7	58 (9/24 - 10/14)	17 (9/24)	134 (9/24 - 10/14)	-	-	11 (9/27)
<i>Summary</i>			58 (9/24 - 10/14)	20 (9/24 - 9/30)	139 (9/24 - 10/22)	-	-	11 (9/27)
Trib 0141 to Samm. River	352	0.2	-	-	-	-	-	-
	353	0.3	-	-	-	-	-	-
	355	0.35	-	-	-	-	-	-
Trib to Trib 0141	354	0	-	-	-	-	-	
Thornton Creek	183	0.1	-	2 (10/11 - 10/23)	3 (10/11 - 10/26)	-	2 (11/22)	6 (10/11 - 10/28)
	184	0.2	2 (11/30)	2 (10/20)	1 (10/28)	-	-	-
	91	0.3	-	-	-	-	-	-
	186	1	-	1 (10/25)	2 (10/10)	-	1 (11/2)	3 (12/2 - 12/12)
	385	1.2	-	1 (11/5)	1 (10/4)	-	-	6 (11/2 - 12/2)
	187	1.3	-	-	1 (9/30)	-	-	-
	416	5	-	-	-	-	1 (10/11)	3 (10/5)
<i>Summary</i>			2 (11/30)	6 (10/11 - 11/5)	8 (9/30 - 10/28)	4 (10/11 - 11/22)	18 (10/5 - 12/12)	
Trib 0143 to Lk. Samm.	423	0.1	-	-	5 (11/11 - 12/13)	-	-	3 (11/18 - 11/21)
<b>North Lake WA. tribs Summary</b>			68 (9/24 - 12/6)	35 (9/24 - 12/12)	247 (9/13 - 12/13)	33 (10/10 - 12/26)	5 (9/16 - 11/22)	52 (9/27 - 12/17)

## Sammamish River Tributaries

The Sammamish River Tributaries are those streams flowing into the Sammamish River (then into Lake Washington) from waters originating in Snohomish County<sup>9</sup> (Little Bear, North, and Swamp creeks; Big Bear Creek is discussed separately above). Volunteers surveyed 5 Sammamish River tributaries in 2000: Little Bear, North, Swamp, Penny, and Cutthroat creeks (Figure 2). Surveys took place from September 13 to December 30. From 1 to 10 sites were watched per stream, and the total number of surveys ranged from 1 to 29 per site (Table 12). Each site was monitored by 1 volunteer, except site 329 on North Creek, which was surveyed by 2 volunteers. Raw survey data for each stream are shown in Appendix H.

Salmonids were found in 4 of the 5 streams surveyed (Table 13). Sockeye were the most commonly seen species in the Sammamish River Tributaries. They were observed in North, Little Bear, and Swamp creeks, as were kokanee. Chinook were observed in only North Creek. Coho were the only species seen in Cutthroat Creek. Coho were also seen in Little Bear Creek and Swamp Creek.

**Table 12. Stream number, site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers, and previous years the sites were watched for each stream surveyed in the Sammamish River Tributaries for the 2000 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
Cutthroat Creek		413	0.7	10/1 – 11/30	17	1	2000
Little Bear Creek	080080	175	0.3	9/16 – 10/29	9	1	1997, 2000
		176	1.3	9/20 – 12/30	29	1	1997, 2000
		14	1.9	9/15 – 11/16	19	1	1999, 2000
		231	3.2	9/17 – 12/17	18	1	1997, 1999, 2000
		230	4.5	9/23 – 12/28	25	1	1997, 1999, 2000
North Creek	080070	438	0	10/2	1	1	2000
		408	0.89	9/22 – 11/20	9	1	2000
		112	0.9	9/22 – 11/20	9	1	1998, 1999, 2000
		255	1.8	9/28 – 10/15	6	1	1999, 2000
		113	2.1	9/13 – 11/27	27	1	1998, 2000
		253	3	9/14 – 11/30	28	1	1997, 1999, 2000
		141	4.1	9/29 – 10/31	5	1	1997, 1999, 2000
		329	6.6	10/20 – 10/31	7	2	1999, 2000
		135	7.9	9/16 – 10/15	5	1	1997, 1998, 1999, 2000
Penny Creek		251	10	10/3 – 11/29	11	1	1999, 2000
		263	0.2	10/2 – 11/12	5	1	2000
		262	2.2	10/2 – 11/3	4	1	1999, 2000
		262	2.2	10/2 – 11/3	4	1	1999, 2000
Swamp Creek	080059	34	0.3	9/26 – 12/8	27	1	1996, 1997, 1999, 2000
		240	7.7	10/5 – 11/30	13	1	1999, 2000
		239	8.3	10/5 – 11/30	13	1	1999, 2000
		237	10.2	10/2 – 11/30	19	1	2000

<sup>9</sup> Because the affiliate Salmon Watcher Program in Snohomish County also produces a report, data reported herein from sites located in Snohomish County will also be reported by the Snohomish County program.

## Uppermost Sightings

Sockeye and coho were both observed at the uppermost site surveyed in Little Bear Creek: RM 4.5, Little Bear Creek Rd, west of 57<sup>th</sup> Ave. SE. Kokanee were observed as far as RM 1.9 in Little Bear Creek. The only chinook observed in the Sammamish River Tributaries was in North Creek, at RM 1.8, 240<sup>th</sup> St. SE. Sockeye were seen as far upstream as RM 6.6 in North Creek, and kokanee were seen as far as RM 2.1. Sockeye, kokanee, and coho were all seen at RM 0.3 in Swamp Creek, the most downstream of four sites surveyed on that stream. One chum was reported in Little Bear Creek at site 175, RM 0.3 in mid-September; this sighting was not verified by a fish biologist, and because oftentimes sockeye have markings that might resemble those of chum, it is likely this fish was a sockeye. This fish is tallied below as an unidentified species. The distributions of chinook, coho, sockeye, and kokanee in the Sammamish River Tributaries determined from volunteer observations are shown in Figure 10.

**Figure 10. Observations of salmonids in the Sammamish River Tributaries (see insert).**

## Timing of Salmon Runs

The observed coho and sockeye runs in the Sammamish River Tributaries were almost the same length of time, 68 days and 69 days, respectively. Sockeye were observed for the first time in North Creek on September 13 and in Little Bear Creek on September 15. Sockeye were seen on the first day of surveys in both North and Little Bear creeks, so it is not possible to tell when the run began. However, it is possible to discern the runs likely ended in both creeks in mid-November. Coho were not seen in North Creek, but in Little Bear Creek were seen beginning September 20. Chinook were only seen on one day, September 28, in one creek, North Creek. Kokanee were observed for about one week in North Creek in mid-September and for about one week in Little Bear Creek at the beginning of November. They were also observed on one day, October 17, in Swamp Creek.

**Table 13. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the Sammamish River Tributaries for the 2000 spawning season.**

Stream	Site ID	RM	Chinook	Coho	Sockeye	Kokanee	Trout	Unidentified
<b>Cutthroat Creek</b>	413	0.7	-	2 (11/27)	-	-	-	-
<b>Little Bear Creek</b>	175	0.3	-	-	58 (9/16 – 10/29)	-	-	4 (9/16 – 9/24)
	176	1.3	-	-	42 (9/20 – 10/29)	-	-	5 (9/23 – 12/24)
	14	1.9	-	5 (9/20 – 10/10)	83 (9/15 – 10/24)	4 (10/1 – 10/7)	-	1 (10/10)
	231	3.2	-	-	183 (9/17 – 11/10)	-	-	2 (9/26)
	230	4.5	-	4 (10/29 – 11/4)	71 (9/23 – 11/4)	-	-	4 (9/26 – 10/23)
<i>Summary</i>			-	9 (9/20 – 11/4)	437 (9/15 – 11/10)	4 (10/1 – 10/7)	-	16 (9/16 – 12/24)
<b>North Creek</b>	438	0	-	-	4 (10/2)	-	-	-
	408	0.89	-	-	41 (9/22 – 10/30)	1 (9/22)	1 (9/29)	-
	112	0.9	-	-	41 (9/22 – 10/30)	-	1 (9/29)	-
	255	1.8	2 (9/28)	-	116 (9/28 – 10/15)	-	-	-
	113	2.1	-	-	215 (9/13 – 11/21)	5 (9/16 – 9/23)	14 (9/13 – 10/8)	18 (9/16 – 10/17)
	253	3	-	-	135 (9/14 – 10/24)	-	2 (9/23 – 10/2)	2 (10/3 – 10/5)
	141	4.1	-	-	13 (9/29 – 10/10)	-	-	10 (9/29 – 10/13)
	329	6.6	-	-	8 (10/20 – 10/31)	-	-	8 (10/22 – 10/28)
	135	7.9	-	-	-	-	-	-
	251	10	-	-	-	-	-	-
<i>Summary</i>			2 (9/28)	-	573 (9/13 – 11/21)	6 (9/16 – 9/23)	18 (9/13 – 10/8)	38 (9/16 – 12/28)
<b>Penny Creek</b>	263	0.2	-	-	-	-	-	-
	262	2.2	-	-	-	-	-	-
<b>Swamp Creek</b>	34	0.3	-	4 (10/18 – 11/6)	4 (10/17 – 10/18)	2 (10/17)	-	8 (10/28 – 11/13)
	240	7.7	-	-	-	-	-	-
	239	8.3	-	-	-	-	-	-
	237	10.2	-	-	-	-	-	-
<b>Sammamish River Tribs Summary</b>			2 (9/28)	15 (9/20 – 11/27)	1014 (9/13 – 11/21)	12 (9/16 – 10/17)	18 (9/13 – 10/8)	62 (9/16 – 12/24)

## West Lake Sammamish Basin

Volunteers surveyed Vasa Creek in the West Lake Sammamish Basin (Figure 2) from mid-October through mid-December. One site was monitored on Vasa Creek a total of 10 times (Table 14). No fish were observed. Raw survey data for each stream are presented in Appendix I.

**Table 14. Stream number, site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers, and previous years the sites were watched for each stream surveyed in the West Lake Sammamish Basin for the 2000 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
Vasa Creek	080156	39	0.5	10/15 – 12/12	10	1	1996, 1999, 2000

## East Lake Sammamish Basin

Volunteers surveyed Laughing Jacobs Creek in the East Lake Sammamish Basin from the end of August through early December (Figure 2). One site was monitored on Laughing Jacobs Creek a total of 13 times (Table 15). Kokanee were the only fish observed in this stream (Table 16). Raw survey data are presented in Appendix J.

**Table 15. Stream number, site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers, and previous years the sites were watched for each stream surveyed in the East Lake Sammamish Basin for the 2000 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
Laughing Jacobs Creek	080166	406	0	8/30 – 12/4	13	1	2000

### Uppermost Sightings

Laughing Jacobs Creek was observed at its mouth, where kokanee were reported. The 2000 spawning season is the first time a Salmon Watcher has observed on Laughing Jacobs Creek.

### Timing of Salmon Runs

Kokanee were observed during the final two days of observation on Laughing Jacobs Creek, on December 3 and 4 (Table 16).

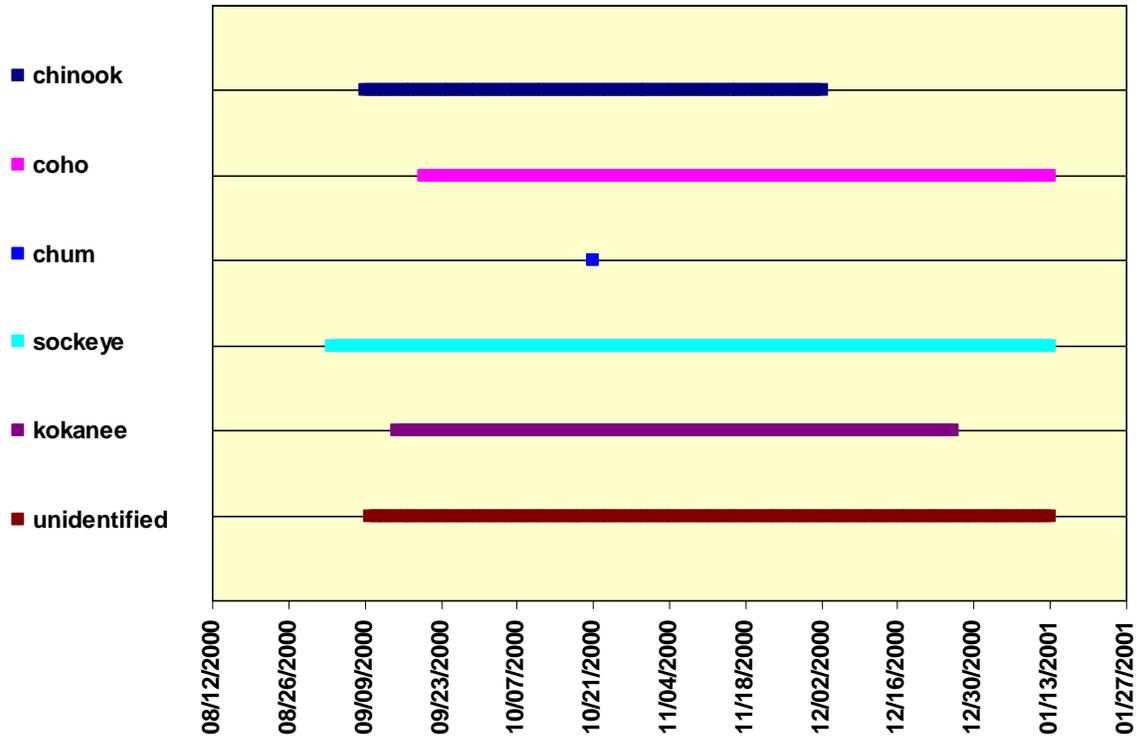
**Table 16. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the East Lake Sammamish Basin for the 2000 spawning season.**

Stream	Site ID	RM	Coho	Sockeye	Kokanee
Laughing Jacobs Creek	406	0	–	–	24 (12/3 – 12/4)

## Summary

By using the volunteer data, the run timing of all salmonids in the Lake Washington Watershed in 2000 may be illustrated in relation to one another (Figure 11). It should be noted that this is a highly generalized graph.

**Figure 11. Observed spawning run of live salmonids in the entire Lake Washington Watershed for 2000. (Note that charts in previous reports illustrated both live and dead fish observed.)**



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## DISCUSSION

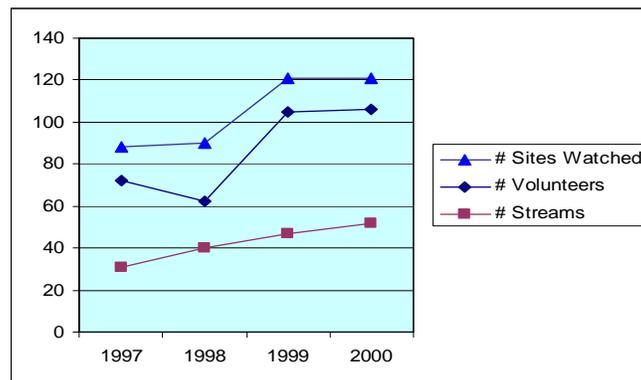
In 2000, for the fifth consecutive year, Salmon Watcher volunteers surveyed streams in the Lake Washington Watershed for live adult salmonids and carcasses. Of the 52 streams surveyed, fish were observed in 29 streams.

Volunteers in the 2000 spawning seasons observed streams from stationary locations. By combining Salmon Watcher data from 1996 through 1999 with the 2000 data, a map of fish distribution based on the extent of volunteer efforts may be constructed. This map may not necessarily reflect accurate fish distribution because of observer error and changes in distribution between years resulting from differing fish densities or stream blockages. It is possible and often probable fish traveled further upstream than the most upstream volunteer site along a given stream. Further observations may be necessary to verify the extent of actual distribution. In the following discussion, volunteer activity and the limitations of the volunteer data are discussed, then the results of the 2000 surveys are discussed for the basins of the study, then finally, the results are examined for each species.

### Volunteer Activity

The number of volunteers participating in the Salmon Watcher Program has increased over the 5 years of the program (Figure 12). Possible reasons for the increase in participation include increased awareness of the program by word-of-mouth recruitment and public outreach. Interest in the region's fish may have also increased because of increased media attention, in part because of the listing of Puget Sound chinook as a threatened species. It is likely that the general public is more aware than ever before of the challenges facing salmon. The Salmon Watcher Program offers a way for people to directly contribute to recovery efforts. As word spreads about the program, people outside the Lake Washington Watershed express interest in watching streams for salmon. In addition to people from King and Pierce counties outside the Lake Washington Watershed who attend training sessions and watch at streams that drain to Puget Sound, two affiliate Salmon Watcher programs have started in Snohomish County (began 1998) and Hylebos Wetlands (began 2000; Appendix K). A group on Vashon Island also watches streams every fall.

**Figure 12. Number of volunteers (defined as an individual, pair, or group) watching in the Lake Washington Watershed and number of sites watched from 1997<sup>10</sup>-2000.**



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<sup>10</sup> Numbers for 1996 are not depicted because many volunteers walked stream reaches, whereas in all other years volunteers watched from stationary positions, and many volunteers were trained differently as part of the kokanee watcher program. In 1997, 30 streams and 16 beach sites were watched; beach sites are counted here as 1 site.

## Contact with Citizens

During 2000, for the first year ever during the Salmon Watcher Program, volunteers were asked to keep track of how many citizens they came into contact with during their time by the streams. Salmon Watcher volunteers spoke with over 1,200 citizens during the 2000 spawning season. Types of citizen contacts ranged from passers-by in parks and along roads to horse-back riders to groups of school children. Table 17 details the numbers of citizens who interacted with volunteers in each basin, including basins outside of the Lake Washington Watershed.

**Table 17. Citizen contacts made by Salmon Watcher volunteers in each of the surveyed basins, including drainages outside the Lake Washington Watershed.**

Cedar River	Big Bear Creek	E. Lake Wash.	Issaquah	N. Lake Wash.	Puget Sound	Hylebos
140	109	107	37	230	529	58

## Limitations of Volunteer Data

Data in these Salmon Watcher reports (e.g., Ostergaard 1999; Vanderhoof et al. 2000; Vanderhoof 2001) are used widely (see “Benefits of the Program” below), and the Salmon Watcher Program is regarded by many people as a very valuable program. However, several qualifications must be kept in mind when reviewing the data in this report and especially when using the data for any purpose other than describing fish distributions. The level of expertise of the volunteers varied widely: some volunteers had past experience identifying fish through professional or school training, recreational fishing, or personal interest. Other volunteers only had experience identifying salmon from the single Salmon Watcher Program training session.

Every year volunteers from previous years return and new volunteers enter the program who must learn to identify the different species of salmonids they might encounter in the Lake Washington Watershed. In 2000, 45 out of 106 volunteers in the Lake Washington Watershed were returnees (42.45 percent). Although the number of volunteers in the watershed did not increase substantially from 1999 to 2000, the proportion of returning volunteers increased by approximately 11 percent. This higher percentage of returning volunteers in 2000 may or may not increase the reliability of accurate species identifications.

Stream surveying could not possibly occur 24 hours a day; therefore, it is possible that observations of fish did not occur that might have extended the uppermost limits of known distributions. Also, adult salmon might migrate more during the night (Brannon and Salo 1982) when volunteers do not observe. Streams were surveyed at different frequencies, by different numbers of volunteers, for different durations, over different portions of the spawning season, and by observers with varying degrees of observation skills. Additionally, conditions were not always favorable for sighting fish: fish may have been difficult to see from banks or bridges; fish can hide around bends or under vegetation; volunteers cannot constantly be at a site to see every fish going by; and fish may pass unnoticed while the volunteer is observing. High flows, turbid water, and glare make fish observation difficult. Some species, such as coho, move upstream to their spawning locations very quickly immediately after it rains and may not have been seen lower in a system at all. Other species may be very difficult to distinguish from one another, such as sockeye and kokanee. Although training sessions are thorough, identification materials are provided, and technical experts are available for help with identification, some misidentifications will occur.

Finally, it is important to keep in mind that the absence of spawner sightings in a stream does not mean that spawning salmonids are not accessing that location. It does mean that fish were not seen by the volunteer at the site at the time of survey. Because of this important distinction and the other mentioned limitations of this type of survey, data in this report should be used only to indicate the presence of adult

salmon of a particular species at specific locations (species distribution). All other uses and benefits derived from the compilation of this data should be used cautiously and with the specific limitations of the data in mind. Only when fish surveys are conducted comprehensively and systematically are wider uses of such data appropriate.

## Benefits of the Program

As stated in the Introduction, there are two primary goals of the Salmon Watcher Program: to expand local agencies' knowledge of the distribution of spawning salmon in the region and to actively engage the public in doing something helpful for the streams in their watershed. The benefits of the program associated with these two goals are discussed below.

## Uses of the Data

Individuals, citizen's groups, non-profit organizations, and government agencies all use data from the Salmon Watcher Program for various reasons. An informal survey was conducted after distributing the 1998/1999 Salmon Watcher Program report to learn how different people use the data. Recipients, both private citizens and public agency personnel, were asked how they have used the data in the Salmon Watcher reports.

Some people representing government agencies reported using the Salmon Watcher Program's data, often in conjunction with other data, for the following reasons:

- to identify which streams fish are using
- to figure out when the fish first appeared in a system
- to interpret to the general public the species present in streams and watersheds in various county parks
- for use in education programs (for example, Stream Connection) with school students to accurately portray life in the stream/system they are studying
- to inform park employees about species present in waters within the park they manage and maintain
- to check for fish presence at streams where CIP projects were constructed to determine, for example, after a fish barrier is removed, if fish are present in the newly accessible reach
- to help with biological assessments where CIP projects are proposed
- to protect salmon habitat on private properties by sharing information with landowners
- for salmon/fish habitat inventories, to create a map of existing and potential fish habitat
- to identify problem areas that may need special protection with new development and redevelopment (such as an increased level of detention or water quality)
- for public education—to let the public know why we need to protect streams (“actual” fish sightings have more of an impact than the “possibility” of fish)
- for information on the need for stream protection and enhancement
- for use in combination with other factors to assess the “health” of some streams
- to help find out where fish are *not* being observed
- to see if fish are being reported in large numbers in places not surveyed regularly by another agency
- to help define upstream distribution of fish
- for spawner information in the WRIA 8 Habitat Factors of Decline Report
- for an opportunity for volunteers, instead of government, to do public outreach on salmon issues

Salmon Watcher volunteers also reported using data from the program for a variety of reasons. One watcher said she used the data to encourage the continued support of city council members for water conservation, and another said she used it for background for court testimony on the daylighting of a

creek. One volunteer has shared the report with people in her environmental classes at UW at Bothell, as well as sharing it with elementary school students. The same volunteer has laminated one of the fish distribution maps and posted it in the school next to a salmon display. She found that visiting adults pay more attention when they can see maps with real data from streams in their areas and the kids are especially excited when they can see that there have been salmon spotted near their homes. One citizen said the report is a great reaffirmation of the work that they are volunteering for.

## **“Eyes and Ears” of the Watershed**

In addition to identifying the distribution of spawning salmon in the Lake Washington Watershed, the volunteers, by virtue of their frequent presence along streams, often end up accomplishing more than their charge. For example, volunteers sometimes help identify problem stream blockages, potential restoration sites, and potential illegal dumping or poor land use practices. They become the eyes and ears of the streams and may report illegal fishing, fish kills, and other discouraged activities taking place in or near streams. Volunteers are encouraged to report this information immediately so the appropriate parties can respond as quickly as possible.

During the 2000 season, volunteers reported a strange green color in a North Lake Washington creek (it was checked out immediately and determined to be from dye testing, a fully legal process of investigation); a blockage on a Cedar River tributary; hand-built “dams” in Cedar River Basin streams; and logs blocking some culverts. Additionally, one volunteer chased away two boys firing a pellet gun into the stream at fish, and the same volunteer reported more than one incidence of illegal fishing practices in the Cedar River. A volunteer in Cottage Lake Creek talked to two people about not riding their horses in the stream. A Salmon Watcher on Taylor Creek in the Cedar River Basin discovered a miss-placed Remote Site Incubator, which was brought to the attention of the Washington State Department of Fish and Wildlife (WDFW); the WDFW is taking measure to correct this type of miss-placement of resources. And a volunteer in the Hylebos Creek program prevented a family from “fishing” for chinook with baseball bats and golf clubs.

## **Basins**

The Lake Washington Watershed study area has been broken into eight basins for the purpose of analysis and discussion. Salmonids were observed in all basins surveyed in 2000 except the West Lake Sammamish Basin (in which only Vasa Creek was watched).

Sockeye were observed in the greatest numbers in the Cedar River Basin and that basin, consequently, had the most fish observed in the Lake Washington Watershed. Sockeye were observed in the second highest numbers in Bear Creek Basin, and that basin had the second most fish observed. Chinook were observed in the highest numbers in the Bear Creek Basin. Coho were observed in the highest numbers in Issaquah Creek Basin. Kokanee were seen in the highest numbers in North Lake Washington tributaries. No adult spawners were observed in 25 streams surveyed, including Denny Creek, Coal Creek, Valley Creek, Walsh Lake Diversion, and some tributaries to larger streams such as Cottage Lake Creek, Rock Creek, Taylor Creek, and the Sammamish River.

It is difficult to compare the Salmon Watcher data from year to year because many variables in the observer methods exist between years:

- number of surveys in a stream
- survey locations along a stream
- the number of surveys at a site
- streams surveyed in a basin
- time of day spent observing
- survey frequency

- level of experience of observers
- type of survey (some surveys in 1996 were walking surveys)
- time spent at a given location
- and beginning and ending dates of surveys

Because most or all of these parameters are different for every stream surveyed from 1996 through 2000, comparisons of raw data likely would not yield valid information about changes in populations. Therefore, the best use for the data is in determining presence of fish and mapping fish distribution. In the following discussion, distributions of salmonid species based solely upon volunteer Salmon Watcher data are discussed. When known fish distributions from Salmon Watcher data have been expanded based upon 2000 data, it is mentioned here. Figures 14 to 17 at the end of this section depict these fish distributions.

## **Big Bear Creek Basin**

No sites in Big Bear Creek Basin were placed further upstream than sites watched in previous years. Salmon Watcher volunteers viewed Big Bear Creek as far as RM 9.25. Sockeye and chinook were observed at the upstream-most site on Big Bear Creek. Sockeye and chinook had been seen to this point in previous years' surveys. Kokanee were observed in Big Bear Creek up to RM 6.0.

Salmon Watcher volunteers viewed Cottage Lake Creek as far as RM 2.2. Kokanee were observed in Cottage Lake Creek up to RM 1.6. Sites were also observed on Daniel's Creek and Tributary 0127, both of which are upstream of Cottage Lake Creek. Sockeye and chinook were observed at the upstream-most site on Cottage Lake Creek, but not in Daniel's Creek or Tributary 0127. Sockeye and chinook had been seen to this point in previous years' surveys.

Coho were observed in Cottage Lake Creek, Mackey Creek, and in an unnamed tributary to Big Bear Creek, and they had been observed at these sites in previous years. Coho were not observed in Big Bear Creek in 2000.

## **Cedar River Basin**

Only one site in the Cedar River Basin was watched further upstream than in previous years—site 403 at RM 0.4 on an unnamed tributary to the Cedar River. This unnamed tributary had not been observed by Salmon Watchers in previous years. Coho and sockeye were both observed at this new site.

Sockeye were seen at every site in the Cedar River that was observed in 2000. The upstream-most site watched in 2000 was Cavanaugh Pond at RM 6.4. Sockeye have been observed in Cavanaugh Pond every year of the Salmon Watcher Program. Chinook were observed in the Cedar River by volunteers as far upstream as the Jones Rd. bridge at RM 5.3, which is not as far as they had to traverse to get to Rock Creek.

Chinook were observed in Rock Creek for the first time during the Salmon Watcher Program; they were observed at site 154, RM 0.4. Coho and sockeye were both also observed in Rock Creek; they were observed as far as the upstream-most survey site at RM 1.6.

Salmon Watcher volunteers viewed Taylor Creek as far upstream as RM 1.8. Coho were observed at RM 1.2 in Taylor Creek; in previous years they have been seen as far upstream as RM 2.4. Sockeye have also been observed as far upstream as RM 2.4 in previous years. In 2000 they were seen at the upstream most site at RM 1.8.

## **East Lake Washington Basin**

Only one site in the East Lake Washington Basin was watched further upstream than in previous years—site 409 on Kelsey Creek. Salmon Watcher volunteers viewed Kelsey Creek as far upstream as RM 6.3.

Chinook and sockeye were observed in Kelsey Creek up to RM 3. Coho were observed in Kelsey Creek up to RM 2.4.

May Creek was viewed at four sites, as far upstream as RM 1.3. Sockeye were observed at the upstream most site in May Creek, as well as the other three sites in the stream. Chinook and coho were both observed in May Creek as far upstream as site 432, RM 0.5.

Salmon Watcher volunteers viewed West Trib Kelsey Creek as far as RM 1, but no salmonids were reported at either site in this stream. Salmon Watcher volunteers viewed Valley Creek as far as RM 0.8, but no salmonids were reported at any of the three sites watched in this stream. Coal Creek was only observed at site 46, RM 0.8, and no fish were observed. No adult spawners were observed in Cochran Springs Creek, Boren Creek, Yarrow Creek, or Forbes Creek.

## **Issaquah Creek Basin**

Only four sites were observed in 2000 in the Issaquah Creek Basin and no sites were placed further upstream than sites watched in previous years. Salmon Watcher volunteers viewed Issaquah Creek as far upstream as RM 5.8, where chinook, coho, and sockeye were all observed. Tibbetts Creek and East Fork Issaquah Creek were both observed in one location (RM 0.2 and RM 3.2, respectively) and sockeye were seen in both.

## **North Lake Washington Tributaries**

Two sites in the North Lake Washington Tributaries were on streams that has not been observed previously—site 427 at the mouth of Lyon Creek and site 430 on Little Brook Creek. Sockeye were observed in Lyon Creek. No salmonids were observed in Little Brook Creek.

Salmon Watcher volunteers viewed Thornton Creek further upstream in 2000 than in previous years—they watched as far as RM 5, north of Twin Ponds Park (site 416). The only fish seen at this site were trout and unidentified species, which is not surprising because the culvert at Lake City Way is considered to be an impassable fish barrier (Reed pers. comm.). The next most upstream site watched on Thornton Creek was at RM 1.3, where sockeye were observed for the first time in the Salmon Watcher Program. Coho were seen as far upstream as RM 1.2, and chinook were reported at RM 0.2. Maple Leaf Creek, a tributary to Thornton Creek, was observed up to RM 0.7. The only fish seen in Maple Leaf Creek in 2000 were unidentified species at RM 0.2.

Three sites were observed in McAleer Creek in 2000. The upstream-most site was RM 1.6. Coho, sockeye, and chinook were all seen as far as RM 1.1.

Kokanee were viewed in Juanita Creek and Totem Lake Tributary for the first time during the Salmon Watcher Program. In Juanita Creek they were observed at site 196, RM 1.4. In Totem Lake Tributary they were seen at site 424, RM 0.1. Sockeye were also observed further upstream in Juanita Creek than in previous years of the Salmon Watcher Program: they were seen as far as RM 1.4.

## **Sammamish River Tributaries**

Only one site in the Sammamish River Tributaries was watched further upstream than in previous years—site 413 on Cutthroat Creek. Cutthroat Creek had not been observed by Salmon Watchers in previous years. Coho were observed in Cutthroat Creek, thereby extending the known coho distribution as observed by Salmon Watchers.

Salmon Watcher volunteers viewed North Creek as far upstream as RM 7.9, where no fish were observed. Sockeye were found at RM 6.6, the second-most upstream site watched; this sighting extends the distribution of sockeye, as observed by Salmon Watchers, by approximately 3.6 river miles. Chinook

were observed by volunteers in North Creek up to RM 1.8. Kokanee were observed in North Creek up to RM 2.1.

Salmon Watcher volunteers viewed Little Bear Creek as far upstream as RM 4.5, where coho were observed further upstream than in previous years of the Salmon Watcher Program. Previously they had only been observed up to RM 1.9; this new sighting extends the coho distribution in Little Bear Creek based upon Salmon Watchers by 2.6 river miles. Sockeye were also seen at the upstream-most site in Little Bear Creek, as well as the other four sites watched in that stream. Kokanee were observed at RM 1.9.

Salmon Watcher volunteers viewed Swamp Creek as far upstream as RM 10.9. The only location out of five sites along Swamp Creek that fish were observed was at RM 0.3. Kokanee were seen in Swamp Creek for the first time during the Salmon Watcher program; they were observed at site 34, at RM 0.3. Sockeye and coho were also observed at this location.

## **West Lake Sammamish Basin**

Only one site in the West Lake Sammamish Basin was watched further upstream than in previous years—site 423 on tributary 0143 to Lake Sammamish. Tributary 0143 had not been observed by Salmon Watchers in previous years. Sockeye and unidentified species were both observed at this new site.

The only other site observed in the West Lake Sammamish Basin in 2000 was at RM 0.5 in Vasa Creek. No adult spawners were observed in Vasa Creek.

## **East Lake Sammamish Basin**

No sites in the East Lake Sammamish Basin were placed further upstream than sites watched in previous years, and in fact, only one site was watched in this basin—on Laughing Jacobs Creek. Laughing Jacobs Creek was watched at its mouth and kokanee were observed at this site.

## **Species**

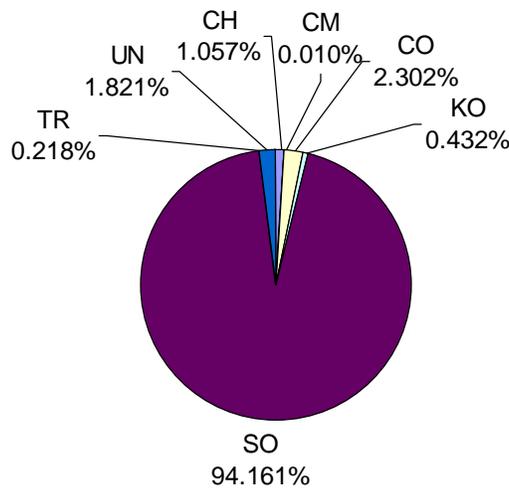
Salmon Watcher Program volunteers recorded observations of all salmonid fish located during surveys, including chinook, coho, and sockeye salmon, kokanee (resident form of sockeye), steelhead trout, and general trout (which may have been cutthroat or rainbow or steelhead). Most trout were not identified to species because, with the exception of sea-run coastal cutthroat and steelhead, they are not anadromous species, and because differentiating between them in the field is extremely difficult. The ratios of all fish observed, including unidentified fish, is depicted in Figure 13.

Of the 52 streams surveyed in 2000, sockeye were found in 21 streams. Coho were found in 24 streams, chinook in 13 streams, kokanee were observed in 8 streams, and trout were reported in 12 streams.

Sockeye was by far the most abundant species counted by volunteers (Figure 13). Coho was the second most commonly observed species. The third most commonly observed species was chinook, followed in order of decreasing counts by kokanee and trout.

If a volunteer was unable to positively identify a fish species, the fish was tallied as “unidentified” (reporting a fish as unidentified was preferable to falsely identifying a species). Out of the 20,157 total adult fish observed in 2000, 367 were unidentified (1.82%). Unidentified adult salmonids were counted in 28 streams. Volunteers made note of unidentified fry and/or juveniles in 30 streams, though it is probable they were present at more sites and not noted.

**Figure 13. Percentage of total fish observed in 2000 by volunteers (CH = chinook, CM = chum, CO = coho, KO = kokanee, SO = sockeye, TR = trout, UN = unidentified).**



### Chinook Salmon

Chinook were observed in 6 basins in the 2000 surveys (Figure 14). A total of 181 live fish and 32 carcasses<sup>11</sup> were found in 11 streams throughout the Lake Washington Watershed (in order of most to least fish seen): Cottage Lake Creek, Sammamish River, Big Bear Creek, Issaquah Creek, McAleer Creek, Cedar River, May Creek, Thornton Creek, Rock Creek, North Creek, and Kelsey Creek.

### Sockeye Salmon

Sockeye were by far the most numerous fish counted by volunteers. Sockeye were observed in 6 basins (Figure 15). A total of 13,665 live fish and 5325 carcasses were found in 21 streams (in order of most to least fish seen): Cedar River, Big Bear Creek, Rock Creek, North Creek, Cottage Lake Creek, Little Bear Creek, East Fork Issaquah Creek, Taylor Creek, Sammamish River, Issaquah Creek, May Creek, McAleer Creek, an unnamed tributary to the Cedar River, Juanita Creek, Kelsey Creek, Lyon Creek, Thornton Creek, trib 0143 to Lake Sammamish, Swamp Creek, West Trib Kelsey Creek, and Tibbetts Creek.

### Coho Salmon

Coho were observed in 6 basins (Figure 16). A total of 425 live fish and 39 carcasses were found in 17 streams (in order of most to least fish seen): Issaquah Creek, Big Bear Creek, Mackey Creek, Rock Creek, Sammamish River, Little Bear Creek, McAleer Creek, trib to Big Bear Creek, Cottage Lake Creek, Thornton Creek, Swamp Creek, Cutthroat Creek, May Creek, Kelsey Creek, Richards Creek, Taylor Creek, and an unnamed tributary to the Cedar River.

### Kokanee

Kokanee, although not anadromous, are of interest to regional fisheries managers because their numbers appear to be significantly depressed from historic levels. Kokanee were observed in 4 basins (Figure 17).

<sup>11</sup> Some carcasses were recounted over multiple visits to a site; volunteers were instructed to note if they thought a dead fish had already been counted, but asked to tally it anyway.

A total of 87 live fish and 0 carcasses were found in 8 streams (in order of most to least fish seen): Laughing Jacobs Creek, Juanita Creek, Totem Lake Tributary 0235, Cottage Lake Creek, Big Bear Creek, North Creek, Little Bear Creek, and Swamp Creek. When reviewing kokanee observations, it should be remembered that differentiating between large kokanee and small sockeye is sometimes difficult.

## **Other Species**

Salmon Watcher volunteers were taught to differentiate between cutthroat, rainbow, and steelhead trout, but when processing data, any counts of these fish are lumped into “trout.” Trout were reported in 9 streams in 4 basins. Trout may have been cutthroat or rainbow trout, or possibly steelhead (though some volunteers differentiated between steelhead and other trout, and these observations are likely accurate based upon location and time of year). Typically, trout were not identified to species because, with the exception of sea-run coastal cutthroat and steelhead, they are not anadromous species, and because differentiating between them in the field is very difficult.

Two chum were reported in Mercer Slough; this unusual sighting was not verified in person by a fish biologist, but the volunteer was able to describe the appearance and behavior of the fish to a biologist, who concluded the fish were chum. Fish of unidentified species were observed throughout the watershed in both years. Cottage Lake Creek and the Cedar River, and consequently Big Bear Creek Basin and the Cedar River Basin, had the most unidentified species reported.

**Figure 14. Distribution of chinook salmon in the Lake Washington Watershed based on Salmon Watcher observations (see insert).**

**Figure 15. Distribution of sockeye salmon in the Lake Washington Watershed based on Salmon Watcher observations (see insert).**

**Figure 16. Distribution of coho salmon in the Lake Washington Watershed based on Salmon Watcher observations (see insert).**

**Figure 17. Distribution of kokanee in the Lake Washington Watershed based on Salmon Watcher observations (see insert).**

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## RECOMMENDATIONS

Some past recommendations have been implemented as part of the program (e.g., earlier training sessions and contact persons for help with fish identification). Other ongoing recommendations remain listed below along with new recommendations for future spawning seasons:

- Target areas with special research needs and try to recruit volunteers for those areas.
- Establish new sites every year above places where fish have already been identified to expand the knowledge of distribution.
- Suggest that volunteers begin survey efforts earlier in successive years if they previously started at a time when fish were already found to be present.
- Similarly, ask volunteers to continue surveying as long as fish are present (except for trout, which may be present year-round).

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## GLOSSARY

<i>anadromous</i>	Fish that leave freshwater and migrate to the ocean to mature then return to freshwater to spawn (Williams et al. 1997).
<i>basin</i>	The land area above a given point in a watershed whose run-off drains into a major constituent of the watershed. As applied in this report, used to refer to subbasins within the Lake Washington Watershed.
<i>escapement</i>	That portion of an anadromous fish population that escapes the commercial and recreational fisheries and reaches the freshwater spawning grounds (Meehan 1991).
<i>kokanee</i>	Non-anadromous sockeye ( <i>Oncorhynchus nerka</i> ); lives its entire life in a freshwater lake, then returns to its native stream to spawn.
<i>natal</i>	Pertaining to the place of birth; a natal stream refers to the stream where a juvenile salmon was hatched.
<i>redd</i>	Nest made in gravel, consisting of a depression hydraulically dug by a fish for egg deposition (and then filled) and associated gravel mounds (Meehan 1991). Spawning salmon dig a depression in the gravel by lying on their sides and rubbing against the gravel with their sides and tail, pumping the water to move the stones. After the female deposits eggs into the depression, the male salmon fertilizes them, then the female digs another depression immediately upstream. The stones from the second depression (called the pit) move downstream to cover the incubating eggs. The pair may do this more than once, even three or four times. New redds usually look like mounds of light-colored gravel with a slight depression in the gravel just upstream of the mound.
<i>river mile</i>	Statute mile as measured along the center line of a river; river miles are measured from the mouth in an upstream direction (e.g., RM 1.3), but can also be used as a discrete measure of distance in a river or stream (e.g., 1-3 river miles).
<i>salmonid</i>	Fish species belonging to the Salmonidae family, which includes salmon, trout, char, and whitefish.
<i>watershed</i>	Entire area that contributes both surface and underground water to a particular lake or river (Williams et al. 1997). As applied in this report, used to refer to the Lake Washington Watershed: all waters draining through the Ballard Locks.

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## Appendices

- A. Report on streams outside the Lake Washington Watershed and associated raw data
- B. Data Collection Form used in 2000
- C. Big Bear Creek Basin raw data
- D. Cedar River Basin raw data
- E. East Lake Washington raw data
- F. Issaquah Creek Basin raw data
- G. North Lake Washington Tributaries raw data
- H. Sammamish River Tributaries raw data
- I. East Lake Sammamish Basin raw data
- J. West Lake Sammamish Basin raw data
- K. Summary of the 2000 Hylebos Creek Salmon Survey

# Appendix A.

## Streams outside the Lake Washington Watershed

The Salmon Watcher Program is centralized around the Lake Washington Watershed (WRIA 8), but because of interest by volunteers and agencies in other areas, streams outside the Lake Washington Watershed are also monitored. Most of these stream systems drain into Central Puget Sound and are reported in this appendix. Also reported herein are data on Hamm Creek, a stream draining into the Duwamish River.

In 2000, volunteers surveyed eight streams that drain to Central Puget Sound and one that drains to the Green/Duwamish Watershed (Table A1.). Surveys on Des Moines Creek began August 31. Pipers Creek surveys began in mid-September and observations in Longfellow, Miller, Walker, and Hamm creeks began at the end of September. Fauntleroy, Venema, and Boeing creeks surveys began in October. Surveys in Boeing and Walker creeks were concluded in November and surveys in the other creeks were completed during December. Each site was watched by 1-3 volunteers, with the exception of Fauntleroy Creek, which was watched by 18 volunteers (see below). From 1 to 6 sites were watched per stream and between 2 and 61 surveys were completed at each site, with the exception of Fauntleroy Creek, which had 149 surveys. Raw survey data for each stream are presented below in Tables A3-A11.

Beginning in 1998, after Seattle Public Utilities completed a fish ladder, volunteers began surveying Fauntleroy Creek. The site is on private property, and the property owners, volunteers and the founders of Friends of Fauntleroy Creek, began allowing access for other Salmon Watchers in 1999. Because of the great amount of interest and so many volunteers, Salmon Watcher volunteers on Fauntleroy Creek schedule themselves in shifts so no volunteers are watching at the same time. The site at Fauntleroy Creek is watched more frequently than any other Salmon Watcher site, and this should be kept in mind when looking at the numbers of fish counted.

### Uppermost Sightings

Several sites were watched along both Longfellow Creek and Pipers Creek. Coho were seen as far upstream on Longfellow Creek as RM 1, but not as far as the uppermost point at RM 2.7. Coho were observed as far as RM 0.5 in Pipers Creek, the uppermost site surveyed. Chum were also observed at the uppermost site surveyed in Pipers Creek, as well as the other two sites in the stream. Additionally, two volunteers in Pipers Creek spotted chum outside their viewing areas (i.e., just upstream or just downstream). Coho were seen in Fauntleroy Creek at the one survey site near the mouth of the stream. Coho and chinook were both observed in Boeing Creek up to RM 0.1, the uppermost point surveyed in that stream. Coho were seen in all streams except Walker and Venema creeks, where no fish were observed. In Hamm and Des Moines creeks, coho and unidentified species were seen at the only survey sites, at RM 0.1 in Hamm Creek and at the mouth of Des Moines Creek. Coho and unidentified species were seen at both sites in Walker Creek, including the uppermost site at RM 0.2. The five unidentified fish at RM 0.9 in Longfellow Creek in Table A1. were reported as chinook. Although a single live chinook may have been seen in Longfellow Creek in 2000 during extensive surveys by the City of Seattle (Lynch, pers. comm.), it is unlikely the five fish reported by the volunteer were chinook because the City's surveyors would almost certainly have seen them and because these fish were reported so late in the season.

### Timing of Salmon Runs

Coho in Longfellow Creek were observed over a 73-day period from October 18 through December 30. Initial coho sightings in Hamm, Miller, and Des Moines creeks were all within 9 days of each other, from October 22 to October 31, and final sightings in each stream ranged from December 9 in Miller Creek to December 30 in Hamm Creek. The observed chum run in Pipers Creek lasted one month, from November 18 to December 17. Volunteers began surveying Fauntleroy Creek October 21, and the first coho were observed two days later. The last coho seen in Fauntleroy Creek was December 15 and surveys continued only two days after that. The two chinook seen in Boeing Creek were observed on October 29, and the coho run was observed from October 21 until the last day of surveys in that stream, November 27.

**Table A1. Site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers' and previous years the sites were watched for each stream surveyed in the Central Puget Sound drainages for the 2000 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
Boeing Creek	080017	436	0.1	10/17 – 11/27	14	1	2000
Des Moines Creek	090377	407	0.1	8/31 – 12/27	61	3	2000
Fauntleroy Creek		132	0.05	10/21 – 12/17	149	18	1998, 1999, 2000
Hamm Creek	090002	418	0	9/23 – 12/30	24	1	2000
Longfellow Creek	090359	177	0.6	9/26 – 12/28	31	1	1999, 2000
		178	0.7	9/25 – 9/30	2	1	1999, 2000
		179	0.8	11/3 – 11/27	8	1	1999, 2000
		180	0.9	10/1 – 12/31	51	3	1999, 2000
		380	1.0	9/26 – 12/26	20	1	2000
		97	2.7	10/21 – 12/31	17	1	1998, 2000
Miller Creek	090371	417	0.1	9/22 – 12/30	48	1	2000
		421	0.2	9/22 – 11/29	15	1	2000
Pipers Creek	080023	70	0	9/25 – 12/18	23	1	1999, 2000
		181	0.2	9/17 – 12/31	29	2	1999, 2000
		98	0.5	9/13 – 12/28	54	2	1998, 1999, 2000
Venema Creek		383	0.1	10/1 – 12/17	9	1	2000
Walker Creek		422	0.1	9/22 – 11/14	13	1	2000

**Table A2. Site ID and fish counts (live and dead) with dates seen at each stream surveyed in the Central Puget Sound drainages for the 2000 spawning season.**

Stream	Site ID	Chinook	Coho	Chum	Trout	Unidentified
Boeing Creek <sup>12</sup>	436	2 (10/29)	25 (10/21 – 11/27)	–	–	–
Des Moines Creek	407	–	163 (10/22 – 12/21)	–	–	3 (11/10 – 12/8)
Fauntleroy Creek	132	–	647 (10/23 – 12/15)	–	4 (10/22 – 11/3)	61 (10/22 – 12/5)
Hamm Creek	418	–	7 (10/31 – 12/30)	–	–	2 (10/28 – 11/30)
Longfellow Creek	177	–	40 (10/18 – 12/12)	–	2 (10/10 – 11/10)	8 (11/1 – 12/20)
	178	–	–	–	–	–
	179	–	20 (11/3 – 11/27)	–	–	–
	180	–	196 (10/21 – 12/30)	–	–	5 (12/1 – 12/8)
	380	–	82 (10/21 – 12/26)	–	–	–
	97	–	–	–	–	–
	<i>Summary</i>		–	338 (10/18 – 12/30)	–	2 (10/10 – 11/10)
Miller Creek	417	–	53 (10/31 – 12/9)	–	–	97 (10/31 – 12/30)
	421	–	9 (11/5 – 11/29)	–	–	8 (9/30 – 10/18)
	<i>Summary</i>		–	62 (10/31 – 12/9)	–	–
Pipers Creek	70	–	–	2 (11/29)	–	1 (11/4)
	181	–	6 (11/21 – 12/2)	14 (11/28 – 12/17)	–	6 (11/5 – 12/17)
	98	–	1 (12/3)	2 (11/18 – 11/21)	–	3 (11/13 – 11/18)
	<i>Summary</i>	–	–	7 (11/21 – 12/3)	18 (11/18 – 12/17)	–
Venema Creek	383	–	–	–	–	–
Walker Creek	422	–	–	–	–	–
<b>Central Puget Sound Summary</b>		2 (10/29)	1249 (10/18 – 12/30)	18 (11/18 – 12/17)	6 (10/10 – 11/10)	194 (9/30 – 12/30)

<sup>12</sup> The volunteer surveying Boeing Creek walked the lower half mile of the stream instead of watching from a stationary site.

**Table A3. Raw data for Boeing Creek.**

Date	Site ID	chin		chum		coho		trout		unidentified	
		live	dead	live	dead	live	dead	live	dead	live	dead
10/17/2000	436	0	0	0	0	0	0	0	0	0	0
10/21/2000	436	0	0	0	0	1	0	0	0	0	0
10/28/2000	436	0	0	0	0	0	0	0	0	0	0
10/29/2000	436	0	2	0	0	0	1	0	0	0	0
10/31/2000	436	0	0	0	0	0	0	0	0	0	0
11/03/2000	436	0	0	0	0	0	0	0	0	0	0
11/05/2000	436	0	0	0	0	0	4	0	0	0	0
11/06/2000	436	0	0	0	0	2	3	0	0	0	0
11/08/2000	436	0	0	0	0	0	0	0	0	0	0
11/10/2000	436	0	0	0	0	1	1	0	0	0	0
11/11/2000	436	0	0	0	0	2	0	0	0	0	0
11/14/2000	436	0	0	0	0	4	2	0	0	0	0
11/16/2000	436	0	0	0	0	1	0	0	0	0	0
11/27/2000	436	0	0	0	0	1	2	0	0	0	0
<b>total</b>		<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Table A4. Raw data for Des Moines Creek.**

Date	Site ID	chin		chum		coho		trout		unidentified	
		live	dead	live	dead	live	dead	live	dead	live	dead
08/31/2000	407	0	0	0	0	0	0	0	0	0	0
09/06/2000	407	0	0	0	0	0	0	0	0	0	0
09/08/2000	407	0	0	0	0	0	0	0	0	0	0
09/10/2000	407	0	0	0	0	0	0	0	0	0	0
09/13/2000	407	0	0	0	0	0	0	0	0	0	0
09/15/2000	407	0	0	0	0	0	0	0	0	0	0
09/19/2000	407	0	0	0	0	0	0	0	0	0	0
09/22/2000	407	0	0	0	0	0	0	0	0	0	0
09/26/2000	407	0	0	0	0	0	0	0	0	0	0
09/29/2000	407	0	0	0	0	0	0	0	0	0	0
10/03/2000	407	0	0	0	0	0	0	0	0	0	0
10/07/2000	407	0	0	0	0	0	0	0	0	0	0
10/10/2000	407	0	0	0	0	0	0	0	0	0	0
10/13/2000	407	0	0	0	0	0	0	0	0	0	0
10/14/2000	407	0	0	0	0	0	0	0	0	0	0
10/17/2000	407	0	0	0	0	0	0	0	0	0	0
10/20/2000	407	0	0	0	0	0	0	0	0	0	0
10/22/2000	407	0	0	0	0	0	1	0	0	0	0
10/23/2000	407	0	0	0	0	0	0	0	0	0	0
10/24/2000	407	0	0	0	0	0	0	0	0	0	0
10/27/2000	407	0	0	0	0	0	0	0	0	0	0
10/31/2000	407	0	0	0	0	0	0	0	0	0	0
11/03/2000	407	0	0	0	0	2	0	0	0	0	0
11/04/2000	407	0	0	0	0	5	0	0	0	0	0
11/05/2000	407	0	0	0	0	8	0	0	0	0	0
11/07/2000	407	0	0	0	0	2	0	0	0	0	0
11/08/2000	407	0	0	0	0	0	0	0	0	0	0
11/10/2000	407	0	0	0	0	15	7	0	0	1	0
11/11/2000	407	0	0	0	0	8	3	0	0	0	0
11/13/2000	407	0	0	0	0	12	1	0	0	0	0
11/15/2000	407	0	0	0	0	2	0	0	0	0	0
11/17/2000	407	0	0	0	0	3	4	0	0	0	0
11/18/2000	407	0	0	0	0	0	0	0	0	0	0
11/21/2000	407	0	0	0	0	1	0	0	0	0	0
11/23/2000	407	0	0	0	0	0	0	0	0	0	0
11/25/2000	407	0	0	0	0	0	0	0	0	0	0
11/29/2000	407	0	0	0	0	9	4	0	0	0	0
12/02/2000	407	0	0	0	0	1	18	0	0	1	0
12/04/2000	407	0	0	0	0	2	1	0	0	0	0
12/06/2000	407	0	0	0	0	1	9	0	0	0	0
12/08/2000	407	0	0	0	0	0	17	0	0	1	0
12/09/2000	407	0	0	0	0	0	0	0	0	0	0
12/13/2000	407	0	0	0	0	0	12	0	0	0	0
12/15/2000	407	0	0	0	0	0	6	0	0	0	0
12/16/2000	407	0	0	0	0	0	6	0	0	0	0
12/17/2000	407	0	0	0	0	0	1	0	0	0	0
12/20/2000	407	0	0	0	0	0	1	0	0	0	0
12/21/2000	407	0	0	0	0	0	1	0	0	0	0
12/24/2000	407	0	0	0	0	0	0	0	0	0	0
12/26/2000	407	0	0	0	0	0	0	0	0	0	0
12/27/2000	407	0	0	0	0	0	0	0	0	0	0
<b>total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>71</b>	<b>92</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>

**Table A5. Raw data for Fauntleroy Creek.**

Date	Site ID	chin		chum		coho		trout		unidentified	
		live	dead	live	dead	live	dead	live	dead	live	dead
10/21/2000	132	0	0	0	0	0	0	0	0	0	0
10/22/2000	132	0	0	0	0	0	0	1	0	1	0
10/23/2000	132	0	0	0	0	0	1	0	0	0	0
10/24/2000	132	0	0	0	0	0	0	0	0	0	0
10/25/2000	132	0	0	0	0	0	1	0	0	0	0
10/26/2000	132	0	0	0	0	0	0	0	0	0	0

Date	Site ID	chin		chum		coho		trout		unidentified	
		live	dead	live	dead	live	dead	live	dead	live	dead
10/27/2000	132	0	0	0	0	0	0	0	0	0	0
10/28/2000	132	0	0	0	0	10	0	1	0	1	0
10/29/2000	132	0	0	0	0	13	0	1	0	0	0
10/30/2000	132	0	0	0	0	0	3	0	0	0	1
10/31/2000	132	0	0	0	0	0	2	0	0	0	1
11/01/2000	132	0	0	0	0	0	1	0	0	0	1
11/02/2000	132	0	0	0	0	0	1	0	0	3	0
11/03/2000	132	0	0	0	0	6	0	1	0	3	0
11/04/2000	132	0	0	0	0	1	4	0	0	1	2
11/05/2000	132	0	0	0	0	0	2	0	0	0	0
11/06/2000	132	0	0	0	0	0	4	0	0	2	2
11/07/2000	132	0	0	0	0	0	1	0	0	0	2
11/08/2000	132	0	0	0	0	0	0	0	0	0	0
11/09/2000	132	0	0	0	0	0	1	0	0	0	0
11/10/2000	132	0	0	0	0	0	3	0	0	0	0
11/11/2000	132	0	0	0	0	0	2	0	0	0	1
11/12/2000	132	0	0	0	0	0	2	0	0	0	1
11/13/2000	132	0	0	0	0	0	1	0	0	0	0
11/14/2000	132	0	0	0	0	0	1	0	0	0	0
11/15/2000	132	0	0	0	0	0	0	0	0	0	0
11/16/2000	132	0	0	0	0	0	0	0	0	1	0
11/17/2000	132	0	0	0	0	0	0	0	0	0	2
11/18/2000	132	0	0	0	0	0	0	0	0	0	0
11/19/2000	132	0	0	0	0	0	1	0	0	0	0
11/20/2000	132	0	0	0	0	0	0	0	0	0	2
11/21/2000	132	0	0	0	0	0	0	0	0	0	0
11/22/2000	132	0	0	0	0	0	0	0	0	0	0
11/23/2000	132	0	0	0	0	1	1	0	0	0	0
11/24/2000	132	0	0	0	0	0	0	0	0	0	2
11/26/2000	132	0	0	0	0	9	0	0	0	0	0
11/27/2000	132	0	0	0	0	7	9	0	0	0	0
11/28/2000	132	0	0	0	0	8	21	0	0	1	1
11/29/2000	132	0	0	0	0	7	17	0	0	0	0
11/30/2000	132	0	0	0	0	10	22	0	0	0	0
12/01/2000	132	0	0	0	0	13	16	0	0	0	0
12/02/2000	132	0	0	0	0	14	71	0	0	0	0
12/03/2000	132	0	0	0	0	3	31	0	0	0	0
12/04/2000	132	0	0	0	0	13	53	0	0	0	13
12/05/2000	132	0	0	0	0	4	34	0	0	0	17
12/06/2000	132	0	0	0	0	4	45	0	0	0	0
12/07/2000	132	0	0	0	0	0	0	0	0	0	0
12/08/2000	132	0	0	0	0	3	14	0	0	0	0
12/09/2000	132	0	0	0	0	0	30	0	0	0	0
12/11/2000	132	0	0	0	0	3	57	0	0	0	0
12/12/2000	132	0	0	0	0	2	24	0	0	0	0
12/15/2000	132	0	0	0	0	1	39	0	0	0	0
12/17/2000	132	0	0	0	0	0	0	0	0	0	0
<b>total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>132</b>	<b>515</b>	<b>4</b>	<b>0</b>	<b>13</b>	<b>48</b>

**Table A6. Raw data for Hamm Creek.**

Date	Site ID	chin		chum		coho		trout		unidentified	
		live	dead	live	dead	live	dead	live	dead	live	dead
09/23/2000	418	0	0	0	0	0	0	0	0	0	0
09/24/2000	418	0	0	0	0	0	0	0	0	0	0
09/26/2000	418	0	0	0	0	0	0	0	0	0	0
09/30/2000	418	0	0	0	0	0	0	0	0	0	0
10/04/2000	418	0	0	0	0	0	0	0	0	0	0
10/08/2000	418	0	0	0	0	0	0	0	0	0	0
10/15/2000	418	0	0	0	0	0	0	0	0	0	0
10/20/2000	418	0	0	0	0	0	0	0	0	0	0
10/22/2000	418	0	0	0	0	0	0	0	0	0	0
10/28/2000	418	0	0	0	0	0	0	0	0	1	0
10/31/2000	418	0	0	0	0	1	0	0	0	0	0
11/04/2000	418	0	0	0	0	0	0	0	0	0	0
11/05/2000	418	0	0	0	0	0	1	0	0	0	0
11/11/2000	418	0	0	0	0	0	1	0	0	0	0
11/12/2000	418	0	0	0	0	0	1	0	0	0	0
11/19/2000	418	0	0	0	0	0	1	0	0	0	0
11/23/2000	418	0	0	0	0	0	1	0	0	0	0
11/24/2000	418	0	0	0	0	0	0	0	0	0	0
11/30/2000	418	0	0	0	0	0	0	0	0	1	0
12/09/2000	418	0	0	0	0	0	0	0	0	0	0
12/10/2000	418	0	0	0	0	0	0	0	0	0	0
12/17/2000	418	0	0	0	0	0	0	0	0	0	0
12/23/2000	418	0	0	0	0	0	0	0	0	0	0
12/30/2000	418	0	0	0	0	0	1	0	0	0	0
<b>total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>

**Table A7. Raw data for Longfellow Creek.**

Date	Site ID	chin		chum		coho		trout		unidentified	
		live	dead	live	dead	live	dead	live	dead	live	dead
09/25/2000	178	0	0	0	0	0	0	0	0	0	0
09/26/2000	177	0	0	0	0	0	0	0	0	0	0
	380	0	0	0	0	0	0	0	0	0	0

Date	Site ID	chin		chum		coho		trout		unidentified	
		live	dead	live	dead	live	dead	live	dead	live	dead
09/27/2000	177	0	0	0	0	0	0	0	0	0	0
09/28/2000	380	0	0	0	0	0	0	0	0	0	0
09/30/2000	178	0	0	0	0	0	0	0	0	0	0
10/01/2000	180	0	0	0	0	0	0	0	0	0	0
10/02/2000	177	0	0	0	0	0	0	0	0	0	0
10/03/2000	180	0	0	0	0	0	0	0	0	0	0
	380	0	0	0	0	0	0	0	0	0	0
10/06/2000	177	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	0	0	0	0	0
10/07/2000	180	0	0	0	0	0	0	0	0	0	0
	380	0	0	0	0	0	0	0	0	0	0
10/09/2000	180	0	0	0	0	0	0	0	0	0	0
10/10/2000	177	0	0	0	0	0	0	1	0	0	0
	180	0	0	0	0	0	0	0	0	0	0
10/12/2000	177	0	0	0	0	0	0	0	0	0	0
10/14/2000	180	0	0	0	0	0	0	0	0	0	0
10/15/2000	180	0	0	0	0	0	0	0	0	0	0
	380	0	0	0	0	0	0	0	0	0	0
10/16/2000	177	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	0	0	0	0	0
10/18/2000	177	0	0	0	0	0	1	0	0	0	0
10/20/2000	180	0	0	0	0	0	0	0	0	0	0
10/21/2000	97	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	1	0	0	0	0	0
	380	0	0	0	0	0	1	0	0	0	0
10/22/2000	97	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	0	0	0	0	0
	380	0	0	0	0	0	0	0	0	0	0
10/23/2000	177	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	0	0	0	0	0
10/25/2000	177	0	0	0	0	0	0	0	0	0	0
	380	0	0	0	0	0	0	0	0	0	0
10/26/2000	180	0	0	0	0	0	0	0	0	0	0
10/28/2000	97	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	2	0	0	0	0	0
10/30/2000	97	0	0	0	0	0	0	0	0	0	0
	177	0	0	0	0	0	1	0	0	0	0
	180	0	0	0	0	4	0	0	0	0	0
10/31/2000	380	0	0	0	0	2	5	0	0	0	0
11/01/2000	177	0	0	0	0	0	1	0	0	1	0
11/03/2000	177	0	0	0	0	0	2	0	0	0	0
	179	0	0	0	0	2	0	0	0	0	0
	180	0	0	0	0	4	2	0	0	0	0
11/04/2000	97	0	0	0	0	0	0	0	0	0	0
	179	0	0	0	0	4	0	0	0	0	0
	180	0	0	0	0	1	0	0	0	0	0
	380	0	0	0	0	2	0	0	0	0	0
11/06/2000	177	0	0	0	0	7	0	0	0	0	0
	180	0	0	0	0	6	2	0	0	0	0
11/08/2000	97	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	0	0	0	0	0
11/09/2000	177	0	0	0	0	0	1	0	0	0	0
	179	0	0	0	0	3	2	0	0	0	0
	180	0	0	0	0	8	0	0	0	0	0
11/10/2000	97	0	0	0	0	0	0	0	0	0	0
	177	0	0	0	0	0	2	0	1	0	0
	180	0	0	0	0	3	2	0	0	0	0
11/11/2000	180	0	0	0	0	5	0	0	0	0	0
	380	0	0	0	0	6	7	0	0	0	0
11/12/2000	177	0	0	0	0	4	5	0	0	0	0
	179	0	0	0	0	3	3	0	0	0	0
	180	0	0	0	0	9	12	0	0	0	0
11/14/2000	177	0	0	0	0	0	1	0	0	0	0
	179	0	0	0	0	2	0	0	0	0	0
	180	0	0	0	0	2	2	0	0	0	0
11/16/2000	180	0	0	0	0	3	10	0	0	0	0
11/17/2000	177	0	0	0	0	0	1	0	0	0	0
11/18/2000	97	0	0	0	0	0	0	0	0	0	0
	179	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	2	0	0	0	0
11/19/2000	97	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	4	0	0	0	0
	380	0	0	0	0	3	11	0	0	0	0
11/21/2000	177	0	0	0	0	0	1	0	0	0	0
11/22/2000	180	0	0	0	0	2	1	0	0	0	0
11/24/2000	177	0	0	0	0	0	3	0	0	0	0
	380	0	0	0	0	0	0	0	0	0	0
11/26/2000	97	0	0	0	0	0	0	0	0	0	0
	179	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	1	0	0	0	0
11/27/2000	177	0	0	0	0	0	1	0	0	0	0
	179	0	0	0	0	0	1	0	0	0	0
	180	0	0	0	0	0	1	0	0	0	0
11/29/2000	177	0	0	0	0	0	2	0	0	0	3
11/30/2000	380	0	0	0	0	0	0	0	0	0	0
12/01/2000	97	0	0	0	0	0	0	0	0	0	0
	180	0	4	0	0	8	49	0	0	0	0
12/03/2000	380	0	0	0	0	2	15	0	0	0	0
12/04/2000	177	0	0	0	0	0	3	0	0	0	2
12/05/2000	180	0	0	0	0	0	0	0	0	0	0

Date	Site ID	chin		chum		coho		trout		unidentified	
		live	dead	live	dead	live	dead	live	dead	live	dead
12/06/2000	177	0	0	0	0	0	3	0	0	0	0
12/08/2000	180	0	1	0	0	0	39	0	0	0	0
12/10/2000	97	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	6	0	0	0	0
	380	0	0	0	0	0	14	0	0	0	0
12/11/2000	97	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	0	0	0	0	0
12/12/2000	177	0	0	0	0	0	1	0	0	0	0
12/14/2000	177	0	0	0	0	0	0	0	0	0	0
12/15/2000	380	0	0	0	0	0	0	0	0	0	0
12/16/2000	97	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	0	0	0	0	0
12/17/2000	380	0	0	0	0	0	2	0	0	0	0
12/20/2000	177	0	0	0	0	0	0	0	0	0	2
12/22/2000	97	0	0	0	0	0	0	0	0	0	0
	177	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	0	0	0	0	0
	380	0	0	0	0	0	0	0	0	0	0
12/26/2000	380	0	0	0	0	0	12	0	0	0	0
12/27/2000	177	0	0	0	0	0	0	0	0	0	0
12/28/2000	177	0	0	0	0	0	0	0	0	0	0
12/30/2000	97	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	5	0	0	0	0
12/31/2000	97	0	0	0	0	0	0	0	0	0	0
	180	0	0	0	0	0	0	0	0	0	0
<b>total</b>		<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>98</b>	<b>240</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>7</b>

**Table A8. Raw data for Miller Creek.**

Date	Site ID	chin		chum		coho		trout		unidentified	
		live	dead	live	dead	live	dead	live	dead	live	dead
09/22/2000	417	0	0	0	0	0	0	0	0	0	0
	421	0	0	0	0	0	0	0	0	0	0
09/24/2000	417	0	0	0	0	0	0	0	0	0	0
09/26/2000	417	0	0	0	0	0	0	0	0	0	0
09/28/2000	421	0	0	0	0	0	0	0	0	0	0
09/30/2000	421	0	0	0	0	0	0	0	0	2	0
10/01/2000	421	0	0	0	0	0	0	0	0	0	0
10/04/2000	421	0	0	0	0	0	0	0	0	0	0
10/08/2000	421	0	0	0	0	0	0	0	0	0	0
10/15/2000	421	0	0	0	0	0	0	0	0	0	0
10/18/2000	421	0	0	0	0	0	0	0	0	6	0
10/22/2000	417	0	0	0	0	0	0	0	0	0	0
	421	0	0	0	0	0	0	0	0	0	0
10/24/2000	417	0	0	0	0	0	0	0	0	0	0
	421	0	0	0	0	0	0	0	0	0	0
10/26/2000	417	0	0	0	0	0	0	0	0	0	0
10/29/2000	417	0	0	0	0	0	0	0	0	0	0
	421	0	0	0	0	0	0	0	0	0	0
10/31/2000	417	0	0	0	0	1	0	0	0	5	0
11/01/2000	421	0	0	0	0	0	0	0	0	0	0
11/02/2000	417	0	0	0	0	0	0	0	0	3	0
11/04/2000	417	0	0	0	0	2	1	0	0	3	0
11/05/2000	417	0	0	0	0	0	6	0	0	0	0
	421	0	0	0	0	1	0	0	0	0	0
11/07/2000	417	0	0	0	0	0	3	0	0	0	0
11/09/2000	417	0	0	0	0	4	0	0	0	0	0
11/11/2000	417	0	0	0	0	0	3	0	0	0	0
11/12/2000	417	0	0	0	0	0	2	0	0	0	0
11/13/2000	417	0	0	0	0	0	3	0	0	0	0
11/14/2000	421	0	0	0	0	2	0	0	0	0	0
11/15/2000	417	0	0	0	0	0	3	0	0	0	0
11/17/2000	417	0	0	0	0	0	3	0	0	0	0
11/18/2000	417	0	0	0	0	0	3	0	0	0	0
11/19/2000	417	0	0	0	0	0	3	0	0	0	0
11/20/2000	417	0	0	0	0	0	3	0	0	0	0
11/22/2000	417	0	0	0	0	0	3	0	0	0	0
	421	0	0	0	0	0	0	0	0	0	0
11/23/2000	417	0	0	0	0	0	0	0	0	0	1
11/24/2000	417	0	0	0	0	0	0	0	0	0	4
11/25/2000	417	0	0	0	0	0	0	0	0	0	4
11/26/2000	417	0	0	0	0	0	1	0	0	1	2
11/27/2000	417	0	0	0	0	0	2	0	0	1	2
11/28/2000	417	0	0	0	0	0	0	0	0	6	0
11/29/2000	417	0	0	0	0	0	0	0	1	4	1
	421	0	0	0	0	4	2	0	0	0	0
11/30/2000	417	0	0	0	0	0	2	0	0	0	2
12/01/2000	417	0	0	0	0	0	4	0	0	0	0
12/02/2000	417	0	0	0	0	0	0	0	0	1	5
12/03/2000	417	0	0	0	0	0	0	0	0	0	2
12/05/2000	417	0	0	0	0	0	0	0	0	0	2
12/07/2000	417	0	0	0	0	0	0	0	0	0	2
12/08/2000	417	0	0	0	0	0	0	0	0	0	4
12/09/2000	417	0	0	0	0	1	0	0	0	0	4
12/11/2000	417	0	0	0	0	0	0	0	0	0	4
12/12/2000	417	0	0	0	0	0	0	0	0	0	6
12/13/2000	417	0	0	0	0	0	0	0	0	0	6
12/15/2000	417	0	0	0	0	0	0	0	0	0	5
12/16/2000	417	0	0	0	0	0	0	0	0	0	5
12/18/2000	417	0	0	0	0	0	0	0	0	0	0

Date	Site ID	chin		chum		coho		trout		unidentified	
		live	dead	live	dead	live	dead	live	dead	live	dead
12/20/2000	417	0	0	0	0	0	0	0	0	0	1
12/22/2000	417	0	0	0	0	0	0	0	0	0	2
12/26/2000	417	0	0	0	0	0	0	0	0	0	3
12/28/2000	417	0	0	0	0	0	0	0	0	0	3
12/30/2000	417	0	0	0	0	0	0	0	0	0	3
<b>total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>47</b>	<b>0</b>	<b>1</b>	<b>32</b>	<b>73</b>

**Table A9. Raw data for Pipers Creek.**

Date	Site ID	chin		chum		coho		trout		unidentified	
		live	dead	live	dead	live	dead	live	dead	live	dead
09/13/2000	98	0	0	0	0	0	0	0	0	0	0
09/16/2000	98	0	0	0	0	0	0	0	0	0	0
09/17/2000	181	0	0	0	0	0	0	0	0	0	0
09/20/2000	98	0	0	0	0	0	0	0	0	0	0
09/23/2000	98	0	0	0	0	0	0	0	0	0	0
09/24/2000	181	0	0	0	0	0	0	0	0	0	0
09/25/2000	70	0	0	0	0	0	0	0	0	0	0
	98	0	0	0	0	0	0	0	0	0	0
09/27/2000	70	0	0	0	0	0	0	0	0	0	0
09/28/2000	98	0	0	0	0	0	0	0	0	0	0
	181	0	0	0	0	0	0	0	0	0	0
09/29/2000	98	0	0	0	0	0	0	0	0	0	0
10/01/2000	98	0	0	0	0	0	0	0	0	0	0
	181	0	0	0	0	0	0	0	0	0	0
10/02/2000	70	0	0	0	0	0	0	0	0	0	0
	98	0	0	0	0	0	0	0	0	0	0
	181	0	0	0	0	0	0	0	0	0	0
10/04/2000	70	0	0	0	0	0	0	0	0	0	0
	98	0	0	0	0	0	0	0	0	0	0
10/06/2000	98	0	0	0	0	0	0	0	0	0	0
	181	0	0	0	0	0	0	0	0	0	0
10/08/2000	98	0	0	0	0	0	0	0	0	0	0
	181	0	0	0	0	0	0	0	0	0	0
10/10/2000	70	0	0	0	0	0	0	0	0	0	0
	98	0	0	0	0	0	0	0	0	0	0
	181	0	0	0	0	0	0	0	0	0	0
10/11/2000	70	0	0	0	0	0	0	0	0	0	0
	98	0	0	0	0	0	0	0	0	0	0
10/12/2000	181	0	0	0	0	0	0	0	0	0	0
10/15/2000	98	0	0	0	0	0	0	0	0	0	0
10/16/2000	70	0	0	0	0	0	0	0	0	0	0
10/17/2000	181	0	0	0	0	0	0	0	0	0	0
10/18/2000	98	0	0	0	0	0	0	0	0	0	0
10/20/2000	98	0	0	0	0	0	0	0	0	0	0
	181	0	0	0	0	0	0	0	0	0	0
10/21/2000	181	0	0	0	0	0	0	0	0	0	0
10/22/2000	70	0	0	0	0	0	0	0	0	0	0
	98	0	0	0	0	0	0	0	0	0	0
10/24/2000	98	0	0	0	0	0	0	0	0	0	0
10/25/2000	70	0	0	0	0	0	0	0	0	0	0
	98	0	0	0	0	0	0	0	0	0	0
10/26/2000	181	0	0	0	0	0	0	0	0	0	0
10/27/2000	98	0	0	0	0	0	0	0	0	0	0
10/29/2000	98	0	0	0	0	0	0	0	0	0	0
	181	0	0	0	0	0	0	0	0	0	0
10/30/2000	98	0	0	0	0	0	0	0	0	0	0
10/31/2000	70	0	0	0	0	0	0	0	0	0	0
	98	0	0	0	0	0	0	0	0	0	0
11/01/2000	98	0	0	0	0	0	0	0	0	0	0
11/02/2000	70	0	0	0	0	0	0	0	0	0	0
11/04/2000	70	0	0	0	0	0	0	0	0	0	1
	98	0	0	0	0	0	0	0	0	0	0
	181	0	0	0	0	0	0	0	0	0	0
11/05/2000	181	0	0	0	0	0	0	0	0	1	0
11/06/2000	98	0	0	0	0	0	0	0	0	0	0
11/07/2000	181	0	0	0	0	0	0	0	0	0	0
11/08/2000	70	0	0	0	0	0	0	0	0	0	0
	98	0	0	0	0	0	0	0	0	0	0
11/10/2000	98	0	0	0	0	0	0	0	0	0	0
11/11/2000	181	0	0	0	0	0	0	0	0	1	0
11/12/2000	181	0	0	0	0	0	0	0	0	0	0
11/13/2000	70	0	0	0	0	0	0	0	0	0	0
	98	0	0	0	0	0	0	0	0	1	0
11/14/2000	98	0	0	0	0	0	0	0	0	1	0
11/15/2000	70	0	0	0	0	0	0	0	0	0	0
	181	0	0	0	0	0	0	0	0	0	0
11/18/2000	98	0	0	0	1	0	0	0	0	1	0
11/20/2000	70	0	0	0	0	0	0	0	0	0	0
	98	0	0	0	0	0	0	0	0	0	0
11/21/2000	98	0	0	0	1	0	0	0	0	0	0
	181	0	0	0	0	1	0	0	0	0	0
11/22/2000	181	0	0	0	0	0	1	0	0	0	0
11/24/2000	98	0	0	0	0	0	0	0	0	0	0
11/25/2000	98	0	0	0	0	0	0	0	0	0	0
11/26/2000	70	0	0	0	0	0	0	0	0	0	0
	98	0	0	0	0	0	0	0	0	0	0
11/27/2000	70	0	0	0	0	0	0	0	0	0	0

Date	Site ID	chin		chum		coho		trout		unidentified	
		live	dead	live	dead	live	dead	live	dead	live	dead
11/28/2000	98	0	0	0	0	0	0	0	0	0	0
	98	0	0	0	0	0	0	0	0	0	0
	181	0	0	1	0	0	0	0	0	0	0
11/29/2000	70	0	0	2	0	0	0	0	0	0	0
11/30/2000	98	0	0	0	0	0	0	0	0	0	0
12/02/2000	181	0	0	10	0	0	4	0	0	0	3
12/03/2000	98	0	0	0	0	1	0	0	0	0	0
12/05/2000	98	0	0	0	0	0	0	0	0	0	0
	181	0	0	1	0	0	0	0	0	0	0
12/06/2000	70	0	0	0	0	0	0	0	0	0	0
12/09/2000	70	0	0	0	0	0	0	0	0	0	0
12/10/2000	181	0	0	0	0	0	0	0	0	0	0
12/12/2000	70	0	0	0	0	0	0	0	0	0	0
	98	0	0	0	0	0	0	0	0	0	0
12/13/2000	98	0	0	0	0	0	0	0	0	0	0
12/17/2000	98	0	0	0	0	0	0	0	0	0	0
	181	0	0	1	1	0	0	0	0	0	1
12/18/2000	70	0	0	0	0	0	0	0	0	0	0
12/20/2000	98	0	0	0	0	0	0	0	0	0	0
12/26/2000	98	0	0	0	0	0	0	0	0	0	0
12/28/2000	98	0	0	0	0	0	0	0	0	0	0
12/31/2000	181	0	0	0	0	0	0	0	0	0	0
<b>total</b>		<b>0</b>	<b>0</b>	<b>15</b>	<b>3</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>5</b>

**Table A10. Raw data for Venema Creek.**

Date	Site ID	chin		chum		coho		trout		unidentified	
		live	dead	live	dead	live	dead	live	dead	live	dead
10/01/2000	383	0	0	0	0	0	0	0	0	0	0
10/08/2000	383	0	0	0	0	0	0	0	0	0	0
10/20/2000	383	0	0	0	0	0	0	0	0	0	0
10/29/2000	383	0	0	0	0	0	0	0	0	0	0
11/07/2000	383	0	0	0	0	0	0	0	0	0	0
11/21/2000	383	0	0	0	0	0	0	0	0	0	0
11/22/2000	383	0	0	0	0	0	0	0	0	0	0
12/02/2000	383	0	0	0	0	0	0	0	0	0	0
12/17/2000	383	0	0	0	0	0	0	0	0	0	0
<b>total</b>		<b>0</b>	<b>0</b>								

**Table A11. Raw data for Walker Creek.**

Date	Site ID	chin		chum		coho		trout		unidentified	
		live	dead	live	dead	live	dead	live	dead	live	dead
09/22/2000	422	0	0	0	0	0	0	0	0	0	0
09/28/2000	422	0	0	0	0	0	0	0	0	0	0
09/30/2000	422	0	0	0	0	0	0	0	0	0	0
10/01/2000	422	0	0	0	0	0	0	0	0	0	0
10/04/2000	422	0	0	0	0	0	0	0	0	0	0
10/08/2000	422	0	0	0	0	0	0	0	0	0	0
10/15/2000	422	0	0	0	0	0	0	0	0	0	0
10/18/2000	422	0	0	0	0	0	0	0	0	0	0
10/22/2000	422	0	0	0	0	0	0	0	0	0	0
10/29/2000	422	0	0	0	0	0	0	0	0	0	0
11/01/2000	422	0	0	0	0	0	0	0	0	0	0
11/05/2000	422	0	0	0	0	0	0	0	0	0	0
11/14/2000	422	0	0	0	0	0	0	0	0	0	0
<b>total</b>		<b>0</b>	<b>0</b>								

# **Appendix B.**

## **Data Collection Form used in 2000**



# Salmon Watcher - Monthly Data Collection Form

Month/Year \_\_\_\_\_ /2000 Stream Name \_\_\_\_\_

Name \_\_\_\_\_ Location Observed / Site ID# \_\_\_\_\_

1. Fill out this form in pencil as your observations are made. EVEN IF YOU DON'T SEE ANY FISH, record your observation date and time and record 0 fish seen.
2. If you observe more than once a day, record all your observations under the same date, on a different line and the different times.
3. Identify any live or dead salmon you see. When you are reasonably certain of your identification (more than 70% sure), record it on this form. If you can't identify it, write UNID and describe it as best you can. (Especially note size, color, spots on back, spots on tail - upper or lower part.)
4. Record other observations you make, too, such as spawning activity, other wildlife, a neighbor's comment, sounds of splashing from non-visible areas, etc. in the Comments portion of the form.

Date	Start Time	End Time	Species Name*	# Live Adult Fish per species	# Dead Adult Fish per species	Total <b>Adult</b> Fish Count (live + dead)	Juvenile Fish < 6"-8"	# Citizens Talked With	Comments (water clarity, redds present, fresh water mussels, etc.) Tags?

\*Key: **COHO**-Coho, **CHIN**-Chinook, **SOCK**-Sockeye, **CHUM**-Chum, **KOKA**-Kokanee, **STHD**-Steelhead trout, **TROU**-Rainbow or cutthroat trout, **UNID**-Unidentified

Estimated total time spent observing: \_\_\_\_\_

**Please return form no later than the 9th of the following month.** If you have any questions, call Jennifer Vanderhoof at (206) 263-6533.

This project is sponsored by the Lake Washington Forum, King Conservation District, Washington Department of Fish and Wildlife, Muckleshoot Indian Tribe, King County Water and Land Resources Division, Snohomish County Surface Water Management, Cities of Bellevue, Issaquah, Kirkland, and Seattle. Thank you so much!

Data entered on \_\_\_\_\_ Initial \_\_\_\_\_ . First data check on \_\_\_\_\_ Initial \_\_\_\_\_ . Second data check on \_\_\_\_\_ Initial \_\_\_\_\_ . Observations IDs \_\_\_\_\_