

1998 and 1999 VOLUNTEER SALMON WATCHER PROGRAM in the LAKE WASHINGTON WATERSHED

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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 salmonid 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 and has been conducted annually since. The purpose of the program is to document the distribution of spawning adult salmonids 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 1998 program, 81 volunteers and one classroom surveyed 90 sites on 40 streams and 6 Lake Washington beaches throughout the Lake Washington Watershed from early August 1998 to late January 1999. For the 1999 program, 123 volunteers and two classrooms surveyed 121 sites on 47 streams from early August 1999 to late January 2000. Because volunteers collect the data in this program, the agencies are able to obtain information from many more locations than would otherwise be possible. However, data in this report should be used with the following limitations in mind:

- (1) Spawning fish can be difficult to see and therefore may have passed through reaches undetected;
- (2) Volunteer expertise in locating and identifying fish species ranged from very high to very low;
- (3) Volunteers view stream sites for relatively short 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) Coverage of streams was by no means complete; therefore, fish distribution information is not complete; 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 throughout the watershed observed the following species in both years: sockeye, chinook, coho, kokanee, chum, and trout (rainbow or cutthroat). Additionally, steelhead were reported during the 1998 season. The following results were compiled from data obtained within the previously mentioned limitations of these surveys: (1) In 1998, chinook, sockeye, and coho were all observed in generally the same areas, with the exception of sockeye, which were observed farther in the Cedar River system than the other species. Chinook were observed by a volunteer in McAleer Creek in 1998 for the first time on record. (2) In 1999, the observations of chinook, sockeye, and coho were also similar, with the exception of sockeye, which were not seen in the East Lake Washington Basin. (3) Sockeye were seen in the greatest number throughout the region in both 1998 and 1999. (4) Kokanee were observed in North Lake Washington and in Big Bear Creek Basin in both 1998 and 1999.

This report has been published on the Internet and can be found using the hyperlinks on this web page: <http://dnr.metrokc.gov/wlr/waterres/salmon/index.htm>

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 third and fourth years 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 (sometimes species that had never before been seen in a particular stream), 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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- A. Puget Sound Drainages report and raw data
- B. Snoqualmie River Basin report and raw data
- C. Data Collections Form used in 1998 and 1999

Appendices D-K, the raw data tables, are in the separately bound Appendices to the 1998 and 1999 Volunteer Salmon Watcher Program report.

- D. Big Bear Creek Basin raw data for 1998 and 1999
- E. Cedar River Basin raw data for 1998 and 1999
- F. East Lake Washington raw data for 1998 and 1999
- G. Issaquah Creek Basin raw data for 1998 and 1999
- H. North Lake Washington Tributaries raw data for 1998 and 1999
- I. Sammamish River Tributaries raw data for 1998 and 1999
- J. West Lake Sammamish Basin raw data for 1999
- K. West Lake Washington Basin raw data for 1999

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 1998, the Bellevue Stream Team (BST), the Washington Department of Fish and Wildlife (WDFW), the Muckleshoot Indian Tribe Fisheries Department (MITFD), King County Water and Land Resource Division (KCWLDRD), and Snohomish County Surface Water Management (SCSWM) participated in the Salmon Watcher Program. The 1999 program included these jurisdictions as well as the cities of Bainbridge, Bothell, Issaquah, Renton, Seattle, and Woodinville.

The Salmon Watcher Program was created to provide information about salmon in addition to data already being collected through other state and local government programs. Prior to the Salmon Watcher Program, salmon spawning observations were being reported to individual agencies and the data were not easily accessible to or pro-actively shared with other agencies and the public. The Salmon Watcher Program became the centralized effort for making the data readily available for a variety of people and entities. Through this program, volunteers annually collect information on the presence of spawning salmonids located during surveys, including chinook, coho, sockeye, and chum salmon, steelhead and resident trout species, and kokanee (resident form of sockeye). The data become more important as salmonids in the region, such as 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, as well as sites in the Snoqualmie River Basin. 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, the 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.

Figure 1. Lake Washington Watershed basins surveyed for the 1998 and 1999 Salmon Watcher Program (see insert).

METHODS

Volunteers¹ are annually recruited to observe salmonids in streams in the Lake Washington Watershed² from stationary locations at banks, bridges, and decks. The 65 volunteers (65 individuals, pairs, or groups, totaling 81 people and one classroom) who participated in the 1998 program are listed in Table 1, and the 141 volunteers (totaling 165 individuals and two classrooms) who participated in the 1999 program are listed in Table 2. These tables include the names of volunteers who surveyed in Puget Sound drainages and in the Snoqualmie River Basin (see Appendices A and B).

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, places of business, or customary walking places whenever possible. They 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. Figure 2 shows all sites surveyed by volunteers for both the 1998 and 1999 spawning seasons.

Table 1. Volunteer observers for the 1998 volunteer Salmon Watcher Program.

Douglas Allen	Liane Fontaine	Diane Pottinger
Jessica Anderson	Paula Fraser	Deb Rice
Russ Atkins	Bob Freiheit	Adrienne Ross
Annette & Jerry Baesel	Gary Gebelin-Goertz	Carolyn Rowland
Tina & Craig Bailey	James W. Hearn	Dick & Mary Schaetzel
Barney & Maureen Baker	Tom Hoffman	Sherry Shao & Wayne Zhan
Jean & Pete Belits	Tom Johnson	Kathryn Sheldon
Shirley Biccum	Brian LaComa	Jim Shoemaker
Mamie Bolender	J.T. Lanum & Gail Erickson	Andy & Barbara Solberg
Janet Charnley	Jeff Laufle	John Sordetto
Maureen Corlas & Mike Simonson	Steve Long	Elaine & Nathan Srinivas
Nancy Daar	Jack McFall	Jacque Stutzman
Jim Dexter	Mike McKenna	Larry Thomas
Dorothy Douglas & Judy Neumann	Jim McRoberts	Doug Weber
Craig & Kim Dowden	Daniel Miller & Hilah Selleck	Irv Weisser
Mark & Justin Doyle	Ryuji Mitsuoka	Willie Wilson
Harry Dursch	Courtney & Harrison Moreland	Maggie Windus
Eileen & Roger Dustan	Michelle Myers	Woodridge Elementary School
Bob & Gary Emerson	Lance Peterson	Aaron Youmans
Gregg Everett	Carolyn & Norris Peterson	Skip Young
Lauralyn Feetham	Judy Pickens	Seward Young
Dave Ferguson	Kathy Piland	

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

² 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 2. Volunteer observers for the 1999 volunteer Salmon Watcher Program.

Ann Aagaard	Jose Felix & Donna Layden-Felix	Kate McWiggins
Kirk Anderson	Steve Fisher	Janet Millard
Russ Atkins	Mary Ellen Flanagan	Ryuji Mitsuoka
Tina & Craig Bailey	Jim & Lauren Flynn	Noreen Oickle & Rose Marie Landry
Barney, Nick, & Maureen Baker	Dave & Genie Folsom	Dave Olson
Mary Barrett	Helen Freeman	Dean Overton
Cathleen Barry	Linda & Brianna Freimanis	Lance Peterson
Kurt Bayer	Andrea Geisler	Tom Piekarski
Jo Anne Bedlington	David Ginder & Michelle Reuss	Dinane Pottinger
Jean & Pete Belits	Gretchen Gonzalez	Paul Racette
Robert & Amelia Best	Deborah Petrak Green	Rachel Reinhart
Nancy Betternow	Terri Griffith	Adrienne Ross
Shirley Biccum	Scott Grindy	Carolyn Rowland
Jan Binks	Marlene Grubb	Lorriane Sanborn
Maureen Birrell	Karen Gyselinck	Bonnie Savo
Mamie Bolender	Eric Hartstein	Lindsay Scarey
Bard Boston & Rowena Lau	James W. Hearn	Dick & Mary Schaezel
Martin Boulander	Jim Hearsey	Sue Schaffer & Janeene Chilcoat
Carla Bowditch	Tiffany Henderson & April Carney	Tina Schulstad
Ann Boyce	Henry Family	Mary Sevilla
Mike Brockt	Hlavacek Family	Kathryn Sheldon
Gretchen Brookes	Andrew Hofstad	Patty Shelton
Ron & Diana Carnell	Dave Hofstad	Toney Sisk
Gina Catarra	Joyce Hoikka	Leah Smith
Mark & Stephan Charnews	James Hughes	Andy Solberg
Janet Charnley	Cassey Ingalls & Lynne Williams	Dick Steen
Janeene Chilcoat	Hugh Jennings	Ellen Stewart
Jennifer Chin	Pam Johnson	Bridgette Stoffey
N. Christiansen	Robert M. Johnson	John Storz
Maureen Corlas & Mark Simonson	Tom Johnson	Debbie & Andy Taylor
Diane Cornell-Drury	Nathan Jones	K. Terry Thorsos
Bob Corra	Ted Jones	Shannon Underwood
Liz Crawford	J. Kelley	Linda Vane
Vicki Creighton	Rainer Kirschner	Art Vetter
Nancy Daar	Kate Klein	Elsa Vetter
Carol Davis	Jody Klineburger & Glen Conley	Ed Walker
Barbara Dickson	Arnie Knudson	Terry Walsh
Al Dietemann	Lyn Kratz	Karen Ware
Mike Dotson	Peter La Raus	Doug Weber
Dean Drugge	Jeff Laufle	Irv Weisser
Eileen & Roger Dustan	Denis Lavoiv	Maggie & Brian Windus
Pearl & Ed Ebert	Ardis, Bob, & Brian Lilleness	Woodridge Elementary School
EastSide Urban Academy	Steve Long	Wayne E. Woulf
Bob Emerson	Barbara Lynum	Lisa Wright
Linda Erickson & Drew Kerr	Steve Mallas & Julie Millard	Connie Wurm
Karen Farnsworth	Jim McRoberts	Mark Yoshida
Lauralyn Feetham	Jim McWha	Janis Young

Figure 2. Sites in the Lake Washington Watershed surveyed by Salmon Watcher volunteers in 1998 and 1999 (see insert).

Volunteer Training

King County and the cooperating jurisdictions held three training sessions in both 1998 and 1999. Additionally, in 1998 Snohomish County implemented a Salmon Watcher program in Snohomish County basins that drain to Lake Washington and held one training session. In 1999, the Snohomish County program went county-wide and they held three training sessions. Snohomish County traded data with King County that were collected for the streams draining into the Lake Washington Watershed (North, Swamp, and Little Bear creeks systems; see Sammamish River Tributaries below). Also in 1999, the City of Seattle held a separate additional training session, which focused on Fautleroy Creek.

All volunteers attended training a training session in which they viewed a slide presentation and learned to identify adult spawning salmon species. They received salmon identification materials, including color adult species identification cards. Volunteers learned safety measures and how to fill out and return data forms. During the training sessions, volunteers were asked to sign up for a site to survey (some signed up for more than one site). They were encouraged to visit the Issaquah Hatchery and practice salmon identification there with the assistance of hatchery docents. They were also given contact information for agency personnel if they had any identification questions and they were informed that biologists were available for field verifications of fish species when requested.

Survey Timing

1998 surveys were conducted between August 4, 1998, and January 24, 1999, with most surveys ending during December 1998. Surveys in 1999 were conducted between July 25, 1999, and January 13, 2000. In both years, survey frequency was typically biweekly but varied from almost every day to once per month. The stream sites and corresponding river miles surveyed, dates of surveys, number of surveys, number of surveyors, and number of each species observed are organized by basin presented in the Results section of this report. Stream Watershed Resource Inventory Area numbers, as assigned by Williams et al. (1975), are included with the raw data, which are presented in the separately bound Appendices to the 1998 and 1999 Volunteer Salmon Watcher Program report.

Data Collection and Analysis

Volunteers were asked to survey for salmon at least twice a week (prior to 1998, volunteers were asked to survey only once per week). Volunteers were also asked to spend at least 10 minutes observing at each location for adult spawners; however, actual survey frequency and duration varied greatly among volunteers. Volunteers counted all live and dead fish they observed (consequently, dead fish were recounted if they were present during more than one survey). If a volunteer surveyed the same site more than one time on the same day, the highest fish count was used. Unidentified fish were also counted and described when possible. Data were recorded onto field data forms (see 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.

Quality Assurance/Quality Control

Several means were used to assure that the data collected from volunteers were accurate and as consistent as possible during all phases of the program. Data included in this report were collected by volunteers who attended a training session. Volunteers were provided with laminated fish identification cards and a packet of training materials with fish identification information in it. Also, contact persons (fish experts) were assigned to each volunteer to answer questions and verify species identification in the field whenever requested and if possible. 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 (e.g., the database was checked against the data sheets to ensure all data were entered into the computer correctly).

Because of the limitations of data usage from a volunteer program such as this (see Limitations of Volunteer Data in the Discussion below) and despite quality control measures, the data are only intended to be used to make preliminary evaluations of the distribution of spawning salmonids in the Lake Washington Watershed (and some nearby drainages).

RESULTS

The streams surveyed during the 1998 and 1999 Salmon Watcher Program 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). Additionally, streams were surveyed in some Puget Sound drainages, including Pipers, Longfellow, and Fauntleroy creeks (Appendix A), and in the Snoqualmie River Basin (Appendix B). In 1998, a total of 90 sites on 40 streams and 6 Lake Washington beaches were surveyed in the Lake Washington Watershed by 62 volunteers (62 individuals, pairs, or groups, totaling 81 people and one classroom; Table 1). In 1999, 121 sites on 47 streams were surveyed by 105 volunteers (totaling 123 individuals and two classrooms; Table 2). Results from both 1998 and 1999 are presented below in basin groupings. Basin maps depict observations of sockeye, coho, chinook, and kokanee identified during the survey. Chum and trout species were not mapped.

Big Bear Creek Basin

Volunteers in 1998 surveyed 7 streams in the Big Bear Creek Basin (Figure 2) from mid-September through mid-December. Each stream had from 1 to 8 survey sites that were each surveyed by a single volunteer from as few as 4 to as many as 58 times (Table 3a.). Volunteers in 1999 surveyed 10 streams in the basin from early-August through December (Figure 2). From 1 to 7 sites were watched per stream, and the total number of surveys ranged from 4 to 66 per site (Table 3b.). Each site was monitored by either 1 or 2 volunteers. Raw survey data for each stream are presented in Appendix D, which is in the separately bound Appendices to the 1998 and 1999 Volunteer Salmon Watcher Program report.

Salmonids were found in five of the seven streams observed in Big Bear Creek Basin in 1998. Salmonids were found in seven of the ten streams observed in the basin in 1999. 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 in both 1998 and 1999. Chinook were also seen in those two creeks in both years. Coho were seen in Big Bear Creek, Mackey Creek, and an unnamed tributary to Bear Creek in 1998, and in those same creeks in 1999 plus Cottage Lake Creek and three other creeks (Colin, Seidel, and Struve creeks). No fish were observed in Colin Creek or Struve Creek in 1998, but coho were found in both in 1999 and kokanee were found in Colin Creek in 1999. Kokanee were observed in only Big Bear Creek in 1998 and 1999 and were also seen in Cottage Lake Creek (and Colin Creek) in 1999.

Uppermost Sightings

The most upstream points surveyed in Big Bear Creek were river mile (RM) 9.8 in 1998 and 9.0 in 1999. As Table 3 shows, chinook were seen in Big Bear Creek up to RM 9.25 in 1998 and RM 9.0 in 1999. Chinook were seen at all sites surveyed, including the uppermost points surveyed, in Cottage Lake Creek in both 1998 and 1999 (RM 2.3 and RM 2.2, respectively).

Sockeye were seen in Big Bear Creek up to NE 179th St. (RM 9.25) in both 1998 and 1999. RM 9.8 was the uppermost site surveyed in 1998 and sockeye were not seen there; RM 9.25 was the uppermost site surveyed in 1999. Sockeye were observed in Cottage Lake Creek up to RM 1.3 in 1998 and RM 1.9 in 1999 (not the uppermost site for either year). Kokanee were seen in Big Bear Creek up to RM 9.0 in 1998 and up to RM 7.4 in 1999. They were seen in Cottage Lake Creek in 1999 at RM 2.2 (the uppermost site surveyed).

In 1998, a single coho was observed in Big Bear Creek at RM 4.9; coho were also seen at the only sites observed in a tributary to Big Bear Creek (RM 0.2) and in Mackey Creek at Farrel-McWhirter Park (RM 0.5). In 1999, they were observed at several locations in Big Bear Creek, including the uppermost survey site at RM 9.25. They were seen to RM 1.9 in Cottage Lake Creek in 1999 (the uppermost point surveyed was at RM 2.2). All other creeks where coho were spotted in 1999 only had one site surveyed (Trib. to Bear Cr., Colin Creek, Mackey Creek, Seidel Creek, and Struve Creek). The observations of sockeye, coho, chinook, and kokanee determined from volunteer surveys in 1998 and 1999 are shown in Figure 3.

Timing of Salmon Runs

In 1998, the lengthiest observed runs were the sockeye runs in Big Bear Creek, where sockeye were spotted over a period of 53 days (from September 12 to November 4). Sockeye were seen the first day of the surveys. In 1999, sockeye, chinook, coho, and kokanee were all observed to have similarly long runs in Big Bear Creek; all initial observations were recorded during the third week of September and final observations were recorded during November (the first week of November for sockeye and the last week of November for the other three species). Sockeye observations lasted for 49 days and the other three species were between 61 and 66 days each.

Figure 3. Observations of salmonids in the Big Bear Creek Basin for 1998 and 1999 (see insert).

Table 3. Site location (listed in river miles, RM), survey dates, total number of surveys, volunteers³, sites, and fish seen (live and dead⁴) at each stream surveyed in the Big Bear Creek Basin for 1998 (a.) and 1999 (b.).

a. 1998

Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Coho	Sockeye	Kokanee	Trout	Unidentified
Big Bear Creek	2.7	9/12 – 12/1	17	1	–	–	51 (9/12 – 10/21)	2 (9/26)	1 (9/26)	4 (9/12 – 10/3)
	4.9	9/28 – 11/27	14	1	2 (9/28 – 10/3)	1 (10/3)	84 (9/28 – 10/30)	2 (9/28 – 10/9)	–	–
	6	9/13 – 12/17	58	1	14 (9/21 – 10/9)	–	206 (9/19 – 10/31)	–	1 (9/19)	1 (10/14)
	7.4	9/26 – 11/4	8	1	–	–	74 (9/26 – 11/4)	–	–	39 (10/2 – 10/27)
	8.3	9/13 – 11/29	22	1	–	–	65 (9/29 – 10/21)	–	–	–
	9	9/21 – 10/30	10	1	–	–	3 (10/11)	10 (9/26 – 10/18)	–	–
	9.25	9/27 – 10/15	4	1	1 (10/4)	–	13 (10/4 – 10/15)	–	–	–
9.8	10/3 – 11/8	9	1	–	–	–	–	–	1 (10/20)	
<i>Summary</i>		9/12 – 12/17	142	8	17 (9/21 – 10/9)	1 (10/3)	496 (9/12 – 11/4)	14 (9/26 – 10/18)	2 (9/19 – 9/26)	45 (9/12 – 10/27)
Trib. to Bear Cr.	0.2	9/13 – 12/17	34	1	–	13 (11/21 – 11/30)	–	–	–	3 (11/21 – 11/25)
Colin Creek	0	9/15 – 11/29	10	1	–	–	–	–	–	–
Cottage Lake Creek	0.6	10/21 – 11/2	4	1	13 (10/25 – 10/29)	–	–	–	–	–
	1.3	9/17 – 11/30	23	1	17 (9/21 – 10/15)	–	307 (9/21 – 10/28)	–	–	–
	2.3	10/21 – 11/2	4	1	6 (10/25)	–	–	–	–	1 (10/21)
<i>Summary</i>		9/17 – 11/30	31	3	36 (9/21 – 10/29)	–	307 (9/21 – 10/28)	–	–	1 (10/21)
Evans Creek	0.51	9/11 – 12/14	23	1	5 (10/9 – 10/15)	–	–	–	–	2 (10/4 – 10/9)
Mackey Creek	0.5	10/11 – 12/6	4	1	–	6 (11/27 – 12/6)	–	–	–	–
Struve Creek	0.5	9/15 – 11/29	10	1	–	–	–	–	–	–
Big Bear Creek Basin Summary		9/11 – 12/17	254	16	58 (9/21 – 10/29)	20 (10/3 – 12/6)	803 (9/12 – 11/4)	14 (9/26 – 10/18)	2 (9/19 – 9/26)	51 (9/12 – 11/25)

³ “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.

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

b. 1999

Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Coho	Sockeye	Kokanee	Trout	Unidentified
Big Bear Creek	2.7	8/7 – 11/28	35	2	25 (9/24 – 11/26)	1 (11/24)	10 (9/25 – 10/30)	7 (10/15 – 11/26)	–	2 (10/6 – 10/26)
	4.9	9/10 – 12/29	26	1	–	5 (9/27 – 11/8)	125 (10/1 – 11/8)	49 (10/6 – 11/8)	–	9 (10/1 – 12/29)
	6	8/3 – 11/29	66	2	25 (9/21 – 10/26)	3 (9/24 – 10/4)	52 (9/20 – 10/30)	2 (10/1)	–	19 (9/1 – 11/3)
	7.4	8/11 – 11/6	21	2	23 (10/3 – 11/6)	1 (10/31)	25 (10/3 – 10/29)	5 (9/21 – 10/24)	–	1 (10/29)
	8.3	9/26 – 11/6	8	1	–	4 (10/31 – 11/6)	4 (10/9 – 10/17)	–	–	–
	9	9/14 – 10/31	10	1	5 (10/14 – 10/31)	–	6 (10/3 – 10/13)	–	–	6 (10/13)
	9.25	9/25 – 11/30	13	1	–	4 (10/31 – 11/8)	5 (10/4 – 10/8)	–	–	–
<i>Summary</i>		8/3 – 12/29	179	10	78 (9/21 – 11/26)	18 (9/24 – 11/24)	227 (9/20 – 11/8)	63 (9/21 – 11/26)	–	37 (9/1 – 12/29)
Trib. to Bear Cr.	0.2	11/7 – 11/28	10	1	–	23 (11/11 – 11/22)	–	–	–	–
Colin Creek	0	8/11 – 11/6	14	1	–	2 (10/31)	–	4 (9/25)	–	–
Cottage Lake Creek	1.3	8/25 – 11/6	16	1	77 (9/21 – 11/6)	1 (10/31)	29 (9/25 – 10/23)	1 (9/25)	–	–
	1.9	9/9 – 10/31	18	1	52 (9/19 – 10/16)	1 (10/7)	13 (9/25 – 10/7)	–	–	–
	2.2	10/9 – 11/13	4	1	6 (10/9 – 10/29)	–	–	1 (10/9)	–	–
<i>Summary</i>		8/25 – 11/13	38	3	135 (9/19 – 11/6)	2 (10/7 – 10/31)	42 (9/25 – 10/23)	2 (9/25 – 10/9)	–	–
Tributary 080127	0.1	9/11 – 12/28	23	1	–	–	–	–	–	–
Daniel's Creek	1.2	9/10 – 12/28	22	1	–	–	–	–	–	–
Evans Creek	0.4	10/9 – 12/10	9	1	–	–	–	–	–	1 (10/31)
	0.51	10/20 – 12/12	10	1	–	–	–	–	–	–
Mackey Creek	0.5	9/30 – 12/22	27	2	–	20 (11/2 – 11/20)	–	–	–	2 (11/4 – 11/18)
Seidel Creek	0.6	9/10 – 12/27	28	1	–	2 (11/10)	–	–	–	19 (10/10 – 11/7)
Struve Creek	0.5	9/26 – 11/6	6	1	–	2 (10/31)	–	–	–	–
Big Bear Creek Basin Summary		8/3 – 12/29	366	23	213 (9/19 – 11/26)	69 (9/24 – 11/24)	269 (9/20 – 11/8)	69 (9/21 – 11/26)	–	59 (9/1 – 12/29)

Cedar River Basin

Volunteers surveyed 8 streams in the Cedar River Basin in 1998 and 4 streams in 1999 (Figure 2). In 1998, the frequency of surveys at 11 sites in the Cedar River Basin ranged from 8 to 36 site visits (Table 4a.). In 1999, the frequency of surveys at 14 sites varied from 2 site visits to 77 (Table 4b.). The duration of surveys varied greatly across the sites and the years. Generally, the majority of sites in the Cedar River Basin were observed from September through November. However, in 1998 some surveys did not begin until November and some were not completed until January 1999, and during the 1999 spawning season, several surveys ended in October and several went through December.

Sockeye were found in the Cedar River and Taylor Creek in 1998, and one unidentified species was observed in Rock Creek. In 1999, salmonids were observed in the Cedar River and Rock and Taylor creeks; no salmonids were observed in Madsen Creek. Raw survey data for the Cedar River Basin are presented in Appendix E, which is in the separately bound Appendices to the 1998 and 1999 Volunteer Salmon Watcher Program report. Note that in Cavanaugh Pond on some days in both years, there were too many dead to count, so the carcass count is not consistent with other sites in which every dead fish was counted each site visit. However, it should be remembered that very often carcasses are recounted over multiple visits.

Uppermost Sightings

Sockeye were the only identified species observed in the Cedar River in 1998, and they were only observed in two locations—Cavanaugh Pond along the Cedar River and at the lowermost site surveyed along Taylor Creek (at RM 1.2). The observations of sockeye, chinook, and coho determined from volunteer surveys in 1998 and 1999 are shown in Figure 4.

In 1999, sockeye were observed at all 8 sites watched along the Cedar, including the uppermost site at RM 9.3. They were also seen at RM 0.4 in Rock Creek.(the uppermost site surveyed in Rock Creek was at RM 1.3). One chinook was also seen at the uppermost site surveyed on the Cedar in 1999, but chinook were not seen in any other tributaries to the Cedar. Coho were seen in the Cedar River, Rock Creek, and Taylor Creek, but they were not seen at the uppermost site surveyed in any of those three streams.

Timing of Observed Salmon Runs

Sockeye were observed during every survey in the Cedar River in 1998 (surveys began November 13 and ended January 24, 1999, when 2 live sockeye were observed). In 1999, sockeye were observed from September 24 through January 10, 2000 (surveys ran from September 16, 1999, through January 13, 2000). Numbers of live sockeye observed in both years were at or near zero by January in both years, but surveys did not begin early enough to determine an approximate start time.

Coho were observed in 1999 in the Cedar River from September 22 through November 23 (a run length of 63 days). Coho were observed only over 5-day periods in mid-November during both Rock Creek's 77 surveys and Taylor Creek's 55 surveys (coho typically peak during December in Rock Creek—Priest pers. comm.).

A total of four chinook were observed at three sites along the Cedar River in 1999. All observations occurred within three weeks, between September 19 and October 11.

Figure 4. Observations of salmonids in the Cedar River Basin for 1998 and 1999 (see insert).

Table 4. Site location (listed in river miles, RM), survey dates, total number of surveys, volunteers, sites, and fish seen (live and dead) at each stream surveyed in the Cedar River Basin for 1998 (a.) and 1999 (b.).

a. 1998

Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Coho	Sockeye	Kokanee	Trout	Unidentified
Cedar River (Cavanaugh Pond)	6.4	11/13 – 1/24/99	17	1	–	–	3843 (11/13 – 1/24/99)	–	–	–
Rock Creek	1.3	9/5 – 12/6	14	1	–	–	–	–	–	1 (9/12)
	2.6	9/23 – 12/31	27	1	–	–	–	–	–	–
	3	10/5 – 1/6/99	36	1	–	–	–	–	–	–
Taylor Creek	1.2	10/7 – 11/14	8	1	–	–	4 (11/4 – 11/8)	–	–	–
	1.8	9/30 – 1/14/99	30	1	–	–	–	–	–	1 (12/10)
	2.4	9/8 – 11/14	14	1	–	–	–	–	–	–
<i>Summary</i>		<i>9/8 – 1/14/99</i>	<i>52</i>	<i>3</i>	<i>–</i>	<i>–</i>	<i>4 (11/4 – 11/8)</i>	<i>–</i>	<i>–</i>	<i>1 (12/10)</i>
Tributary 0321	0.6	9/8 – 11/14	14	1	–	–	–	–	–	–
Tributary 0323	0.8	9/8 – 11/14	14	1	–	–	–	–	–	–
Tributary 0325	0.2	10/7 – 11/14	8	1	–	–	–	–	–	–
Tributary 0327	2	9/8 – 11/14	14	1	–	–	–	–	–	–
Cedar River Basin Summary		9/5 – 1/24/99	196	11	–	–	3847 (11/4 – 1/24/99)	–	–	2 (9/12 – 12/10)

b. 1999

Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Coho	Sockeye	Kokanee	Trout	Unidentified
Cedar River (Cavanaugh Pond)	1	9/20 – 11/10	10	1	–	–	159 (9/27 – 11/10)	–	–	1 (10/7)
	1.2	9/16 – 10/25	13	1	2 (9/19 – 9/29)	–	679 (9/28 – 10/25)	–	–	3 (9/16 – 10/5)
	1.5	9/25 – 9/28	2	1	–	–	8 (9/28)	–	–	–
	1.8	9/17 – 12/13	20	1	1 (10/11)	60 (10/13 – 11/22)	102 (10/4 – 11/8)	–	–	–
	2.9	9/17 – 11/30	15	2	–	10 (10/12 – 11/23)	27 (10/12 – 10/20)	–	–	1 (9/29)
	4.3	9/17 – 11/30	14	1	–	34 (9/22 – 11/23)	59 (9/24 – 11/8)	–	–	4 (9/29)
	6.4	11/13 – 1/13/00	21	1	–	–	2576 (11/13 – 1/10/00)	–	–	–
	9.3	9/25 – 10/28	7	1	1 (10/5)	–	205 (9/25 – 10/28)	–	–	46 (10/24)
<i>Summary</i>		<i>9/16 – 1/13/00</i>	<i>102</i>	<i>9</i>	<i>4 (9/19 – 10/11)</i>	<i>104 (9/22 – 11/23)</i>	<i>3815 (9/24 – 1/10/00)</i>	<i>–</i>	<i>–</i>	<i>55 (9/16 – 10/24)</i>
Madsen Creek	0.2	9/21 – 10/28	8	1	–	–	–	–	–	–
	0.9	9/16 – 10/31	13	1	–	–	–	–	–	–
Rock Creek	0.4	9/11 – 12/31	77	2	–	6 (11/16 – 11/21)	137 (11/17 – 12/6)	–	–	20 (11/20)
	1.3	11/21 – 12/4	3	1	–	–	–	–	–	–
Taylor Creek	1.2	9/27 – 12/31	55	1	–	2 (11-19 – 11/24)	–	–	–	–
	1.8	9/18 – 12/29	25	1	–	–	–	–	–	–
Cedar River Basin Summary		9/11 – 1/13/00	283	16	4 (9/19 – 10/11)	112 (9/22 – 11/24)	3952 (9/24 – 1/10/00)	–	–	75 (9/16 – 11/20)

East Lake Washington Basin

Volunteers surveyed 9 streams and 6 beaches in the East Lake Washington Basin in 1998 and 12 streams in 1999 (Figure 2). Surveys for the 1998 spawning season took place from August 19, 1998, to January 3, 1999; surveys for the 1999 season took place between August 1, 1999, and January 6, 2000. The number of surveys at the 9 streams and 6 beaches in 1998 ranged from 5 to 46, and there were either 1 or 2 volunteers monitoring each site (Table 5a.). The number of surveys at the 12 streams in 1999 ranged from 1 to 55, and there were from 1 to 3 volunteers at each site (Table 5b.). Raw survey data for each stream are presented in Appendix F, which is in the separately bound Appendices to the 1998 and 1999 Volunteer Salmon Watcher Program report.

Salmonids were found in 6 of the 9 streams and at 4 of the 6 beaches surveyed in 1998, and at 6 of the 12 streams surveyed in 1999. Chinook were the most commonly seen species in the East Lake Washington Basin in both years. In both 1998 and 1999 they were observed in Kelsey Creek, Richards Creek, Valley Creek, and West Fork Kelsey Creek. Additionally, they were observed in Mercer Slough in 1998.

Sockeye were found in Kelsey Creek, Richards Creek, West Fork Kelsey Creek, and at three Lake Washington beaches in 1998, but were not observed anywhere in the East Lake Washington Basin in 1999. Coho were observed in Coal Creek, Kelsey Creek, Mercer Slough, and Richards Creek in 1998, but in only West Fork Kelsey Creek in 1999.

Uppermost Sightings

Chinook were seen in Kelsey Creek to RM 5.3 (the uppermost site surveyed) in 1998 and to RM 5.0 in 1999 (Table 5). Sockeye were also seen in Kelsey Creek to RM 5.3 (the Bellevue Reformed Church) in 1998, as well as the lowest point surveyed in Richards Creek (RM 0.4) and the uppermost site surveyed in West Fork Kelsey Creek (RM 1.0). Coho were seen to the uppermost point surveyed in Coal Creek in 1998 (RM 2.0). They were also seen to RM 5.0 in Kelsey Creek (the uppermost site surveyed was RM 5.3). The observations of salmonids determined from volunteer surveys in 1998 are shown in Figure 5, and observations from 1999 are shown in Figure 6.

Timing of Salmon Runs

In 1998, the lengthiest observed runs were the sockeye runs, which, depending on the location, were observed as early as September 29 and as late as December 15 (total of 77 days). The sockeye observed in December were at a Lake Washington Beach (at Pleasure Point); all other sockeye were observed on or before November 11. Chinook were seen over a two-month period in the East Lake Washington Basin, from September 19 to November 19, in 1998. 1999 chinook observations occurred within a shorter time frame, from September 23 through October 30. Coho were observed in 1998 from the end of September through the end of November; however, only one fish was seen in November and most of the rest were observed in October. In 1999, coho were seen only on one day in West Fork Kelsey Creek (October 7).

Figure 5. Observations of salmonids in the East Lake Washington Basin during 1998 (see insert).

Figure 6. Observations of salmonids in the East Lake Washington Basin during 1999 (see insert).

Table 5. Site location (listed in river miles, RM), survey dates, total number of surveys, volunteers, sites, and fish seen (live and dead) at each stream surveyed in the East Lake Washington Basin for 1998 (a.) and 1999 (b.).

a. 1998

Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Coho	Sockeye	Trout	Unidentified
Coal Creek	0.8	8/19 – 10/19	13	1	–	–	–	–	–
	2	8/20 – 12/30	46	1	–	7 (10/16 – 10/23)	–	–	9 (10/9 – 11/18)
Forbes Creek	0.2	10/3 – 12/28	19	1	–	–	–	–	–
	0.7	8/26 – 9/18	7	1	–	–	–	–	–
Kelsey Creek	2	10/1 – 11/19	6	1	2 (10/1 – 10/8)	–	–	–	–
	2.4	10/1 – 12/28	24	2	2 (10/9)	–	19 (10/6 – 11/3)	2 (10/6 – 10/29)	2 (10/20 – 11/10)
	2.5	9/4 – 9/29	7	1	3 (9/24 – 9/29)	–	–	–	1 (9/7)
	2.8	9/4 – 9/30	7	1	–	–	–	–	–
	3	10/1 – 1/3/99	22	2	26 (10/8 – 11/19)	1 (10/8)	–	–	–
	3.5	9/28 – 11/29	11	2	36 (9/28 – 10/13)	–	–	–	–
	5	8/19 – 11/26	23	1	–	7 (9/27 – 10/3)	–	–	–
	5.3	9/29 – 10/27	5	1	4 (9/29 – 10/20)	–	1 (9/29)	–	–
<i>Summary</i>		8/19 – 1/3/99	105	11	75 (9/24 – 11/19)	8 (9/27 – 10/3)	20 (9/29 – 11/3)	2 (10/6 – 10/29)	3 (9/27 – 11/10)
Lake Wa. Beaches	30.5	9/23 – 12/15	19	1	–	–	–	–	1 (9/23)
	30.8	9/23 – 12/15	19	1	–	–	–	–	–
	32.4	11/10 – 12/16	6	1	–	–	–	–	–
	34.3	9/2 – 10/26	8	1	–	–	1 (9/30)	–	–
	35.9	9/23 – 12/28	28	1	–	–	5 (11/1 – 11/11)	–	–
	36.8	10/24 – 12/15	5	1	–	–	30 (10/24 – 12/15)	–	–
Mercer Slough	1.7	9/29 – 12/28	27	2	9 (10/2 – 10/9)	1 (11/30)	–	–	2 (10/5 – 11/2)
Richards Creek	0.4	9/4 – 12/28	31	2	7 (10/1 – 10/15)	1 (10/15)	1 (10/15)	–	7 (9/7 – 10/1)
	0.7	9/29 – 12/28	25	2	–	–	–	–	–
	1.3	9/16 – 12/28	17	2	–	–	–	–	–
	1.6	9/2 – 10/15	8	1	–	–	–	–	–
	2.2	9/29 – 12/28	18	1	–	–	–	–	–
<i>Summary</i>		9/2 – 12/28	99	8	7 (10/1 – 10/15)	1 (10/15)	1 (10/15)	–	7 (9/7 – 10/1)
Sturtevant Creek	0.25	9/29 – 12/28	20	2	–	–	–	–	–
Valley Creek	0.1	8/19 – 11/26	24	1	1 (9/19)	–	–	–	–
West Fork Kelsey	0.3	10/1 – 12/10	7	1	–	–	–	–	–
	0.8	9/1 – 11/30	31	1	–	–	–	–	–
	1	8/20 – 12/23	46	2	1 (10/14)	–	29 (10/14 – 10/25)	–	–
<i>Summary</i>		8/20 – 12/23	84	4	1 (10/14)	–	29 (10/14 – 10/25)	–	–
Yarrow Creek	0.3	12/6 – 1/1/99	4	1	–	–	–	–	–
East Lake WA. Basin Summary		8/19 – 1/3/99	533	39	93 (9/19 – 11/19)	17 (9/27 – 11/30)	86 (9/29 – 12/15)	2 (10/6 – 10/29)	22 (9/7 – 11/18)

b. 1999

Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Coho	Sockeye	Trout	Unidentified
Boren Creek	0.5	10/14 – 1/6/00	13	1	–	–	–	–	1 (12/28)
Coal Creek	0.8	9/11 – 12/26	29	2	–	–	–	–	–
	2.0	9/10 – 10/31	15	1	–	–	–	–	–
Tributary	0.25	9/10 – 11/29	23	1	–	–	–	–	–
Goff Creek	1.3	9/11 – 12/30	23	1	–	–	–	–	–
Kelsey Creek	2	9/16 – 12/28	20	2	–	–	–	–	1 (9/29)
	2.4	9/11 – 12/28	33	2	1 (10/21)	–	–	2 (9/15 – 9/28)	3 (11/2)
	3	10/7 – 12/31	5	1	11 (10/9 – 10/30)	–	–	–	1 (10/7)
	4	9/10 – 12/13	46	1	23 (9/25 – 10/9)	–	–	–	–
	4.4	9/17 – 10/22	5	1	–	–	–	–	–
	5	9/10 – 12/31	47	2	11 (10/9 – 10/30)	–	–	–	1 (10/7)
	5.5	9/10 – 10/25	15	1	–	–	–	–	–
	6	9/6 – 12/20	55	3	–	–	–	–	–
<i>Summary</i>		9/6 – 12/31	230	16	55 (9/23 – 10/30)	–	–	2 (9/15 – 9/28)	6 (9/29 – 11/2)
May Creek	3	9/28	1	1	–	–	–	–	–
Mercer Slough	1.7	9/7 – 12/28	27	2	–	–	–	–	1 (10/10)
Richards Creek	0.4	9/11 – 12/28	27	1	7 (10/15 – 10/24)	–	–	2 (9/15 – 9/30)	1 (9/28)
	0.7	9/11 – 12/28	39	2	–	–	–	2 (10/19)	–
	1.3	9/16 – 12/28	13	1	–	–	–	–	6 (9/29)
<i>Summary</i>		9/11 – 12/28	79	4	7 (10/15 – 10/24)	–	–	4 (9/15 – 10/19)	7 (9/28 – 9/29)
Sturtevant Creek	0.25	10/14 – 12/7	13	1	–	–	–	–	–
Valley Creek	0.1	9/17 – 10/22	5	1	–	–	–	–	–
	0.6	9/27 – 12/28	19	1	2 (10/6)	–	–	–	3 (10/4 – 12/2) ⁵
	0.8	9/29 – 12/28	20	1	–	–	–	–	–
<i>Summary</i>		9/17 – 12/28	44	3	2 (10/6)	–	–	–	3 (10/4 – 10/6)
West Fork Kelsey	0.2	7/25 – 11/28	24	1	–	–	–	–	–
	0.3	10/7 – 12/16	6	1	–	2 (10/7)	–	–	–
	0.8	8/1 – 12/15	44	1	2 (9/25 – 10/14)	–	–	–	–
<i>Summary</i>		8/1 – 12/16	74	3	2 (9/25 – 10/14)	2 (10/7)	–	–	–
Yarrow Creek	0.3	9/12 – 12/28	25	1	–	–	–	–	–
East Lake WA. Basin Summary		8/1 – 1/6/00	592	32	57 (9/23 – 10/30)	12 (10/7)	–	6 (9/15 – 10/19)	18 (9/28 – 12/28)

⁵ One of the “unidentified” fish, observed on 12/2, was identified by the volunteer as a chum. However, it is possible that the fish was misidentified and not a chum because of the location of the sighting—chum are rarely sighted in the East Lake Washington Basin. Sockeye, for example, sometimes appear to have coloration similar to chum.

Issaquah Creek Basin

Twelve sites along six streams were surveyed in the Issaquah Creek Basin in 1998 (for a total of 127 surveys), and nine sites along five streams were surveyed in 1999 (for a total of 284 surveys) (Figure 2). The earliest surveys in 1998 began in early September and the last surveys concluded in the third week of January, 1999 (Table 6a.). The earliest surveys in the 1999 spawning season began at the end of July, and the majority of volunteers finished their surveys at the end of December (Table 6b.). Volunteers surveyed East Fork Issaquah Creek, Holder Creek, Issaquah Creek, North Fork Issaquah Creek, and Tibbetts Creek in both years, and Fifteenmile Creek in 1998. Each site in 1998 had one volunteer and each site in 1999 had only one volunteer except for one Issaquah Creek site that had two volunteers. Raw survey data for each stream are presented in Appendix G, which is in the separately bound Appendices to the 1998 and 1999 Volunteer Salmon Watcher Program report.

In both 1998 and 1999, salmonids were observed in only East Fork Issaquah and Issaquah creeks. Chinook and sockeye were seen in both streams in both years. Coho were observed in only Issaquah Creek in 1998 and in only East Fork Issaquah Creek in 1999. No salmonids were observed in Fifteenmile Creek in 1998 or in Holder Creek, North Fork Issaquah Creek, or Tibbetts Creek in either year.

Uppermost Sightings

In 1998, chinook and coho were both observed at the uppermost point surveyed in Issaquah Creek (RM 5.8). In both 1998 and 1999, chinook and sockeye were also both found at the uppermost site surveyed in East Fork Issaquah Creek (RM 0.5) (Table 6). Chinook, coho, and sockeye were all observed in East Fork Issaquah Creek in 1999 only as far up as RM 0.4. The distributions of chinook, coho, and sockeye in the Issaquah Creek Basin determined from volunteer observations are shown in Figure 7.

Timing of Salmon Runs

Over half of the chinook seen in Issaquah Creek in 1998 were observed at the intake dam, which is upstream of the Issaquah Salmon Hatchery; volunteers began seeing chinook at this site on the first day of their surveys. Chinook were observed in the basin until November 11 in the 1998 spawning season. During the 1999 spawning season, the first chinook were not observed until late September, almost two months into surveys, and were seen until November 10. Coho were seen almost throughout the entire survey period in 1998 (they had the lengthiest observed run at 125 days). Despite greater numbers of surveys in 1999, coho were seen only in one stream (East Fork Issaquah Creek), and were seen only over a period of 41 days (from the end of October until the beginning of December). Initial and final observations of chinook in both years fell right in the middle of the survey periods (end of September through the beginning of November in 1998 and mid-October through the first week of November, 1999).

Figure 7. Observations of salmonids in the Issaquah Creek Basin for 1998 and 1999 (see insert).

Table 6. Site location (listed in river miles, RM), survey dates, total number of surveys, volunteers, sites, and fish seen (live and dead) at each stream surveyed in the Issaquah Creek Basin for 1998 (a.) and 1999 (b.).

a. 1998

Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Coho	Sockeye	Steelhead	Trout	Unidentified
E. Fk. Issaquah Cr.	0.1	9/8 – 9/20	5	1	–	–	–	–	–	–
	0.5	9/28 – 11/6	7	1	6 (9/28 – 10/30)	–	8 (10/28 – 11/6)	–	–	1 (11/6)
Fifteenmile Creek	0.6	10/6 – 11/7	2	1	–	–	–	–	–	–
Holder Creek	12.7	9/26 – 10/26	8	1	–	–	–	–	–	–
Issaquah Creek	1.2	9/9 – 9/30	4	1	–	–	–	–	–	–
	3	9/15 – 11/17	7	1	57 (9/15 – 10/7)	4 (9/24)	2 (9/24)	–	–	10 (10/5 – 10/7)
	3.3	9/15 – 12/30	16	1	24 (9/25 – 10/5)	8 (9/25)	–	–	–	–
	3.4	9/8 – 1/23/99	27	1	109 (9/8 – 11/11)	193 (9/25 – 1/7/99)	10 (9/25)	57 (12/17 – 1/15/99)	107 (11/21 – 1/15/99)	1 (1/2/99)
	4.5	9/29	1	1	–	–	–	–	–	–
	5.8	9/18 – 11/22	25	1	4 (10/9 – 10/27)	1 (10/11)	–	–	–	1 (10/18)
<i>Summary</i>		9/8 – 1/23/99	80	6	194 (9/8 – 11/11)	206 (9/24 – 1/7/99)	12 (9/24 – 9/25)	57 (12/17 – 1/15/99)	107 (11/21 – 1/15/99)	12 (10/5 – 1/2/99)
N. Fk. Issaquah Cr.	0.6	9/17 – 10/4	4	1	–	–	–	–	–	–
Tibbetts Creek.	0.2	9/18 – 11/22	21	1	–	–	–	–	–	–
Issaquah Basin Summary		9/8 – 1/23/99	127	12	200 (9/8 – 11/11)	206 (9/24 – 1/7/99)	20 (9/24 – 11/6)	57 (12/17 – 1/15/99)	107 (11/21 – 1/15/99)	13 (10/5 – 1/2/99)

b. 1999

Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Coho	Sockeye	Steelhead	Trout	Unidentified
E. Fk. Issaquah Cr.	0.1	9/10 – 12/30	30	1	29 (10/14 – 11/10)	22 (10/28 – 11/24)	–	–	–	5 (10/5 – 11/19)
	0.4	9/15 – 12/31	108	1	45 (10/8 – 10/24)	15 (11/7 – 12/8)	39 (10/16 – 11/8)	–	–	5 (12/2 – 12/4)
	3.2	9/15	1	1	–	–	–	–	–	–
<i>Summary</i>		9/10 – 12/31	139	3	74 (10/8 – 11/10)	37 (10/28 – 12/8)	39 (10/16 – 11/8)	–	–	10 (10/5 – 12/4)
Holder Creek	12.7	9/18 – 12/29	25	1	–	–	–	–	–	–
Issaquah Creek	3	8/3 – 9/7	9	1	–	–	–	–	–	–
	4.5	9/15 – 9/26	4	1	2 (9/26)	–	–	–	–	–
	5.8	7/30 – 12/30	60	2	9 (10/13 – 11/5)	–	13 (11/2 – 11/4)	–	–	3 (10/17 – 11/2)
<i>Summary</i>		7/30 – 12/30	73	4	11 (9/26 – 11/5)	–	13 (11/2 – 11/4)	–	–	3 (10/17 – 11/2)
N. Fk. Issaquah Cr.	0.6	9/16 – 12/24	18	1	–	–	–	–	–	–
Tibbetts Creek	0.2	7/31 – 11/18	29	1	–	–	–	–	–	–
Issaquah Basin Summary		7/30 – 12/31	284	10	85 (9/26 – 11/10)	37 (10/28 – 12/8)	52 (10/16 – 11/8)	–	–	13 (10/5 – 12/4)

North Lake Washington Basin

The streams in the North Lake Washington Basin are separated in this document into two groups: North Lake Washington Tributaries and Sammamish River Tributaries. The North Lake Washington Tributaries are those streams flowing into the north end of Lake Washington (Denny, McAleer, and Thornton creeks and their tributaries and the Sammamish River). The Sammamish River Tributaries are those streams flowing into the Sammamish River (then into Lake Washington) from waters originating in Snohomish County (Little Bear, North, and Swamp creeks and their tributaries). (Big Bear Creek is discussed separately above.)

North Lake Washington Tributaries

Volunteers surveyed six North Lake Washington tributaries in 1998 and eight in 1999 (Figure 2). In 1998, a total of 267 surveys were made at 12 sites (from 1 to 4 sites per stream); each site had 1 volunteer watcher except for the Maple Leaf Creek site, which had two volunteers (Table 7a.). In 1999, there were a total of 373 surveys at 22 sites in the North Lake Washington tributaries (from 1 to 6 sites per stream), and each site had either 1 or 2 volunteers watching (Table 7b.). The majority of surveys in 1998 began in September and concluded in December, though surveys on McAleer Creek went until late January. 1999 surveys began anywhere between the end of July and early November and concluded most often in December. Raw survey data for each stream are shown in Appendix H, which is in the separately bound Appendices to the 1998 and 1999 Volunteer Salmon Watcher Program report.

The most salmonids in the North Lake Washington tributaries were observed in the Sammamish River in both 1998 and 1999. Salmonids were also seen in Maple Leaf Creek and McAleer Creek both years. Juanita Creek was not observed in 1999, but in 1998, two unidentified salmonids were counted. Salmonids were not seen in Thornton Creek in 1998 or 1999. No salmonids were seen in Peters Creek in 1998, the only year Peters Creek was observed, nor were they seen in Scriber or Woodin creeks in 1999, the only year they were surveyed.

Uppermost Sightings

Chinook were observed in the Sammamish River at the uppermost point surveyed in 1998, at RM 11.5 (Leary Way), and as far up as RM 12.5 (in Marymoor Park along the Burke-Gilman bicycle trail extension) in 1999 (the uppermost point surveyed was RM 13.5, at the Marymoor Park concrete weir). Sockeye were also seen up to RM 11.5 in 1998, but were only observed as far as RM 7.3 (near NE 145th Street and Woodinville-Redmond Road) in 1999. Coho were only seen as far as RM 7.3 in the Sammamish River both years; kokanee were also only observed to that point in 1998 (no kokanee were seen in 1999). Only one site was surveyed along McAleer Creek and along Maple Leaf Creek in 1998; chinook and coho were both seen at the lone location (RM 1.1) in McAleer Creek, and coho were seen at the lone location in Maple Leaf Creek (RM 0.3). Two sites were surveyed in McAleer and Maple Leaf creeks in 1999; coho and sockeye were both seen at the uppermost site surveyed in McAleer Creek (RM 1.1), and coho were seen at the uppermost site in Maple Leaf Creek (RM 0.7). The distribution of chinook, coho, sockeye, and kokanee determined from volunteer observations in 1998 and 1999 are shown in Figure 8.

Timing of Salmon Runs

Chinook were observed from the end of August until mid-November in the North Lake Washington tributaries in 1998; in 1999 their observed run was earlier, from July 28 to November 6. The observed sockeye run in the Sammamish River in 1998 began August 31 and concluded November 9; the observations in 1999 began a little later, in mid-October, and went through early November. Coho were only seen on one day each in Maple Leaf Creek and the Sammamish River in 1998. They were observed from the end of October through mid-December in McAleer Creek. In 1999, the observed coho run in the basin began the end of September and ended mid-November. Kokanee were only observed in 1998 in the Sammamish River at RM 7.3, and those observations were from October 26 through November 2.

Figure 8. Observations of salmonids in the North Lake Washington Tributaries for 1998 and 1999 (see insert).

Table 7. Site location (listed in river miles, RM), survey dates, total number of surveys, volunteers, sites, and fish seen (live and dead) at each stream surveyed in North Lake Washington Tributaries for 1998 (a.) and 1999 (b.).

a. 1998

Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Coho	Sockeye	Kokanee	Trout	Unidentified
Juanita Creek	0.2	8/23 – 12/26	25	1	–	–	–	–	–	2 (9/3 – 9/30)
	2.7	10/2 – 12/30	20	1	–	–	–	–	–	–
Maple Leaf Creek	0.3	9/13 – 12/26	27	2	–	1 (11/7)	–	–	–	–
McAleer Creek	1.1	9/18 – 1/20/99	30	1	45 (10/25 – 11/19)	14 (10/31 – 12/13)	–	–	–	1 (10/25)
Peters Creek	0	8/19 – 11/30	33	1	–	–	–	–	–	–
Sammamish River	5	9/3 – 12/31	30	1	–	–	3 (9/11 – 9/30)	–	8 (9/18)	8 (11/16 – 12/31)
	7.3	9/3 – 12/31	34	1	10 (9/11 – 10/5)	2 (11/9)	94 (9/14 – 11/9)	28 (10/26 – 11/2)	26 (9/3 – 11/7)	15 (9/18 – 11/18)
	10.8	9/3 – 11/30	27	1	–	–	2 (10/7 – 10/25)	–	–	37 (9/17 – 10/16)
	11.5	8/25 – 12/3	22	1	129 (8/26 – 10/5)	–	27 (8/31 – 9/17)	–	–	71 (8/25 – 12/3)
<i>Summary</i>		8/25 – 12/31	113	4	139 (8/26 – 10/5)	2 (11/9)	126 (8/31 – 11/9)	28 (10/26 – 11/2)	34 (9/3 – 11/7)	131 (8/25 – 12/31)
Thornton Creek	0.3	9/12 – 10/10	5	1	–	–	–	–	–	–
	1.5	10/24 – 12/26	9	1	–	–	–	–	–	–
	1.7	9/12 – 10/10	5	1	–	–	–	–	–	–
North Lake WA. tribs Summary		8/23 – 1/20/99	267	13	184 (8/26 – 11/19)	17 (10/31 – 12/13)	(8/31 – 11/9)	28 (10/26 – 11/2)	34 (9/3 – 11/7)	134 (8/25 – 12/31)

b. 1999

Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Coho	Sockeye	Kokanee	Trout	Unidentified
Maple Leaf Creek	0.2	10/11 – 12/26	12	1	–	–	–	–	–	–
	0.7	9/13 – 12/12	37	2	–	5 (11/1 – 11/3)	–	–	–	4 (10/30 – 10/31)
McAleer Creek	0.8	9/20 – 10/7	5	1	–	–	–	–	–	–
	1.1	7/31 – 12/1	22	2	1 (11/6)	–	4 (10/2 – 11/6)	–	–	–
Sammamish River	2.6	9/18 – 10/31	14	1	–	14 (9/20 – 10/24)	4 (10/15)	–	–	15 (9/18 – 10/6)
	4.1	9/17 – 10/23	16	1	–	–	–	–	–	22 (9/25 – 10/23)
	7.3	7/28 – 12/27	32	1	16 (7/28 – 9/21)	4 (9/21 – 11/17)	42 (10/21 – 11/8)	–	–	1 (11/1)
	8.7	9/16	1	1	–	–	–	–	–	5 (9/16)
	12.5	8/6 – 10/7	10	2	1 (9/15)	–	–	–	–	10 (9/15 – 10/7)
	13.5	8/20 – 9/10	3	1	–	–	–	–	–	–
<i>Summary</i>		7/28 – 12/27	76	7	17 (7/28 – 9/21)	18 (9/20 – 11/17)	46 (10/15 – 11/8)	–	–	53 (9/15 – 11/1)
Tributary 0141	0.2	9/19 – 1/5/00	7	1	–	–	–	–	–	–
	0.3	9/19 – 12/30	14	1	–	–	–	–	–	–
	0.35	9/19 – 12/27	15	1	–	–	–	–	–	–
Trib to 0141	0	9/19 – 12/30	8	1	–	–	–	–	–	–
Scriber Creek	2.5	10/22 – 12/12	13	1	–	–	–	–	–	–
Thornton Creek	0.2	9/15 – 12/28	64	2	–	–	–	–	–	–
	0.3	11/5 – 12/5	3	1	–	–	–	–	–	–
	0.5	9/19 – 12/11	18	1	–	–	–	–	–	–
	1	9/19 – 12/26	32	2	–	–	–	–	–	–
	2	10/4 – 12/5	5	2	–	–	–	–	–	–
2.9	9/18 – 11/10	21	2	–	–	–	–	–	–	
Woodin Creek	0.3	9/11 – 12/18	21	1	–	–	–	–	–	–
North Lake WA. tribs Summary		7/31 – 1/5/00	373	29	18 (7/28 – 11/6)	23 (9/20 – 11/17)	50 (10/2 – 11/8)	–	–	57 (9/15 – 11/1)

Sammamish River Tributaries

Four Sammamish River tributaries were surveyed in 1998: Little Bear, North, Silver, and Swamp creeks (Figure 2). In 1999, those same creeks were surveyed plus Penny Creek. Volunteers surveyed the streams from the beginning of August in both years; 1998 surveys were concluded January 12, 1999, and 1999 spawning season surveys were concluded on December 31, 1999. One to 5 sites were watched per stream in 1998 (for a total of 191 visits at 9 sites), and 1 to 10 sites were watched per stream in 1999 (for a total of 438 visits to 27 sites). All sites in 1998 were observed by a single volunteer; in 1999, sites had from 1 to 3 volunteers each, but most often just 1. Raw survey data for each stream are shown in Appendix I, which is in the separately bound Appendices to the 1998 and 1999 Volunteer Salmon Watcher Program report.

Salmonids were observed in only Little Bear Creek and North Creek in both 1998 and 1999. No salmonids were observed in Silver or Swamp creeks in either year, although Swamp Creek was observed only two time throughout the entire 1998 spawning season. The only salmonids reported in Penny Creek were trout.

Uppermost Sightings

As shown in Table 8, a single chinook was reported in 1998 at RM 0.2 in Little Bear Creek, but none was seen at the uppermost site surveyed (RM 5.9). In North Creek, chinook were seen only at RM 1.7 in 1998 and were seen as far up as RM 7.9 in 1999 (the uppermost sites surveyed were at RM 7.9 and 10.0 in 1998 and 1999, respectively). Coho were observed at every survey site in 1998, including the uppermost point of RM 7.9. In 1999, they were observed at 8 out of 10 survey points, including the uppermost site (RM 10.0). Sockeye were seen at the uppermost site surveyed on Little Bear Creek in 1998 (RM 5.9), and were seen up as far as RM 4.5 in 1999. In North Creek, sockeye were seen up to RM 2.1 in 1998 and up to RM 3.0 in 1999. Kokanee were reported up at the mouth of Little Bear Creek and up to RM 0.2 in 1999; they were also see as far up as RM 4.1 in North Creek that year, but were not observed in 1998. The distributions of coho and sockeye in the Sammamish River tributaries determined from volunteer observations are shown in Figure 9.

Timing of Salmon Runs

Chinook, coho, and sockeye were observed in the Sammamish River tributaries over approximately the same time frames in both 1998 and 1999. Chinook were seen from mid-September through early November in 1998 and early October through early November in 1999. Coho were initially reported in the tributaries on October 4 in both years and final observations came in the third week of November both years. Sockeye were first observed mid-September in both years and were seen until early November in 1998 and mid-November in 1999.

Figure 9. Observations of salmonids in the Sammamish River Tributaries for 1998 and 1999 (see insert).

Table 8. Site location (listed in river miles, RM), survey dates, total number of surveys, volunteers, sites, and fish seen (live and dead) at each stream surveyed in Sammamish River Tributaries for 1998 (a.) and 1999 (b.).

a. 1998

Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Coho	Sockeye	Kokanee	Trout	Unidentified
Little Bear Creek	0.2	9/3 – 12/31	34	1	1 (9/14)	–	116 (9/16 – 11/2)	–	10 (9/14 – 10/5)	1 (10/5)
	5.9	9/22 – 12/31	19	1	–	–	51 (9/27 – 10/18)	–	–	–
<i>Summary</i>		9/3 – 12/31	53	2	1 (9/14)	–	167 (9/16 – 11/2)	–	10 (9/14 – 10/5)	1 (10/5)
North Creek	0.9	8/27 – 11/10	9	1	–	1 (10/10)	7 (10/10 – 10/21)	–	–	3 (9/21 – 10/4)
	1.7	9/23 – 11/19	22	1	11 (9/23 – 11/5)	2 (10/26)	40 (9/24 – 10/26)	–	–	3 (9/28 – 10/27)
	2.1	8/27 – 11/10	9	1	–	2 (10/10)	4 (10/21)	–	–	–
	6.5	10/4 – 11/17	36	1	–	49 (10/4 – 11/17)	–	–	1 (10/29)	–
	7.9	9/27 – 1/12/99	19	1	–	1 (11/1)	–	–	–	–
<i>Summary</i>		8/27 – 1/12/99	95	5	11 (9/23 – 11/5)	55 (10/4 – 11/17)	51 (9/24 – 10/26)	–	1 (10/29)	6 (9/21 – 10/27)
Silver Creek	0.8	8/4 – 12/23	41	1	–	–	–	–	–	–
Swamp Creek	6.9	8/25 – 9/2	2	1	–	–	–	–	–	–
Sammamish River Tribs Summary		8/4 – 1/12/99	191	9	12 (9/14 – 11/5)	55 (10/4 – 11/17)	218 (9/16 – 11/2)	–	11 (9/14 – 10/29)	7 (9/21 – 10/27)

b. 1999

Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Coho	Sockeye	Kokanee	Trout	Unidentified
Little Bear Creek	0	8/21 – 12/27	20	1	–	–	9 (10/16 – 11/8)	60 (10/16 – 11/8)	–	4 (9/25 – 9/27)
	0.2	9/4 – 12/27	40	2	–	–	17 (9/25 – 11/4)	161 (9/27 – 11/4)	–	–
	1.9	9/10 – 12/26	28	1	–	–	5 (10/24)	–	–	1 (10/24)
	3.2	10/6 – 10/24	5	1	–	–	–	–	–	–
	4.5	10/2 – 12/31	38	3	–	–	4 (11/10 – 11/14)	–	–	–
	4.7	10/8 – 12/14	17	1	–	–	–	–	–	5 (11/4 – 11/9)
<i>Summary</i>		8/21 – 12/31	148	9	–	–	35 (9/25 – 11/14)	221 (9/27 – 11/8)	–	10 (9/25 – 11/9)
North Creek	0.8	9/15 – 9/29	3	1	–	–	–	–	–	15 (9/22 – 9/29)
	0.9	8/1 – 11/18	42	2	–	30 (10/15 – 11/7)	35 (10/18 – 11/5)	8 (10/19 – 10/25)	–	43 (10/18 – 11/14)
	1.8	10/1 – 11/5	15	1	–	–	94 (10/11 – 11/5)	3 (11/5)	1 (11/1)	–
	3	9/17 – 12/15	26	1	–	1 (10/9)	20 (9/24 – 10/30)	–	–	–
	4.1	9/10 – 11/20	17	1	17 (10/12 – 10/26)	5 (10/4 – 10/8)	–	1 (10/18)	–	1 (10/8)
	5.3	10/4 – 11/3	10	1	–	2 (11/1 – 11/3)	–	–	–	–
	6.5	10/2 – 11/15	14	2	4 (11/15)	21 (10/28 – 11/7)	–	–	–	–
	6.6	9/10 – 11/22	21	1	–	7 (10/28 – 11/1)	–	–	–	1 (11/20)
	7.9	9/18 – 11/19	16	1	1 (10/6)	5 (10/29 – 11/14)	–	–	–	–
	10	9/25 – 12/11	33	2	–	2 (11/24)	–	–	–	–
<i>Summary</i>		8/1 – 12/15	197	13	22 (10/6 – 11/15)	73 (10/4 – 11/24)	149 (9/24 – 11/5)	12 (10/18 – 11/5)	1 (11/1)	60 (9/22 – 11/20)
Penny Creek	2.2	10/2 – 11/7	6	1	–	–	–	–	7 (10/10)	–
Silver Creek	0.3	9/10 – 11/3	8	1	–	–	–	–	–	–
	0.8	9/23 – 11/26	17	1	–	–	–	–	–	–
Swamp Creek	0.3	10/9 – 11/14	5	1	–	–	–	–	–	–
	1.4	10/21 – 11/27	10	1	–	–	–	–	–	–
	2.5	10/14 – 10/18	2	1	–	–	–	–	–	–
	4.3	10/8 – 12/13	16	1	–	–	–	–	–	–
	5.2	10/10 – 11/30	16	1	–	–	–	–	–	–
	7.7	10/21 – 11/15	5	1	–	–	–	–	–	–
	8.3	10/21 – 11/15	5	1	–	–	–	–	–	–
	8.9	10/10 – 10/31	3	1	–	–	–	–	–	–
Sammamish River Tribes Summary		8/1 – 12/31	438	33	22 (10/6 – 11/15)	73 (10/4 – 11/24)	184 (9/24 – 11/14)	9/27 – 11/8	8 (10/10 – 11/1)	70 (9/22 – 11/20)

West Lake Sammamish Basin

Volunteers surveyed Lewis Creek and Vasa Creek in the West Lake Sammamish Basin (Figure 2) in 1999. Lewis Creek was surveyed from September 11 until December 21 and Vasa Creek was surveyed from September 11 through December 28. One volunteer monitored 1 site on Lewis Creek (for a total of 16 visits). Two sites were monitored on Vasa Creek (for a total of 90 visits; one site had 2 volunteers and the other had 1) (Table 9). Kokanee was the only species observed in these streams. Raw survey data for each stream are presented in Appendix J, which is in the separately bound Appendices to the 1998 and 1999 Volunteer Salmon Watcher Program report.

Uppermost Sightings

Vasa Creek was observed at RM 0.5 and Lewis Creek was observed at RM 0.5 and RM 1.1. Kokanee were observed at the only site in Lewis Creek and at the lower of the two sites in Vasa Creek. The distribution of kokanee in the West Lake Sammamish Basin may be seen in Figures 5 and 6, in the East Lake Washington section above.

Timing of Salmon Runs

Volunteers began surveying both Vasa and Lewis creeks in the first half of September and concluded during the end of December. Kokanee were observed from late November until mid-December in Lewis Creek and from mid-November until mid-December in Vasa Creek.

Table 9. Site location (listed in river miles, RM), survey dates, total number of surveys, volunteers, sites, and fish seen (live and dead) at each surveyed site in West Lake Sammamish Basin streams for 1999.

Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Sockeye	Kokanee	Unidentified
Lewis Creek	0.5	9/11 – 12/21	16	1	–	–	56 (11/25 – 12/13)	–
Vasa Creek	0.5	9/26 – 12/28	83	2	–	–	9 (11/11 – 12/14)	1 (12/16)
	1.1	9/11 – 10/21	7	1	–	–	–	–
West Lake Samm. Basin Summary		9/11 – 12/28	106	4	–	–	11/11 – 12/14	12/16

West Lake Washington Basin

One volunteer surveyed one site along Taylor Creek in the West Lake Washington Basin (Figure 2). The creek was surveyed from mid-October until mid-November, but was only surveyed three times (Table 12). During those three surveys, no fish were seen. Raw survey data for each stream are presented in Appendix K, which is in the separately bound Appendices to the 1998 and 1999 Volunteer Salmon Watcher Program report.

Table 10. Site location (listed in river miles, RM), survey dates, total number of surveys, volunteers, sites, and fish seen (live and dead) at each stream surveyed in the West Lake Washington Basin for 1999.

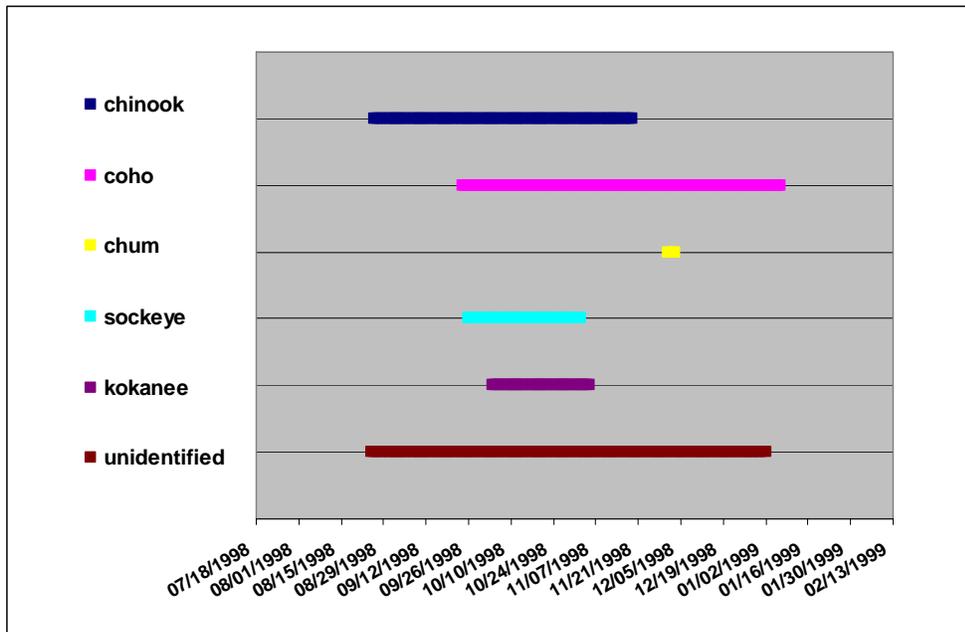
Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Coho	Sockeye
Taylor Creek (Seattle)	0.3	10/17 – 11/7	3	1	–	–	–

Summary

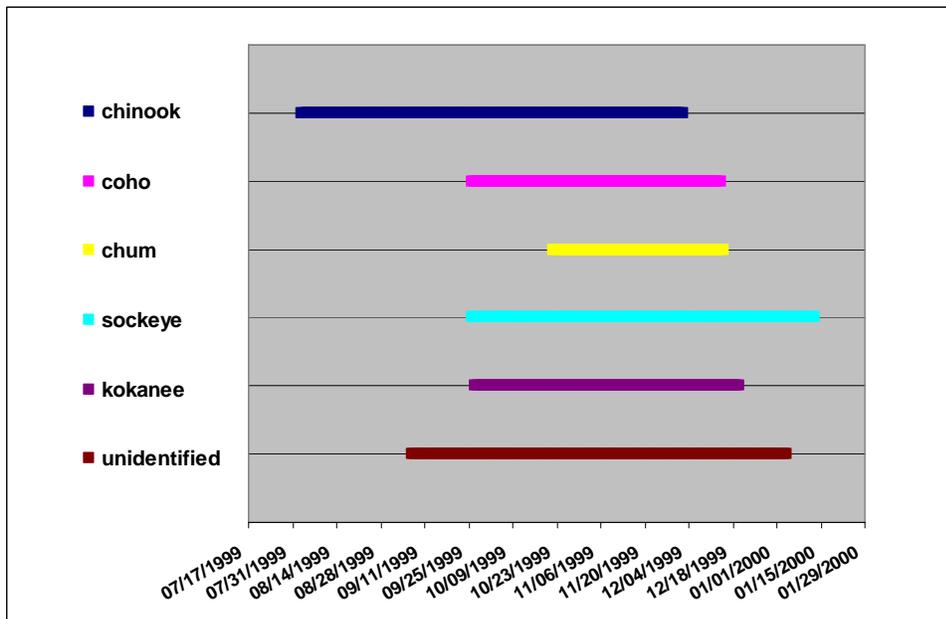
By using the volunteer data, the run timing of all salmonids in the Lake Washington Watershed in 1998 and 1999 may be illustrated in relation to one another (Figure 10).

Figure 10. Observed spawning run of salmonids (live and dead) in the entire Lake Washington Watershed for (a.) 1998 and (b.) 1999.

a. 1998



b. 1999



DISCUSSION

In 1998 and 1999, for the third and fourth consecutive years, Salmon Watcher Program volunteers surveyed streams in the Lake Washington Watershed for live adult salmonids and carcasses. Of the 40 streams and 6 Lake Washington beaches surveyed in the Lake Washington Watershed in 1998, fish were observed in 20 streams and 4 beaches. In 1999, fish were observed in 27 of the 47 streams surveyed.

Volunteers in the 1998 and 1999 spawning seasons observed streams from stationary locations. By combining the 1996 and 1997 Salmon Watcher data with the 1998 and 1999 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, the limitations of the volunteer data are discussed, then the results of the 1998 and 1999 surveys are discussed for the basins of the study, then finally, the results are examined for each species.

LIMITATIONS OF VOLUNTEER DATA

Data in these reports (e.g., Ostergaard 1999; Vanderhoof et al. 2000) are used widely (see below in the section entitled Benefits of the Data) 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 known 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. Twenty out of 62 of the 1998 volunteers were returnees and 33 out of 105 volunteers in 1999 were returnees, approximately 31% returnees in both years.

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, turbid water and glare also may render the fish difficult to see. 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, excellent identification materials are provided, and technical experts are available for help with identification, some misidentifications will be made.

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 no fish were seen during the survey by the volunteer at the site at the times the site was observed. 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 surveys are conducted comprehensively and systematically are wider uses of such data warranted.

BASINS

The Lake Washington Watershed study area has been broken into seven basins for the purpose of analysis and discussion. Further, the North Lake Washington Basin is divided into the North Lake Washington Tributaries and the Sammamish River Tributaries. Salmonids were observed in all basins surveyed in both 1998 and 1999 (except the West Lake Washington Basin, which was only surveyed three times and only in 1999).

In both 1998 and 1999, sockeye were observed in the greatest numbers in the Cedar River Basin, which rendered it the basin with the most fish observed in the Lake Washington Watershed. Chinook were observed in the highest numbers in Issaquah Creek and the Sammamish River in 1998 and in Big Bear Creek in 1999. Coho were observed in the highest numbers in 1998 in Issaquah Creek and in the Cedar River Basin. Kokanee were seen in the Big Bear Creek Basin and in North Lake Washington tributaries in both years, as well as West Lake Sammamish in 1999. No fish were seen in Thornton Creek and several streams in the Issaquah Creek Basin in 1998 or 1999.

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 1999, comparisons of raw data likely would not yield valid information about changes in populations.

Therefore, the best use for the data are 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 1998 and 1999 data, it is mentioned here. Figures 12 to 15 depict these fish distributions.

Big Bear Creek Basin

Salmon Watcher volunteers viewed Big Bear Creek further upstream in 1998 than in previous years—they watched as far as RM 9.8. Volunteers watched as far upstream as RM 9.25 in 1999. In 1998, kokanee were observed in Big Bear Creek up to RM 9.0. Chinook were found further upstream in Big Bear Creek in both 1998 (up to RM 9.25) and 1999 (RM 9.0) than in previous years' surveys. Coho were also found up to RM 9.25 in 1999; previously they had been seen as far as RM 8.3. Sockeye were found up to RM 9.25 in 1998 and 1999. Prior to 1998 or 1998, sockeye had been seen as far as RM 9.0.

Salmon Watcher volunteers viewed Cottage Lake Creek further upstream in 1998 than in previous years—they watched as far as RM 2.3. Volunteers watched as far upstream as RM 2.2 in 1999. In 1998, chinook were observed in Cottage Lake Creek slightly upstream (RM 2.3) of where they had previously been observed (RM 2.2). The observed distribution of kokanee was expanded in 1999 up to RM 2.2.

Sockeye had been seen as far as RM 2.2 in previous years, but were seen to only RM 1.3 in 1998 and RM 1.9 in 1999. Coho were seen up to RM 1.9 in Cottage Lake Creek in 1999; in previous years they had not been seen at all in Cottage Lake Creek, though they were observed in one of its tributaries (0122A), whose confluence is at RM 1.7 of Cottage Lake Creek.

Chinook were observed by volunteers in Evans Creek in 1998 for the first time; they were seen up to RM 0.51. The observed distribution of kokanee was expanded in Evans Creek in 1998 up to RM 0.51. Unlike previous surveys, no sockeye were observed in Evans Creek in either 1998 or 1999.

Coho were again observed in Struve Creek at the same location they were seen previously (RM 0.5). No survey sites have been established upstream of that location. Seidel Creek was observed for the first time by Salmon Watchers in 1999 and coho were observed up to RM 0.6.

Cedar River Basin

Sockeye have been observed in Cavanaugh Pond (at RM 6.4 in the Cedar River) every year of the Salmon Watcher Program. Salmon Watcher volunteers viewed Rock Creek further upstream in 1998 than in previous years—they watched as far as RM 3. In 1999, sockeye were seen up to RM 0.4 in Rock Creek, though they have been observed as far upstream as RM 1.3 (Summit-Landsburg Road) in previous years. In 1998, sockeye were observed by Salmon Watcher volunteers for the first time in Taylor Creek (up to RM 1.2).

In 1999, chinook were observed in the Cedar River by volunteers as far upstream as RM 9.3, which is not as far as they had to traverse to get to Taylor Creek, where they were observed during walking surveys in 1996. The confluence of Taylor Creek with the Cedar River is at RM 12.8 of the Cedar.

Salmon Watcher volunteers viewed Taylor Creek further upstream in 1998 than in previous years—they watched as far as RM 2.4. Coho were observed in Taylor Creek in 1999 further upstream than they had previously been seen by volunteers (RM 1.2). In 1999, coho were seen up to RM 0.4 in Rock Creek, though they have been observed as far upstream as RM 1.3 (Summit-Landsburg Road) in previous years.

East Lake Washington Basin

Salmon Watcher volunteers viewed Kelsey Creek as far upstream in 1998 as RM 5.3 (not as far as in previous years). Volunteers watched as far upstream as RM 6 in 1999 (also not as far upstream as in previous years). Chinook were observed in Kelsey Creek in 1998 up to RM 5.3 and up to RM 5.0 in 1999—both sightings of which are further upstream than had been previously reported by volunteers. Sockeye were observed in Kelsey Creek up to RM 5.3 in 1998; this observation increases their known distribution in Kelsey Creek (as reported by Salmon Watchers) by almost 3 river miles.

Salmon Watcher volunteers viewed West Trib Kelsey Creek further upstream in 1998 than in previous years—they watched as far as RM 1. Chinook were observed in West Trib Kelsey Creek up to RM 1.0 in 1998. This observation extends the known distribution of chinook in that stream by Salmon Watcher volunteers by another two-tenths of a mile. In 1998, sockeye were seen in West Trib Kelsey Creek up to RM 1.0; previously, sockeye had not been reported by volunteers in West Trib Kelsey Creek.

Salmon Watcher volunteers viewed Valley Creek further upstream in 1998 than in previous years—they watched as far as RM 0.8. Chinook were observed by volunteers in Valley Creek for the first time in 1999; they were seen up to RM 0.6. Coho were observed in Coal Creek in 1998 up to RM 2.0; no coho had been previously reported by Salmon Watcher volunteers in Coal Creek. Goff Creek was watched for the first time in 1999 but no fish were observed.

Issaquah Creek Basin

Salmon Watcher volunteers viewed Issaquah Creek as far upstream as RM 5.8 in 1998 and 1999 (not as far as in previous years). Chinook were observed in Issaquah Creek in 1998 and 1999 up to RM 5.8; these observations are approximately 2.4 river miles further upstream than reported in previous Salmon Watcher surveys. Coho were observed three-tenths of a mile further upstream in East Fork Issaquah Creek than in previous surveys (up to RM 0.4).

Holder Creek was observed at RM 12.7 in 1998 and 1999 but no fish were observed there in either year. Fifteenmile Creek was watched for the first time in 1998, but no fish were observed.

North Lake Washington Basin

As described above, the North Lake Washington Basin is divided into two groups: North Lake Washington Tributaries and Sammamish River Tributaries. The North Lake Washington Tributaries are those streams flowing into the north end of Lake Washington (Denny, McAleer, and Thornton creeks and their tributaries and the Sammamish River). The Sammamish River Tributaries are those streams flowing into the Sammamish River (then into Lake Washington) from waters originating in Snohomish County (Little Bear, North, and Swamp creeks and their tributaries).

North Lake Washington Tributaries

Salmon Watcher volunteers viewed McAleer Creek as far upstream as RM 1.1 in 1998 and 1999 (not as far as in previous years). Chinook were reported in McAleer Creek for the first time in historic record in 1998 (at RM 1.1). A King County biologist verified the sighting; this sighting expanded the known distribution of chinook salmon in the Lake Washington Watershed. A lone chinook was reported at the same location again in 1999. Sockeye were also reported at that location in 1999; previously they had been reported to only three-tenths of a mile upstream from Lake Washington.

Salmon Watcher volunteers viewed Thornton Creek further upstream in 1998 than in previous years—they watched as far as RM 1.7, and they watched even further upstream in 1999—up to RM 2.9. Salmon Watcher volunteers viewed Maple Leaf Creek further upstream in 1998 than in previous years—they watched as far as RM 0.3, and they watched even further upstream in 1999—up to RM 0.7. Coho were observed in Maple Leaf Creek in 1998 up to RM 0.3 and in 1999 up to RM 0.7; these are the first sightings of coho in Maple Leaf Creek by Salmon Watcher volunteers. The coho sightings in Maple Leaf Creek, a tributary of Thornton Creek, imply that coho traversed Thornton Creek at least as far as the confluence with Maple Leaf Creek at RM 1.3; previously, no coho had been reported by volunteers in Thornton Creek or Maple Leaf Creek.

Sammamish River Tributaries

Salmon Watcher volunteers viewed North Creek as far upstream as RM 7.9 in 1998 (not as far as in previous years), but volunteers viewed further upstream in 1999 than in previous years—they watched as far as RM 10. Chinook were observed by volunteers in North Creek in both 1998 and 1999. In previous years' Salmon Watcher surveys, chinook had not been observed in North Creek. In 1998 chinook were observed up to RM 1.7 and in 1999 they were seen over 6 river miles further upstream—as far as RM 7.9. Coho were reported up to RM 10.0 in North Creek, over 2 river miles upstream of where volunteers had previously reported them. Kokanee were observed in North Creek up to RM 4.1 in 1999; previously, Salmon Watchers had not identified kokanee in North Creek.

Salmon Watcher volunteers viewed Little Bear Creek further upstream in 1998 than in previous years—they watched as far as RM 5.9; in 1999 volunteers watched as far upstream as RM 4.7. One dead chinook was reported in Little Bear Creek in 1998. Sockeye were reported in Little Bear Creek in 1998 up to RM

5.9, almost a mile and a half further upstream than previously reported by a volunteer. Salmon Watcher volunteers viewed Swamp Creek as far upstream as RM 6.9 in 1998 and as far as RM 8.9 in 1999 (not as far as in previous years), but no fish were observed in either year.

West Lake Sammamish Basin

Vasa Creek and Lewis Creek were not surveyed in 1998. In 1999, Vasa Creek was observed up to RM 1.1, further upstream than in previous years. In 1999, Lewis Creek was observed as far upstream as RM 0.5, further upstream than in previous years. Kokanee were observed for the first time by volunteers in the Salmon Watcher Program in Vasa Creek in 1999; they were sighted a half-mile upstream from Lake Sammamish. Similarly, kokanee were observed by Salmon Watcher volunteers in Lewis Creek (RM 0.5) in 1999.

West Lake Washington

Only three surveys were completed in the West Lake Washington area; they were in Taylor Creek in 1999 at RM 0.3. No salmonids were reported.

SPECIES

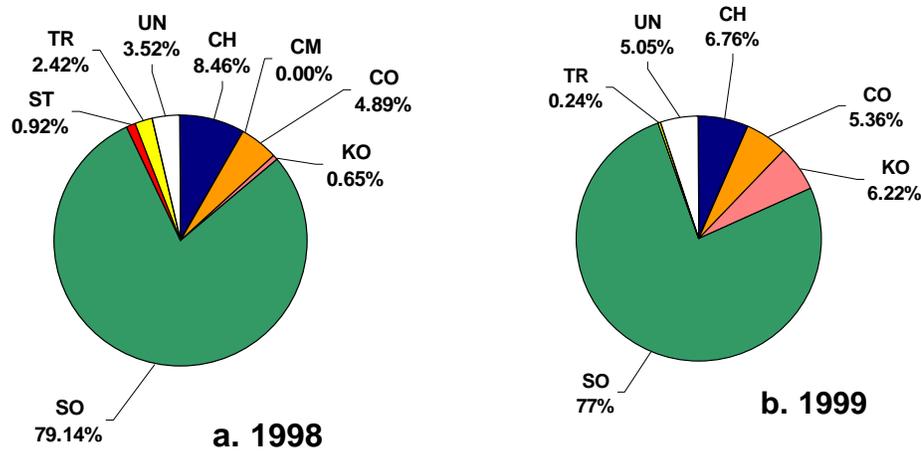
Salmon Watcher Program volunteers recorded observations of all salmonid fish located during surveys, including chinook, coho, and sockeye salmon, kokanee (resident form of sockeye), steelhead trout, and general trout (which may have been cutthroat or rainbow or steelhead). Most trout were not identified 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 10.

Of the 40 streams and 6 beach sites surveyed in 1998, sockeye were found in 12 streams and at 3 Lake Washington beaches. Of the 47 streams surveyed in 1999, sockeye were found in 10 of them. Coho were found in 12 streams in 1998 and in 15 streams in 1999. Chinook were found in 14 streams in 1998 and in 12 streams in 1999. Kokanee were observed in 2 streams in 1998 and 7 streams in 1999. Trout were reported in 6 streams in 1998 and 4 in 1999, and steelhead were observed in 2 streams in 1998.

Sockeye was the most abundant species counted by volunteers in both 1998 and 1999 (Figure 11). Chinook was the second most common species observed in both 1998 and 1999. In 1998, the third most commonly observed species was coho, followed in order of decreasing counts by trout, steelhead, and kokanee. In 1999 the third most commonly observed species was kokanee, followed by coho, trout, and chum. In 1998 and 1999, chinook, sockeye, and coho were all observed in generally the same areas, with the exception of sockeye, which were observed farther in the Cedar River system than the other species in 1998 and were not seen in the East Lake Washington Basin in 1999.

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 6444 total adult fish observed in 1998, 227 were unidentified (3.52%), and 297 out of 5910 were unidentified in 1999 (5.02%). Unidentified adult salmonids were counted in 17 streams and 1 Lake Washington beach in 1998 and in 18 streams in 1999. Volunteers made note of unidentified fry and/or juveniles in 9 streams and at 2 Lake Washington beaches in 1998 and at 20 streams in 1999, though it is probable they were present at more sites and not noted.

Figure 11. Percentage of total fish observed by volunteers in 1998 (a.) and 1999 (b.) by volunteers (CH = chinook, CM = chum, CO = coho, KO = kokanee, SO = sockeye, ST = steelhead, TR = trout, UN = unidentified).



Chinook Salmon

Chinook were observed in 5 basins in the 1998 surveys and in 6 in the 1999 surveys (Figure 12). A total of 372 live fish and 173 carcasses⁶ were found in 14 streams in 1998 (in order of most to least fish seen): Issaquah Creek, Sammamish River, Kelsey Creek, McAleer Creek, Cottage Lake Creek, Big Bear Creek, North Creek, Mercer Slough, Richards Creek, East Fork Issaquah Creek, Evans Creek, Little Bear Creek, Valley Creek, and West Trib Kelsey Creek. A total of 279 live chinook and 121 carcasses were found in 12 streams in 1999: Cottage Lake Creek, Big Bear Creek, East Fork Issaquah Creek, Kelsey Creek, North Creek, Sammamish River, Issaquah Creek, Richards Creek, Cedar River, Valley Creek, West Trib Kelsey Creek, and McAleer Creek.

Chinook are spawned and raised at the hatchery at Issaquah Creek, a fact that likely accounts for some or all of their presence in the mainstem and East Fork Issaquah. As mentioned above, chinook were confirmed for the first time in McAleer Creek in 1998.

Sockeye Salmon

Sockeye were the most numerous fish counted by volunteers in both 1998 and 1999. Sockeye were observed in 6 basins in the 1998 surveys and in 5 in the 1999 surveys (Figure 13). A total of 3735 live fish and 1365 carcasses were found in 12 streams and 3 Lake Washington beaches in 1998 (in order of most to least fish seen): Cedar River, Big Bear Creek, Cottage Lake Creek, Little Bear Creek, Sammamish River, North Creek, Lake Washington Beach, West Trib Kelsey Creek, Kelsey Creek, Issaquah Creek, East Fork Issaquah Creek, Taylor Creek, and Richards Creek. A total of 4022 live fish and 485 carcasses were found in 10 streams in 1999: Cedar River, Big Bear Creek, North Creek, Rock Creek, Sammamish River, Cottage Lake Creek, East Fork Issaquah Creek, Little Bear Creek, Issaquah Creek, McAleer Creek.

⁶ 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 to tally it anyway.

Coho Salmon

Coho were observed in 5 basins in the 1998 surveys and in 6 in the 1999 surveys (including the Puget Sound and Middle Puget Sound basins) (Figure 14). A total of 301 live fish and 14 carcasses were found in 12 streams in 1998 (in order of most to least fish seen): Issaquah Creek, North Creek, McAleer Creek, trib to Big Bear Creek, Kelsey Creek, Coal Creek, Mackey Creek, Sammamish River, Big Bear Creek, Maple Leaf Creek, Mercer Slough, and Richards Creek. A total of 267 live fish and 49 carcasses were found in 15 streams in 1999: Cedar River, North Creek, East Fork Issaquah Creek, trib to Big Bear Creek, Mackey Creek, Big Bear Creek, Sammamish River, Rock Creek (Cedar), Maple Leaf Creek, Colin Creek, Cottage Lake Creek, Seidel Creek, Struve Creek, Taylor Creek, and West Trib Kelsey Creek.

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 2 basins in the 1998 surveys and in 3 in the 1999 surveys (Figure 15). A total of 42 live fish and 0 carcasses were found in 2 streams in 1998 (in order of most to least fish seen): Sammamish River and Big Bear. A total of 357 live fish and 10 carcasses were found in 7 streams in 1999: Creek Little Bear Creek, Big Bear Creek, Lewis Creek, North Creek, Vasa Creek, Colin Creek, and Cottage Lake Creek. When reviewing kokanee observations, it should be remembered that differentiating between large kokanee and small sockeye is sometimes difficult.

Other Species

Trout were reported in 9 streams in 8 basins in 1998 and 7 streams in 4 basins in 1999. 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.

Chum were reported in Valley Creek in 1999; however, this unusual sighting was not verified by a fish biologist. Fish of unidentified species were observed throughout the watershed in both years; in 1998 the majority were counted in the North Lake Washington tributaries (Sammamish River, specifically), but in 1999 no single stream or basin had significantly more unidentified species than the others.

Figure 12. Distribution of chinook salmon in the Lake Washington Watershed (see insert).

Figure 13. Distribution of sockeye salmon in the Lake Washington Watershed (see insert).

Figure 14. Distribution of coho salmon in the Lake Washington Watershed (see insert).

Figure 15. Distribution of kokanee in the Lake Washington Watershed (see insert).

BENEFITS OF THE DATA

In addition to identifying the distribution of spawning salmon in the Lake Washington Watershed, the volunteers, by virtue of their frequent presence along streams in the watershed, often end up accomplishing more than their charge. For example, salmon watchers 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.

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).

GLOSSARY

<i>anadromous</i>	Those species of fish, such as salmon, that hatch and typically rear in freshwater, migrate to the ocean to mature into adults, and return upstream to freshwater rivers, streams, and lakes to spawn.
<i>basin</i>	The land area whose run-off drains to a to a stream, lake, or ocean. As applied in this report, used to refer to subbasins within the Lake Washington Watershed.
<i>escapement</i>	Estimated number of adult salmon returning to a stream to spawn.
<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>	A nest of fish eggs in the gravel of a stream or river bed. Spawning salmon dig a depression in the gravel by lying on their sides and hitting 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 just upstream to cover the eggs. The pair may do this 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>	The land area whose run-off drains to a to a stream, lake, or ocean. 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

Appendices A-C are presented here. Appendices D-K, the raw data tables, are in the separately bound Appendices to the 1998 and 1999 Volunteer Salmon Watcher Program report.

- A. Puget Sound Drainages report and raw data
- B. Snoqualmie River Basin report and raw data
- C. Data Collections Form used in 1998 and 1999

Appendix A.

Puget Sound Drainages

The Salmon Watcher Program is centralized around the Lake Washington Watershed, but because of increasing interest by volunteers in other areas, streams outside the Lake Washington Watershed are also monitored. Many of these stream systems drain into Puget Sound; those streams are reported on here. The Snoqualmie River Basin is another such area and is discussed in Appendix B.

In 1998, volunteers surveyed Fauntleroy, Longfellow, and Pipers creeks, which all drain to Puget Sound. Longfellow and Pipers creeks surveys began in mid-September and Fauntleroy Creeks surveys began in November; all surveys were completed by early December (Table A1a.). Those same creeks plus Venema Creek were also surveyed in 1999 (Table A1b.). Surveys began in either September or October and concluded in either November or December. Each site was watched by 1 volunteer in 1998 and there were between 13 and 32 surveys per site. In 1999, most sites had 1 or 2 volunteers, though one site had 3 and the Fauntleroy Creek site had 18 (see below); between 11 and 35 surveys were completed at each site, with the exception of Fauntleroy Creek, which had 164 surveys. Raw survey data for each stream are presented below in Tables A2-A5.

Beginning in 1998, after Seattle Public Utilities completed a fish ladder, volunteers began watching 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

Only one site was watched at each stream in 1998; coho were seen in Fauntleroy Creek (near the mouth) and Pipers Creek (at RM 0.5), and chum were also seen at the one Pipers Creek site. During 1999 several sites were watched along both Longfellow Creek and Pipers Creek. Coho were seen at every site, including the uppermost point on Longfellow Creek at RM 0.9. Coho were observed as far as RM 0.5 in Pipers Creek, whereas chum were seen only to RM 0.2. 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.

Timing of Salmon Runs

Volunteers did not begin surveying Fauntleroy Creek until November 7 in 1998, which is when the first coho was seen; similarly, the last coho was observed December 6, only two days before the final survey. Chum were first observed in Pipers Creek December 1, but the final survey was December 3 (chum were observed that day also). During the 1999 surveys, coho were first observed in Fauntleroy Creek on October 27; they were last observed on November 20, one day before the final survey. Coho in Longfellow Creek were observed from October 23 through December 7. Chum in Pipers Creek were observed from October 16 through November 25.

Table 1. Site location (listed in river miles, RM), survey dates, total number of surveys, volunteers, sites, and fish seen (live and dead) at each stream surveyed in Puget Sound basins for 1998 (a.) and 1999 (b.).

a. 1998

Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Coho	Sockeye	Chum	Trout	Unidentified
Fauntleroy Creek	0.05	11/7 – 12/8	32	1	–	220 (11/7 – 12/6)	–	–	4 (11/14 – 12/2)	1 (11/10)
Longfellow Creek	2.7	9/16 – 12/4	18	1	–	–	–	–	–	–
Pipers Creek	0.5	9/15 – 12/3	13	1	–	3 (11/7 – 11/20)	–	25 (12/1 – 12/3)	7 (11/17 – 11/20)	5 (11/5 – 11/20)
Puget Sound Basins Summary		9/15 – 12/8	63	3	–	223 (11/7 – 12/6)	–	25 (12/1 – 12/3)	11 (11/14 – 12/2)	6 (11/5 – 11/20)

b. 1999

Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Coho	Sockeye	Chum	Trout	Unidentified
Fauntleroy Creek	0.05	9/10 – 11/21	164	18	–	411 (10/27 – 11/20)	–	–	39 (10/29 – 11/14)	35 (10/28 – 11/17)
Longfellow Creek	0.6	10/23 – 11/28	12	2	–	9 (10/31 – 11/7)	–	–	4 (10/30 – 11/13)	1 (11/18)
	0.7	10/21 – 12/7	17	1	–	134 (10/23 – 12/7)	–	–	–	1 (10/26)
	0.8	10/23 – 11/29	13	2	–	39 (10/23 – 11/14)	–	–	2 (10/24)	12 (11/7 – 11/28)
	0.9	9/16 – 12/31	27	2	–	41 (10/31 – 11/19)	–	–	–	–
<i>Summary</i>		9/16 – 12/31	69	7	–	223 (10/23 – 12/7)	–	–	6 (10/24 – 11/13)	14 (10/26 – 11/28)
Pipers Creek	0	9/14 – 12/8	18	1	–	–	–	–	–	–
	0.2	9/16 – 11/25	21	2	–	–	–	21 (10/16 – 11/25)	–	1 (11/20)
	0.4	9/18 – 12/4	17	1	–	–	–	–	2 (10/28 – 10/30)	–
	0.5	9/13 – 12/27	35	3	–	5 (11/6 – 11/14)	–	–	–	3 (10/28-10/31)
	0.6	11/10 – 12/6	11	1	–	–	–	–	–	3 (11/10 – 11/15)
<i>Summary</i>		9/13 – 12/27	102	8	–	5 (11/6 – 11/14)	–	21 (10/16 – 11/25)	2 (10/28 – 10/30)	7 (10/28 – 11/20)
Venema Creek	0.1	9/15 – 12/31	38	3	–	–	–	–	–	–
Puget Sound Basins Summary		9/10 – 12/31	373	36	–	639 (10/23 – 12/7)	–	21 (10/16 – 11/25)	47 (10/24 – 11/14)	56 (10/26 – 11/28)

Raw data for Fauntleroy Creek taken in 1998 (a.) and 1999 (b.).

a. 1998

Date	River Mile	Coho		Trout		Unknown	
		Live	Dead	Live	Dead	Live	Dead
11/7/98	0.05	14	0	0	0	0	0
11/8/98	0.05	4	0	0	0	0	0
11/9/98	0.05	4	0	0	0	0	0
11/10/98	0.05	5	0	0	0	1	0
11/11/98	0.05	5	0	0	0	0	0
11/12/98	0.05	3	0	0	0	0	0
11/13/98	0.05	3	0	0	0	0	0
11/14/98	0.05	2	0	1	0	0	0
11/15/98	0.05	3	0	0	0	0	0
11/16/98	0.05	10	0	2	0	0	0
11/17/98	0.05	2	5	0	0	0	0
11/18/98	0.05	3	0	0	0	0	0
11/19/98	0.05	1	0	0	0	0	0
11/20/98	0.05	0	1	0	0	0	0
11/21/98	0.05	2	0	0	0	0	0
11/22/98	0.05	19	0	0	0	0	0
11/23/98	0.05	17	1	0	0	0	0
11/24/98	0.05	16	3	0	0	0	0
11/25/98	0.05	0	0	0	0	0	0
11/26/98	0.05	28	0	0	0	0	0
11/27/98	0.05	15	0	0	0	0	0
11/28/98	0.05	14	0	0	0	0	0
11/29/98	0.05	6	0	0	0	0	0
11/30/98	0.05	4	3	0	0	0	0
12/1/98	0.05	4	0	0	0	0	0
12/2/98	0.05	6	0	1	0	0	0
12/3/98	0.05	10	0	0	0	0	0
12/4/98	0.05	6	0	0	0	0	0
12/5/98	0.05	0	0	0	0	0	0
12/6/98	0.05	1	0	0	0	0	0
12/7/98	0.05	0	0	0	0	0	0
12/8/98	0.05	0	0	0	0	0	0
Total		207	13	4	0	1	0

River Mile **Location**
0.05

Intersection of Fauntleroy Way SW & Director St.

Surveyor
Judy Pickens

b. 1999

Date	River Mile	Coho		Trout		Unknown	
		Live	Dead	Live	Dead	Live	Dead
9/10/99	0.05	0	0	0	0	0	0
9/15/99	0.05	0	0	0	0	0	0
9/17/99	0.05	0	0	0	0	0	0
9/18/99	0.05	0	0	0	0	0	0
9/19/99	0.05	0	0	0	0	0	0
9/21/99	0.05	0	0	0	0	0	0
9/23/99	0.05	0	0	0	0	0	0
9/26/99	0.05	0	0	0	0	0	0
9/27/99	0.05	0	0	0	0	0	0
9/28/99	0.05	0	0	0	0	0	0
10/2/99	0.05	0	0	0	0	0	0
10/5/99	0.05	0	0	0	0	0	0
10/12/99	0.05	0	0	0	0	0	0
10/14/99	0.05	0	0	0	0	0	0
10/15/99	0.05	0	0	0	0	0	0
10/16/99	0.05	0	0	0	0	0	0
10/17/99	0.05	0	0	0	0	0	0
10/18/99	0.05	0	0	0	0	0	0
10/19/99	0.05	0	0	0	0	0	0
10/20/99	0.05	0	0	0	0	0	0
10/21/99	0.05	0	0	0	0	0	0
10/22/99	0.05	0	0	0	0	0	0
10/24/99	0.05	0	0	0	0	0	0
10/26/99	0.05	0	0	0	0	0	0
10/27/99	0.05	3	0	0	0	0	0
10/28/99	0.05	23	0	0	0	5	0
10/29/99	0.05	21	15	1	0	0	0
10/30/99	0.05	1	2	0	0	0	0
10/31/99	0.05	47	11	7	0	0	0
11/1/99	0.05	14	2	0	0	0	0
11/2/99	0.05	27	8	1	0	0	0
11/3/99	0.05	9	14	4	0	0	3
11/4/99	0.05	19	14	3	0	6	2
11/5/99	0.05	3	4	2	0	0	0
11/6/99	0.05	23	21	6	0	0	0
11/7/99	0.05	14	8	8	0	10	5
11/8/99	0.05	11	4	0	0	0	0
11/9/99	0.05	22	10	2	0	0	0
11/10/99	0.05	5	0	0	0	0	0
11/11/99	0.05	4	2	0	0	0	0
11/12/99	0.05	0	2	0	0	0	0
11/13/99	0.05	24	5	3	0	0	0
11/14/99	0.05	2	5	2	0	0	0
11/15/99	0.05	0	2	0	0	2	0
11/16/99	0.05	1	0	0	0	0	0
11/17/99	0.05	3	2	0	0	0	2
11/18/99	0.05	0	1	0	0	0	0
11/19/99	0.05	4	0	0	0	0	0
11/20/99	0.05	0	1	0	0	0	0
11/21/99	0.05	0	0	0	0	0	0
Total		280	133	39	0	23	12

River Mile **Location**
0.05 Intersection of Fauntleroy Way SW & Director St.

Surveyor

Robert and Amelia Best
 Maureen Birrell
 Ron and Diana Carnell
 April Carney
 N. Christiansen
 Diane Cornell-Drury
 Pearl and Ed Ebert
 Karen Farnsworth
 Marlene Grubb
 Tiffany Henderson

Henry Family
 Hlavacek Family
 Andrew Hofstad
 Dave Hofstad
 Lyn Kratz
 Denis Lavoit
 Dean Overton
 John Storz
 Mark Yoshida

Table 2. Raw data for Longfellow Creek taken in 1998 (a.) and 1999 (b.).**a. 1998**

Date	River Mile	Chinook		Coho	
		Live	Dead	Live	Dead
9/16/98	2.7	0	0	0	0
9/21/98	2.7	0	0	0	0
9/26/98	2.7	0	0	0	0
9/29/98	2.7	0	0	0	0
10/2/98	2.7	0	0	0	0
10/5/98	2.7	0	0	0	0
10/9/98	2.7	0	0	0	0
10/13/98	2.7	0	0	0	0
10/17/98	2.7	0	0	0	0
10/19/98	2.7	0	0	0	0
10/26/98	2.7	0	0	0	0
11/10/98	2.7	0	0	0	0
11/13/98	2.7	0	0	0	0
11/16/98	2.7	0	0	0	0
11/18/98	2.7	0	0	0	0
11/24/98	2.7	0	0	0	0
11/30/98	2.7	0	0	0	0
12/4/98	2.7	0	0	0	0
Total		0	0	0	0

River Mile Location

2.7 SW Brandon St between 26th and 28th Ave SW

Surveyor

Willie Wilson

b. 1999

Date	River Mile	Coho		Trout		Unknown	
		Live	Dead	Live	Dead	Live	Dead
9/16/99	0.9	0	0	0	0	0	0
9/21/99	0.9	0	0	0	0	0	0
9/27/99	0.9	0	0	0	0	0	0
9/29/99	0.9	0	0	0	0	0	0
10/12/99	0.9	0	0	0	0	0	0
10/18/99	0.9	0	0	0	0	0	0
10/21/99	0.7	0	0	0	0	0	0
10/22/99	0.9	0	0	0	0	0	0
10/23/99	0.6	0	0	0	0	0	0
	0.7	4	1	0	0	0	0
	0.8	2	0	0	0	0	0
10/24/99	0.7	5	1	0	0	0	0
	0.8	3	0	2	0	0	0
	0.9	0	0	0	0	0	0
10/25/99	0.7	2	0	0	0	0	
10/26/99	0.7	9	2	0	0	1	0
10/29/99	0.7	4	17	0	0	0	0
10/30/99	0.6	0	0	0	3	0	0
	0.9	0	0	0	0	0	0
10/31/99	0.6	2	3	0	0	0	0
	0.7	7	10	0	0	0	0
	0.8	5	7	0	0	0	0
	0.9	1	1	0	0	0	0
11/2/99	0.9	5	8	0	0	0	0
11/4/99	0.6	0	3	0	0	0	0
	0.8	5	0	0	0	0	0
	0.9	0	3	0	0	0	0
11/5/99	0.7	9	10	0	0	0	0
	0.9	1	1	0	0	0	0
11/6/99	0.8	3	2	0	0	0	0
11/7/99	0.6	1	0	0	0	0	0
	0.8	2	1	0	0	0	8
	0.9	3	0	0	0	0	0
11/9/99	0.7	6	4	0	0	0	0
	0.9	0	2	0	0	0	0
11/11/99	0.6	0	0	0	0	0	0
	0.9	0	0	0	0	0	0
11/13/99	0.6	0	0	0	1	0	0
	0.8	0	0	0	0	2	1
11/14/99	0.6	0	0	0	0	0	0
	0.7	22	3	0	0	0	0
	0.8	7	2	0	0	0	0
	0.9	3	0	0	0	0	0
11/17/99	0.7	7	0	0	0	0	0
11/18/99	0.6	0	0	0	0	1	0
	0.9	8	3	0	0	0	0
11/19/99	0.9	2	0	0	0	0	0
11/20/99	0.6	0	0	0	0	0	0
11/21/99	0.7	5	0	0	0	0	0
	0.8	0	0	0	0	0	0
	0.9	0	0	0	0	0	0
11/25/99	0.7	0	0	0	0	0	0
11/26/99	0.9	0	0	0	0	0	0

Date	River Mile	Coho		Trout		Unknown	
		Live	Dead	Live	Dead	Live	Dead
11/28/99	0.6	0	0	0	0	0	0
11/28/99	0.8	0	0	0	0	0	1
11/29/99	0.7	0	2	0	0	0	0
	0.8	0	0	0	0	0	0
12/2/99	0.7	0	1	0	0	0	0
12/4/99	0.7	0	1	0	0	0	0
	0.9	0	0	0	0	0	0
12/5/99	0.9	0	0	0	0	0	0
12/7/99	0.7	0	2	0	0	0	0
12/11/99	0.9	0	0	0	0	0	0
12/18/99	0.9	0	0	0	0	0	0
12/20/99	0.9	0	0	0	0	0	0
12/31/99	0.9	0	0	0	0	0	0
Total		133	90	2	4	4	10

River Mile Location
0.6 footbridge parallel to SW Yancy St.
0.7 footbridge parallel to SW Dakota St.
0.8 footbridge parallel to SW Adams St.
0.9 footbridge parallel to SW Nevada St.

Surveyor

Gina Catarra
Mark and Stephan Charnews
Terri Griffith
Ted Jones
Ardis, Bob, and Brian Lilleness
Rachel Reinhart
Connie Wurm

Table 3. Raw data for Pipers Creek taken in 1998 (a.) and 1999 (b.).

a. 1998

Date	River Mile	Chum		Coho		Trout		Unknown	
		Live	Dead	Live	Dead	Live	Dead	Live	Dead
9/15/98	0.5	0	0	0	0	0	0	0	0
9/16/98	0.5	0	0	0	0	0	0	0	0
9/23/98	0.5	0	0	0	0	0	0	0	0
10/5/98	0.5	0	0	0	0	0	0	0	0
10/9/98	0.5	0	0	0	0	0	0	0	0
10/17/98	0.5	0	0	0	0	0	0	0	0
10/23/98	0.5	0	0	0	0	0	0	0	0
10/31/98	0.5	0	0	0	0	0	0	0	0
11/5/98	0.5	0	0	0	0	0	0	1	0
11/17/98	0.5	0	0	0	1	1	0	0	0
11/20/98	0.5	0	0	0	2	6	0	3	1
12/1/98	0.5	9	2	0	0	0	0	0	0
12/3/98	0.5	12	2	0	0	0	0	0	0
Total		21	4	0	3	7	0	4	1

River Mile Location
0.5 Carkeek Park; 1st footbridge downstream of sewer treatment facility

Surveyor

Mike McKenna

b. 1999

Date	River Mile	Chum		Coho		Trout		Unknown	
		Live	Dead	Live	Dead	Live	Dead	Live	Dead
9/16/99	0.2	0	0	0	0	0	0	0	0
	0.5	0	0	0	0	0	0	0	0
9/25/99	0.2	0	0	0	0	0	0	0	0
9/13/99	0.5	0	0	0	0	0	0	0	0
9/21/99	0	0	0	0	0	0	0	0	0
9/27/99	0.5	0	0	0	0	0	0	0	0
9/18/99	0.2	0	0	0	0	0	0	0	0
	0.4	0	0	0	0	0	0	0	0
9/30/99	0.4	0	0	0	0	0	0	0	0
	0.5	0	0	0	0	0	0	0	0
9/14/99	0	0	0	0	0	0	0	0	0
9/20/99	0.2	0	0	0	0	0	0	0	0
	0.5	0	0	0	0	0	0	0	0
9/23/99	0.4	0	0	0	0	0	0	0	0
9/28/99	0.4	0	0	0	0	0	0	0	0
	0.5	0	0	0	0	0	0	0	0
9/24/99	0.5	0	0	0	0	0	0	0	0
9/17/99	0	0	0	0	0	0	0	0	0
	0.2	0	0	0	0	0	0	0	0
10/28/99	0.2	3	2	0	0	0	0	0	0
	0.4	0	0	0	0	0	1	0	0
	0.5	0	0	0	0	0	0	0	1
10/14/99	0	0	0	0	0	0	0	0	0
10/31/99	0.5	0	0	0	0	0	0	0	1
10/1/99	0	0	0	0	0	0	0	0	0
10/3/99	0.4	0	0	0	0	0	0	0	0
	0.5	0	0	0	0	0	0	0	0
10/21/99	0	0	0	0	0	0	0	0	0
	0.2	1	2	0	0	0	0	0	0
	0.5	0	0	0	0	0	0	0	0
10/23/99	0.4	0	0	0	0	0	0	0	0
10/9/99	0.2	0	0	0	0	0	0	0	0
	0.5	0	0	0	0	0	0	0	0
10/13/99	0.2	0	0	0	0	0	0	0	0
10/7/99	0.2	0	0	0	0	0	0	0	0
	0.5	0	0	0	0	0	0	0	0
10/2/99	0.2	0	0	0	0	0	0	0	0
	0.5	0	0	0	0	0	0	0	0
10/12/99	0.2	0	0	0	0	0	0	0	0
	0.5	0	0	0	0	0	0	0	0
10/15/99	0.5	0	0	0	0	0	0	0	0
10/4/99	0.5	0	0	0	0	0	0	0	0
10/6/99	0	0	0	0	0	0	0	0	0
	0.5	0	0	0	0	0	0	0	0
10/11/99	0.4	0	0	0	0	0	0	0	0
10/27/99	0	0	0	0	0	0	0	0	0
	0.4	0	0	0	0	0	0	0	0
10/16/99	0.2	0	1	0	0	0	0	0	0
10/30/99	0.4	0	0	0	0	0	1	0	0
	0.5	0	0	0	0	0	0	0	1
11/1/99	0.5	0	0	0	0	0	0	0	0
11/2/99	0.2	1	1	0	0	0	0	0	0

Date	River Mile	Chum		Coho		Trout		Unknown	
		Live	Dead	Live	Dead	Live	Dead	Live	Dead
11/3/99	0	0	0	0	0	0	0	0	0
11/4/99	0.4	0	0	0	0	0	0	0	0
11/5/99	0.2	0	0	0	0	0	0	0	0
11/6/99	0.2	1	2	0	0	0	0	0	0
	0.5	0	0	0	4	0	0	0	0
11/9/99	0	0	0	0	0	0	0	0	0
	0.2	1	1	0	0	0	0	0	0
	0.4	0	0	0	0	0	0	0	0
11/10/99	0.6	0	0	0	0	0	0	0	1
11/13/99	0	0	0	0	0	0	0	0	0
	0.5	0	0	0	0	0	0	0	0
	0.6	0	0	0	0	0	0	0	1
11/14/99	0.4	0	0	0	0	0	0	0	0
	0.5	0	0	1	0	0	0	0	0
11/15/99	0.4	0	0	0	0	0	0	0	0
	0.6	0	0	0	0	0	0	0	1
11/16/99	0	0	0	0	0	0	0	0	0
11/17/99	0.6	0	0	0	0	0	0	0	0
11/18/99	0.5	0	0	0	0	0	0	0	0
11/20/99	0.2	1	0	0	0	0	0	1	0
	0.4	0	0	0	0	0	0	0	0
	0.6	0	0	0	0	0	0	0	0
11/21/99	0	0	0	0	0	0	0	0	0
11/22/99	0.4	0	0	0	0	0	0	0	0
	0.6	0	0	0	0	0	0	0	0
11/24/99	0.6	0	0	0	0	0	0	0	0
11/25/99	0	0	0	0	0	0	0	0	0
	0.2	2	2	0	0	0	0	0	0
	0.5	0	0	0	0	0	0	0	0
11/26/99	0.6	0	0	0	0	0	0	0	0
11/28/99	0	0	0	0	0	0	0	0	0
12/1/99	0.6	0	0	0	0	0	0	0	0
12/2/99	0	0	0	0	0	0	0	0	0
	0.5	0	0	0	0	0	0	0	0
12/4/99	0.4	0	0	0	0	0	0	0	0
	0.6	0	0	0	0	0	0	0	0
12/5/99	0	0	0	0	0	0	0	0	0
	0.5	0	0	0	0	0	0	0	0
12/6/99	0.6	0	0	0	0	0	0	0	0
12/8/99	0	0	0	0	0	0	0	0	0
12/12/99	0.5	0	0	0	0	0	0	0	0
12/16/99	0.5	0	0	0	0	0	0	0	0
12/23/99	0.5	0	0	0	0	0	0	0	0
12/27/99	0.5	0	0	0	0	0	0	0	0
Total		10	11	1	4	0	2	1	6

River Mile

Location

- 0 at mouth, Carkeek Park.
- 0.2 lower wetland area in Carkeek Pk.
- 0.4 confluence with Venema Ck in Carkeek Pk.
- 0.5 Carkeek Park; 1st footbridge downstream of metro sewer treatment facility and double culverts
- 0.6 Carkeek Park; 1st footbridge upstream of metro sewer treatment facility and double culverts

Surveyor

- Carla Bowditch Paul Racette
- Linda Erickson Rachel Reinhart
- Jim Hearsey Ellen Stewart

Drew Kerr Terry Walsh
 Peter La Raus

Table 4. Raw data for Venema Creek taken in 1999.

Date	River Mile	Coho	
		Live	Dead
9/15/99	0.1	0	0
9/17/99	0.1	0	0
9/20/99	0.1	0	0
9/23/99	0.1	0	0
9/27/99	0.1	0	0
9/30/99	0.1	0	0
10/1/99	0.1	0	0
10/4/99	0.1	0	0
10/7/99	0.1	0	0
10/10/99	0.1	0	0
10/12/99	0.1	0	0
10/14/99	0.1	0	0
10/17/99	0.1	0	0
10/20/99	0.1	0	0
10/24/99	0.1	0	0
10/28/99	0.1	0	0
10/31/99	0.1	0	0
11/5/99	0.1	0	0
11/7/99	0.1	0	0
11/11/99	0.1	0	0
11/14/99	0.1	0	0
11/17/99	0.1	0	0
11/19/99	0.1	0	0
11/21/99	0.1	0	0
11/22/99	0.1	0	0
11/26/99	0.1	0	0
11/27/99	0.1	0	0
12/2/99	0.1	0	0
12/5/99	0.1	0	0
12/10/99	0.1	0	0
12/12/99	0.1	0	0
12/17/99	0.1	0	0
12/20/99	0.1	0	0
12/23/99	0.1	0	0
12/26/99	0.1	0	0
12/31/99	0.1	0	0
Total		0	0

River Mile **Location**
 0.1 Carkeek Park, ~700' upstream from
 trailhead

Surveyor
 Gretchen Brooks
 Pam Johnson
 Lisa Wright

Appendix B.

Snoqualmie River Basin

Volunteers surveyed Raging River and Tolt River in the Snoqualmie River Basin in 1999. Raging River was surveyed from November 18 until December 24 a total of five times by one volunteer. Tolt River was surveyed from October 14 through December 9 nine times by one volunteer (Table B1). Raw survey data for each stream are presented below in Tables B2 and B3.

Only unidentified salmonids were seen in the Raging River, and were observed the entire time period of the surveys. Chinook, coho, and chum were all observed in the Tolt River.

Uppermost Sightings

Only one site was monitored in each of the two streams. The unidentified fish in the Raging River were all seen at RM 12.6. The only site monitored in the Tolt River was at RM 0.6.

Timing of Salmon Runs

All chinook observed in the Tolt River were seen on the same day (October 14). Coho were seen from mid-November until early December. The first observations of chum were at the end of November and went until the final survey.

Table B1. Site location (listed in river miles, RM), survey dates, total number of surveys, volunteers, sites, and fish seen (live and dead) at each stream surveyed in the Snoqualmie River Basin for 1999.

Stream	RM	Survey Dates	# Surveys	# Vols.	Chinook	Coho	Chum	Unidentified
Raging River	12.6	11/18 – 12/24	5	1	–	–	–	48 (11/18 – 12/24)
Tolt River	0.6	10/14 – 12/9	9	1	4 (10/14)	22 (11/18 – 12/4)	76 (11/29 – 12/9)	–
Snoqualmie Basin Summary		10/14 – 12/24	14	2	4 (10/14)	22 (11/18 – 12/4)	76 (11/29 – 12/9)	48 (11/18 – 12/24)

Table B2. Raw data for Raging River taken in 1999.

Date	River Mile	Coho		Unknown	
		Live	Dead	Live	Dead
11/18/99	12.6	0	0	8	1
12/6/99	12.6	0	0	21	3
12/8/99	12.6	0	0	11	2
12/23/99	12.6	0	0	1	0
12/24/99	12.6	0	0	1	0
Total		0	0	42	6

River Mile **Location**
 12.6 where river flows near Kerriston Rd., north of Holamar Rd.

Surveyor
 Kurt Bayer

Table B3. Raw data for Tolt River taken in 1999.

Date	River Mile	Chinook		Chum		Coho	
		Live	Dead	Live	Dead	Live	Dead
10/14/99	0.6	2	2	0	0	0	0
10/18/99	0.6	0	0	0	0	0	0
10/28/99	0.6	0	0	0	0	0	0
11/2/99	0.6	0	0	0	0	0	0
11/18/99	0.6	0	0	0	0	4	0
11/29/99	0.6	0	0	17	1	1	0
11/30/99	0.6	0	0	14	0	7	2
12/4/99	0.6	0	0	30	2	7	1
12/9/99	0.6	0	0	4	8	0	0
Total		2	2	65	11	19	3

River Mile **Location**
 0.6 Frew side channel off Tolt

Surveyor
 Kirk Anderson

Appendix C.

Data Collection Form used in 1998 and 1999

