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# 2010 Volunteer Salmon Watcher Program

Lake Washington Watershed,  
Puget Sound WRIA 8 Streams,  
and other Puget Sound Streams

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April 2011



**King County**

Department of Natural Resources and Parks  
Water and Land Resources Division

**Science Section**

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# 2010 Volunteer Salmon Watcher Program

Lake Washington Watershed and Puget Sound WRIA 8 Streams

King County Water and Land Resources Division, in cooperation with:  
Lake Washington/Cedar/Sammamish Watershed (WRIA 8) Forum  
Bellevue Stream Team  
Cities of Bothell, Kirkland, Redmond, Renton, Seattle, and Woodinville  
With support from King Conservation District

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**King County**

Department of  
Natural Resources and Parks

**Water and Land Resources Division**

201 South Jackson Street, Suite 600  
Seattle, WA 98104



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## Summary

The purpose of the Salmon Watcher Program is to document the distribution of spawning adult salmon throughout the basin via an active public outreach and education program and subsequently consolidate all the information into a single resource (this report). These data can be used to inform how aquatic resources are managed, to protect salmon and trout species, and to enhance their habitat.

For the 2010 program, 111 volunteers surveyed 107 sites on 40 streams from August 30, 2010, to February 3, 2010. Surveyed streams were located throughout the Lake Washington Watershed, other WRIA 8 streams in Central Puget Sound, and other streams draining to Puget Sound. Because volunteers collect the data in this program, the agencies are able to obtain more information from far more locations than would otherwise be possible. However, data in this report should be used with the following factors in mind:

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

Volunteers observed the following species: chinook, sockeye, kokanee, coho, and chum salmon, as well as trout. The following results were compiled from volunteer observations: (1) Sockeye were seen in the greatest numbers (10,629 enumerated); (2) Chinook and coho were seen in 6 Lake Washington Watershed basins; (3) Sockeye were observed in 5 Lake Washington basins; (4) Kokanee were observed in 2 Lake Washington basins; and (5) Chum were reported in 3 streams draining to Puget Sound. No observed species ranges were expanded based on Salmon Watcher data in 2010.

This report is published on the Internet and can be found using the hyperlinks on this web page: <http://www.kingcounty.gov/environment/animalsAndPlants/salmon-and-trout/salmon-watchers/reports.aspx>.

Maps included in this report have been published on the Internet and can be found using the hyperlinks on this web page: <http://www.kingcounty.gov/environment/animalsAndPlants/salmon-and-trout/salmon-watchers/maps.aspx>.

The home page for the Salmon Watcher Program web site is here: <http://www.kingcounty.gov/environment/animalsandplants/salmon-and-trout/salmon-watchers.aspx>.

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## Acknowledgements

Many thanks to all the dedicated volunteers for spending many hours in what is often cold and wet weather to collect the information for this report—some for the fourteenth year in a row, and sometimes without ever seeing a single fish. Without the volunteers there would be no data, no maps, and no report. They help make a positive difference here in the Northwest, not only by reporting fish species, but by acting as the eyes and ears of the streams, reporting stream blockages as well as illegal and other suspect activities. They are the stewards of resources that make the Pacific Northwest so special. A *huge* Thank You to all our great volunteers!

We also want to acknowledge the various individuals from the cooperating jurisdictions. Every year these folks meet and plan the program, organize and stage the training sessions, and invest lots of time attending to the questions of the volunteers. Thanks (in no particular order) to Laurie Devereaux, Debra Crawford, Peter Holte, Janet Geer, Gary Fink, Betsy Adams, Micah Bonkowski, Kollin Higgins, Beth Miller, Sarah McCarthy, Kit Paulsen, Katie Conlon, Wendy Collins, Suzi Wong-Swint, and Karren Gratt.

Jennifer Vanderhoof is the program's technical lead and also writes these annual reports.

Finally, we would like to thank those who partially sponsored our funding: Lake Washington/Cedar/ Sammamish Watershed (WRIA 8) Forum through a King Conservation District grant.

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## Introduction

The Salmon Watcher Program is a volunteer program that originated in 1996 and whose purpose is to record observations of adult fall-spawning salmonids. Volunteers are recruited and trained to identify and watch for spawning salmon throughout Water Resource Inventory Area 8 (WRIA 8), which includes the Lake Washington Watershed and some streams leading to Puget Sound (Figure 1). Regional agencies who participated in the Salmon Watcher Program along with King County during the 2010 season include the Bellevue Stream Team, the cities of Bothell, Kirkland, Issaquah, Redmond, Renton, Seattle, and Woodinville.

The Salmon Watcher Program was initiated to expand on current efforts undertaken by resource agencies to document the distribution of spawning salmon in WRIA 8, including the Lake Washington Watershed. Basins that comprise the Lake Washington Watershed include Bear Creek, Cedar River, East Lake Washington, West Lake Sammamish, East Lake Sammamish, West Lake Sammamish, Issaquah Creek, and North Lake Washington (divided into the North Lake Washington tributaries and the Sammamish River tributaries). Other streams in WRIA 8 that were watched included Pipers Creek and Boeing Creek, both of which drain to Puget Sound.

Salmon Watcher volunteers annually collect information on the presence of fall-spawning salmonids, including chinook, coho, sockeye, kokanee (resident form of sockeye), and chum salmon, as well as trout species. Data of this type become more important in the region as salmonids, such as Puget Sound chinook, are listed under the Endangered Species Act.

Because volunteers do this work, gathering this volume of data is accomplished with reduced agency resources, and the watersheds' residents can become involved and educated at the same time. Further, interactions with agency personnel foster positive relationships between the public and government agencies. With current budget and time constraints of agency personnel, much of the data collected in this effort would not be collected otherwise.

In addition to summaries of fish observed during the fall season, this 2010 report contains information and some statistics about the volunteers. It should be noted that this report summarizes data collected only by Salmon Watcher volunteers, and it is therefore in no way intended to be an exhaustive report of fish distribution in WRIA 8. Other fish surveys are conducted annually by county, state, city, and federal agencies and non-profit organizations. For example, surveys have been conducted by County staff to look specifically for kokanee and chinook; the results of these surveys are reported separately and are not included here.

### **Figure 1. Basins surveyed for the 2010 Salmon Watcher Program**

(see [http://your.kingcounty.gov/dnrp/library/water-and-land/salmon/salmonwatcher/2010/1-surveyed\\_basins\\_2010.pdf](http://your.kingcounty.gov/dnrp/library/water-and-land/salmon/salmonwatcher/2010/1-surveyed_basins_2010.pdf)).

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## Methods

Volunteers were recruited during late summer and early fall of 2010 to observe fish in streams throughout the Lake Washington Watershed<sup>1</sup> and other WRIA 8 streams. The 111 volunteers who surveyed in the project area, plus 1 individual who observed outside the project area, are listed in Table 1 (totals: 112 individuals, pairs, or groups totaling 132 people).

**Table 1. Volunteer observers for the 2010 Salmon Watcher Program.**

---

Ann Aagaard	Doug Greaves	John & Laura Ramsey
Russ Atkins	Rhoda Green	Kelly Rau
Kathleen Auld	Ron Green	Grace Reamer
Frank Backus	Katie Hart	John Reinke
Danielle Banner	Ruth Ihlenfeldt	David L. Reitz
Ed Barnes	AJ Jaipean	Larry Reymann
Cathleen Barry	Hannah Johnson	Marian Rice
Judith Barry	Pam Kelly	David Richardson
John and Morgan Beaumier	Cheri & Stewart Kirchmeier	Debbie Roberts
Robin Bentley	Bob Klee	Megan Rosholt
Katrina Beyer	Tatsu Komada	Kathleen Ryan
Patrick & Leslie Bigos	Janusz Komorowski	Ed Schein
Marilyn & Tom Blue	Tommy & Caroline Kraft	Carrie & Drew Schwitters
Mark Borchardt	Marina & Andrey Krasnovid	Kiyomi, Allan, & Jesse Sharp
Kevin Boze	John Laible	Jim Shellooe
Richard Brashen	Jim Laughlin	Patty & Dave Shelton
Janet Broadus	Ginny Lodwig	John & Peggy Sherman
Arlene & Jarred Bruce	Philip Luecking	Henry Shirinyan
Heather & Ryann Burton	Maurine MacHugh	Sue Short
Jessica Chen	Ken Mackey	Kris Sigloh
Dick & Jane Christie	John McAlpine	Gary Smith
Bridget & Margaret Cook	Madeline McClelland	Eric Soshea
Tianmin Ding	Jim McRoberts	Dan Spuckler
Chuck Dolan	Dana Miller	Randy & Sandra Spurlock
Ken Dorsch	Jason Moon	Kirk Stauffer
Bridget DuRuz	Declan Moran	John, Johnny, & Becky Stephenson
Amelia Dumovic	Garet Munger	Rob Stevens
Erin Duvall	Greta Nelson	Mike Stults
Gary Emerson	Veleda Nelson & Jerry Asher	Kay Tokuda
Dorothy Fischer	Karin Ockerman	Gary Tribble
Adrienne Fox	Yoshiko Otonari	Terry Trimmingham
Heather Frankovic	Tammy Parise	Mary Vincent
Hon Cheung Fung	Betty Peltzer	Leslie Walker
Preston Glidden	Gary Pilawski	Leslie Waters
Chris Gonzalez	Tim Pritchard	Todd Wentworth
Tyler Goodman	Katerina Prochaska	Maggie Windus
Su and Heather Gow	Katherine Quinn-Dumovic	Jon Yurchak

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<sup>1</sup> In this document, the Lake Washington Watershed means all waters draining through the Ballard Locks, and the subbasins of the Lake Washington Watershed are referred to as basins (e.g., Issaquah Creek Basin).

## Volunteer Training

Agency staff held a total of 4 classroom training sessions in 2010. Approximately 87 people attended a training session, and of those, about 31 were returning volunteers from prior seasons. Returning volunteers are not required to attend a training every year; however, they are encouraged to attend a session every other year.

During training sessions, all volunteers were taught to identify adult spawning salmon species with a slide presentation, which was placed on King County's web site so volunteers could review it any time. During the training sessions, volunteers signed up for one or more sites to survey. They were given salmon identification materials, including color adult salmon identification cards and spawner timing charts. Volunteers were taught how to fill out and return data forms.

Some survey locations were prioritized by staff from each cooperating jurisdiction based on the need for information. However, sites were typically surveyed based on volunteer choice and availability. Volunteers were assigned to stream locations near their homes or customary walking places whenever possible. Volunteers were instructed to stay on public property (bridges, parks, etc.) unless they gained permission from the landowners to enter private property or the survey location was on their own property. Figure 2 shows all the sites watched by volunteers during the 2010 fall spawning season.

### Figure 2. Sites surveyed by Salmon Watcher volunteers in 2010

See [http://your.kingcounty.gov/dnrp/library/water-and-land/salmon/salmonwatcher/2010/2-surveyed\\_sites\\_2010.pdf](http://your.kingcounty.gov/dnrp/library/water-and-land/salmon/salmonwatcher/2010/2-surveyed_sites_2010.pdf).

## Data Collection

Surveys were conducted between August 30, 2010 to February 3, 2011, though most surveys began in September and were concluded in November or December (Table 2). Volunteers were asked to watch at their survey sites for at least 15 minutes, twice per week, and record any adult salmonids they observed. Actual survey frequency and duration varied greatly among volunteers.

**Table 2. Number of surveys per month during 2010 Salmon Watcher season.**

Month	Number of Surveys
August	5
September	509
October	1058
November	652
December	277
January	9
February	2

Volunteers counted all live and dead adult salmonids they observed. If a volunteer surveyed the same site more than one time on the same day, the highest fish count was used; however, occasionally more than one volunteer surveyed the same site on a single day and their individual observations were used. Volunteers were asked to report only once those dead fish observed on more than one occasion and to note subsequent observations of the same fish in their comments. Juvenile fish were noted if present. Unidentified fish were counted and described when possible.

Volunteers were asked if they could tell whether the fish they saw had an adipose fin. Volunteers were asked to note how many citizens they came into contact with during their streamside duties.

They were also asked if they noticed anything at their site that needed to be reported and whether they reported it. All data were recorded onto field data forms (Appendix A), which were mailed to Salmon Watcher staff on a monthly basis.

Volunteers were asked to fill out a “First Fish ID” form. This form had several multiple-choice questions about various key characteristics for identifying fish. Volunteers were asked to fill one of these forms out the first time they saw a new species and to turn the forms in with their data. The purpose of this form is twofold: (1) to aid volunteers in identification by highlighting key characteristics, and (2) to aid Salmon Watcher staff in quality control.

## Quality Assurance/Quality Control

Several means were used to assure that the data collected from volunteers were as accurate and consistent as possible during all phases of the program. Volunteers were provided with training by fish experts: data included in this report were collected either by returning volunteers or new volunteers who attended one of the training sessions for the 2010 season. Volunteers were provided laminated fish identification cards and a packet of training materials that included fish identification information. Duplicate as well as additional fish identification materials were placed on the Internet. Contact persons were made available to volunteers to answer questions and verify species identification when necessary; volunteers were encouraged to call upon these individuals if they were unsure of species identification.

Staff receiving the data sheets screened them for anything requiring immediate attention such as an unusual fish sighting or potential water quality problems. If an unusual fish sighting was noticed on a data form, agency staff contacted the volunteer to further inquire about what characteristics were used to identify the fish. The First Fish ID forms were intended to provide another means by which fish identifications could be checked and verified.

Data were input into a SQL server database housed at King County. The database has been designed to catch anomalies in data entry, such as dates not in the season. The database also poses questions when it detects that a count of a certain species has never been as high at that site in that month in previous years. These and other checks were built into the database software to increase accuracy of input data. Following data entry, the figures were verified at least once by agency staff to ensure accuracy, as well as catch anything that might need addressing. The data reviewers are familiar with the basins and the fish runs typical for the basins.

Because of the limitations of usage of these data (Limitations of Volunteer Data, page 23) and despite quality control measures, the data are intended to be used only to make preliminary evaluations of the distribution of spawning salmonids in the Lake Washington Watershed.

## Results and Discussion

In 2010, a total of 108 sites on 41 streams were surveyed by 112 volunteers (Table 3).

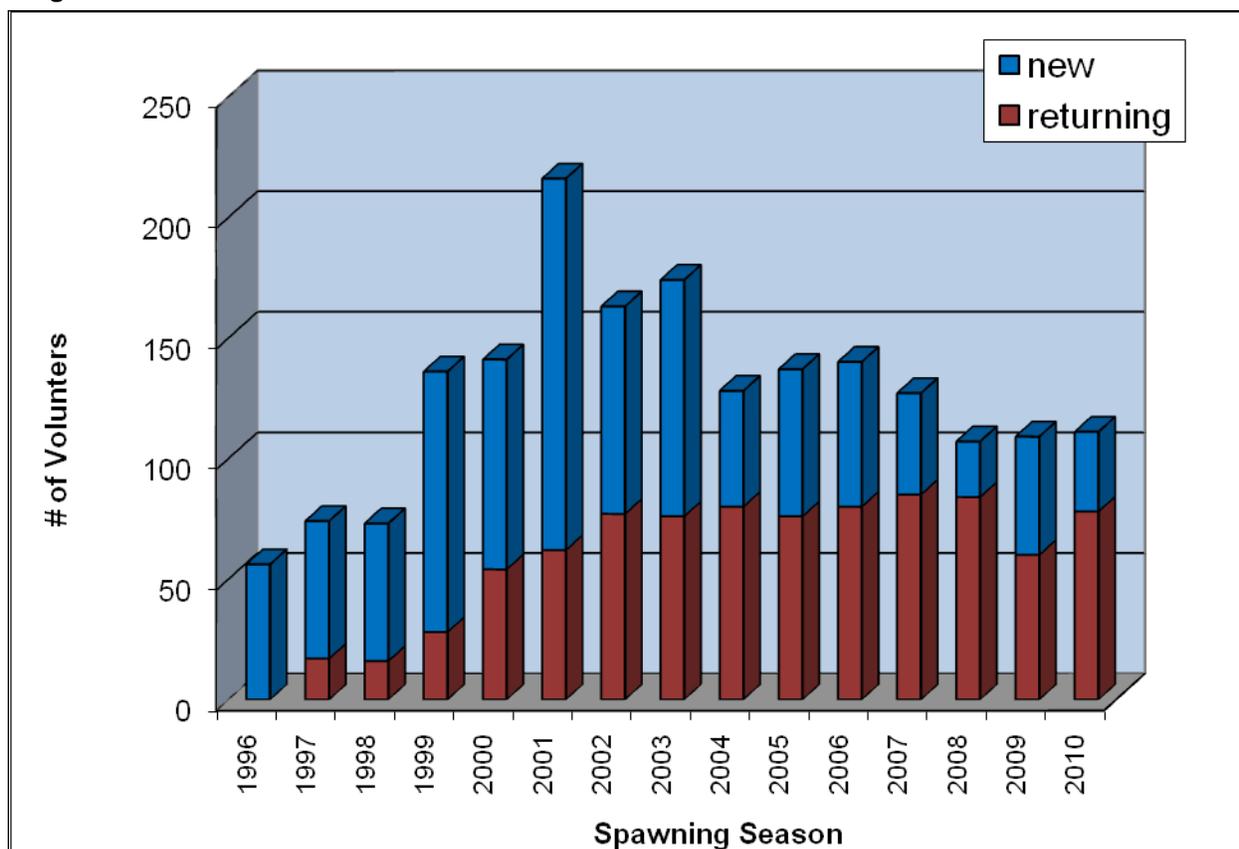
**Table 3. Numbers of streams, sites, and volunteers involved in the 2010 spawning season.**

Area	# streams	# sites	# volunteers
Lake Washington Watershed	36	98	103
Other WRIA 8 Streams	3	5	5
WRIA 9 streams in program area*	1	4	3
Other (outside program area)	1	1	1
<b>Total</b>	<b>41</b>	<b>108</b>	<b>112</b>

\*Longfellow Creek, which is part of the City of Seattle's program.

In 2010, 78 out of 111 volunteers (70 percent) watching in the official program area were returnees (Figure 3). Of the 78 returnees, 2 have surveyed every year since the program began.

**Figure 3. Total number of new and returning volunteers for each year of the Salmon Watcher Program<sup>2</sup>.**



<sup>2</sup> Note that volunteers in 2001 were from a larger geographic area. For further discussion, please see "Volunteer Activity" on page 23.

## Basin Summary

For the 2010 spawning season, chinook were reported in the greatest numbers in Issaquah Creek Basin (Table 4). Sockeye were reported in the largest numbers in the Cedar River Basin. The most kokanee were observed in Little Bear Creek and North Creek, in the Sammamish River Tributaries. Coho were seen in the most number of basins.

**Table 4. Species enumerated within surveyed basins during the 2010 Salmon Watcher season.**

Basin	Chinook	Chum	Coho	Kokanee	Sockeye	Trout	Unid. <sup>1</sup>	Basin Total
Big Bear Creek	68	0	6	0	2049	1	56	<b>2146</b>
Cedar River	30	0	48	0	6244	3	74	<b>6399</b>
East Lake Washington	0	0	1	0	150	1	13	<b>165</b>
West Lake Sammamish	0	0	0	0	0	0	0	<b>0</b>
Issaquah Creek	99	0	1	0	1	0	0	<b>101</b>
North Lake Washington Tribs.	3	0	7	2	191	0	75	<b>278</b>
Samm. River Tribs.	20	0	3	17	1994	0	51	<b>1920</b>
Middle Puget Sound - WRIA 8	0	9	0	0	0	0	2	<b>11</b>
Central Puget Sound - WRIA 9	0	2	1	0	0	2	2	<b>7</b>
Other <sup>2</sup>	0	0	1	0	0	0	0	<b>1</b>
Species Total	<b>220</b>	<b>11</b>	<b>68</b>	<b>19</b>	<b>10,629</b>	<b>7</b>	<b>273</b>	<b>11,227</b>

<sup>1</sup> Unidentified species.

<sup>2</sup> Outside program area.

Detailed results for each basin in the program are presented below in basin groupings. Data include stream name and state stream numbers as assigned in the “stream catalog” by Williams et al. (1975), corresponding stream sites (with Site ID and river mile), dates of surveys, number of surveys, number of surveyors, and number of each species observed. The unique Site ID numbers that correspond with each survey site are used to distinguish the sites. A site, with its unique ID number, will always have the same data associated with it, regardless of refined river mile (RM) designations. River mile designations are generally derived from the stream catalog combined with measurements made using King County’s Geographic Information System. Additionally, a designated site may vary a few feet from year to year: (1) if a volunteer watches on the upstream side of a bridge versus the downstream side, (2) if a new volunteer happens to watch a few yards from where a previous watcher observed, (3) if a volunteer moves a few feet to observe in an area of better spawning habitat or visibility, or (4) if restoration and/or overgrown vegetation improves or obstructs the view.

Maps are presented for each basin in the program area and depict observations of sockeye, coho, chinook, kokanee, and chum identified during the survey. The streams surveyed in the Lake Washington Watershed were grouped into the following basins: Big Bear Creek, Cedar River, East Lake Washington, West Lake Sammamish, Issaquah Creek, and North Lake Washington (split into North Lake Washington tributaries and Sammamish River tributaries). Salmonids were observed in all basins surveyed in 2010. Trout and unidentified species were not mapped.

## Big Bear Creek Basin

Volunteers surveyed 13 sites in 3 streams in the Big Bear Creek Basin in 2010 (Figure 2). From 1 to 8 sites were watched per stream, and the total number of surveys ranged from 12 to 45 per site (Table 6). Most sites were monitored by 1 volunteer, one site had 2 volunteers, and two sites had 3 volunteers.

**Table 5. Stream number, site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers<sup>3</sup>, and years the sites were watched for each stream surveyed in the Big Bear Creek Basin for the 2010 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
Big Bear Creek	080105	65	2.7	8/30 - 12/7	45	3	1997-2000, 2002-2010
		101	4.9	9/18 - 11/13	14	1	1997- 2010
		89	6	8/30 - 10/31	19	1	1998- 2010
		647	7.2	9/19- 12/21	34	2	2009, 2010
		136	7.4	9/17 - 10/28	13	1	1998-2010
		503	7.85	9/9 - 12/17	25	1	2002, 2004-2007, 2009, 2010
		106	10	9/18 - 12/5	14	1	1998, 2006-2008, 2010
		466	11.6	9/18 - 12/5	12	1	2001, 2006-2008, 2010
Trib. to Bear	-	90	0.2	8/30 - 10/31	19	1	1998-2010
Cottage Lake Cr.	080122	646	1.97	9/17 - 10/30	12	1	2009, 2010
		50	2.2	9/10 - 10/29	34	3	1997, 1999-2010
		644	2.4	9/15 - 11/28	23	1	2009, 2010
		395	2.7	9/18 - 11/30	26	1	2002, 2003, 2008-2010

Salmonids were found in 2 of the 3 streams observed in Big Bear Creek Basin (Table 7): Bear Creek and Cottage Lake Creek. Chinook, coho, and sockeye were all seen in Bear Creek and its primary tributary, Cottage Lake Creek. No salmonids were reported in the unnamed tributary to Bear Creek.

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

**Table 6. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the Big Bear Creek Basin for the 2010 spawning season.**

Stream	Site ID	RM	Chinook	Coho	Sockeye	Unid.
Big Bear Creek	65	2.7	4 (9/17 - 9/18)	-	374 (8/30 - 10/19)	16 (9/1 - 10/13)
	101	4.9	2 (9/18)	-	143 (9/18 - 10/23)	-
	89	6	2 (9/18 - 9/25)	-	344 (9/18 - 10/31)	-
	647*	7.2	3 (9/21 - 10/13)	-	202 (9/21 - 10/28)	2 (9/23 - 10/5)
	136	7.4	1 (9/22)	1 (10/22 - 10/22)	363 (9/17 - 10/26)	28 (9/22 - 10/28)
	503	7.85	-	2 (11/19 - 12/1)	57 (9/12 - 10/6)	-
	106	10	-	-	-	-
	466	11.6	-	-	-	-
Trib. to Bear	90	0.2	-	-	-	-
Cottage Lake Cr.	646	1.97	8 (9/19 - 10/30)	-	95 (9/17 - 10/30)	-
	50	2.2	13 (9/18 - 10/15)	1 (9/27)	231 (9/13 - 10/17)	10 (9/29 - 10/20)
	644	2.4	32 (9/18 - 10/27)	2 (10/21)	129 (9/15 - 10/27)	-
	395	2.7	3 (9/26 - 10/2)	-	111 (9/18 - 10/27)	-

\*Trout also observed at this location.

The observations of sockeye, coho, and chinook in the Big Bear Creek Basin determined from volunteer surveys are shown in Figure 4.

**Figure 4. Observations of salmonids in the Big Bear Creek Basin**

See <http://your.kingcounty.gov/dnrp/library/water-and-land/salmon/salmonwatcher/2010/4-salmonid-observations-big-bear-cr.pdf>.

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## Cedar River Basin

Volunteers surveyed 18 sites in 5 streams in the Cedar River Basin in 2010 (Figure 2). From 1 to 9 sites were watched per stream, and the total number of surveys ranged from 2 to 94 per site (Table 7). Most sites were monitored by 1 volunteer, two sites had 2 volunteers, and two sites had 3 volunteers.

**Table 7. Stream number, site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed in the Cedar River Basin for the 2010 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
Cedar River  (Cavanaugh Pond)	080299	595	0	9/20 - 12/17	21	2	2006, 2009, 2010
		198	0.1	9/14 - 12/17	20	1	2009, 2010
		199	1	9/14 - 12/17	29	2	1999, 2006, 2009, 2010
		203*	1.6	9/13 - 11/29	18	1	2000, 2001, 2004, 2010
		204	1.8	9/13 - 11/29	18	1	1999, 2000-2002, 2010
		206	4.3	9/15 - 9/22	2	1	1999, 2001, 2002, 2009, 2010
		555	6.2	9/20 - 9/27	2	1	2008, 2010
		139	6.4	9/10 - 1/29/11	30	1	1997-2010
		653	11.7	9/26 - 10/31	6	1	2010
C.R. Side Channel	-	557	0.15	9/12 - 11/21	32	3	2003, 2005-2010
Madsen Creek	080305	16	0.9	9/20 - 12/29	14	1	1997, 1999, 2002, 2010
Rock Creek	080338	410	0.2	9/18 - 11/30	70	1	2001-2010
		154	0.4	9/18 - 11/27	18	1	1999-2010
Taylor Creek	080320	588	0.37	9/12 - 11/30	94	3	2004-2010
		596	0.5	9/18 - 11/30	70	1	2004-2010
		655	0.6	9/27 - 11/28	20	1	2010
		71	1.8	9/18 - 11/27	19	1	1998-2010
		126	2.4	9/18 - 11/27	18	1	1998, 2001-2010

\*Trout also observed at this location.

Sockeye were observed at all but one stream watched in the Cedar River basin. Chinook and coho were reported in the Cedar River and Taylor Creek. No adult salmon were reported in Madsen Creek.

**Table 8. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the Cedar River Basin for the 2010 spawning season.**

Stream	Site ID	RM	Chinook	Coho	Sockeye	Unidentified
Cedar River  (Cavanaugh Pond)	595	0	1 (10/14)	-	80 (10/4 - 10/31)	31 (9/22 - 12/8)
	198	0.1	-	-	238 (9/22 - 11/3)	-
	199	1	8 (9/28 - 10/21)	3 (10/6 - 10/21)	1914 (9/20 - 12/8)	25 (10/1 - 10/21)
	203	1.6	3 (10/14 - 10/21)	28 (10/5 - 10/27)	978 (9/13 - 11/29)	1 (9/13)
	204	1.8	2 (9/13 - 10/19)	12 (9/30 - 10/19)	558 (9/13 - 11/25)	-
	206	4.3	-	-	57 (9/15 - 9/22)	1 (9/15)
	555	6.2	-	-	31 (9/20 - 9/27)	-
	139	6.4	-	-	1538 (10/10 - 1/15/11)	10 (9/18 - 10/24)
	653	11.7	-	-	61 (9/26 - 10/31)	-
<b>C.R. Side Channel</b>	557	0.15	-	-	181 (9/23 - 11/5)	-
<b>Madsen Creek</b>	16	0.9	-	-	-	-
<b>Rock Creek</b>	410	0.2	-	-	120 (9/18 - 11/9)	-
	154	0.4	-	-	-	-
<b>Taylor Creek</b>	588	0.37	-	-	114 (9/20 - 11/18)	2 (9/14 - 11/11)
	596	0.5	4 (10/6 - 10/14)	-	245 (9/26 - 11/28)	-
	655	0.6	12 (10/2 - 10/12)	5 (11/14 - 11/28)	129 (9/29 - 11/18)	4 (9/27 - 11/28)
	71	1.8	-	-	-	-
	126	2.4	-	-	-	-

The observations of sockeye, chinook, and coho in the Cedar River Basin determined from volunteer surveys are shown in Figure 5.

**Figure 5. Observations of salmonids in the Cedar River Basin**

See <http://your.kingcounty.gov/dnrp/library/water-and-land/salmon/salmonwatcher/2010/5-salmonid-observations-cedar-river.pdf>.

## East Lake Washington Basin

Volunteers surveyed 25 sites in 11 streams and 1 beach site in the East Lake Washington Basin in 2010 (Figure 2). From 1 to 7 sites were watched per stream, and the total number of surveys ranged from 2 to 90 per site (Table 9). Each site was monitored by 1 to 5 volunteers.

**Table 9. Stream number, site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed in the East Lake Washington Basin for the 2010 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
Coal Creek	080268	46	0.8	9/30 - 11/20	7	1	1997-2005, 2008, 2010
		441	2	9/11 - 10/25	11	1	2001-2008, 2010
		442	2.1	9/18 - 12/17	47	4	2001-2010
East Creek	-	514	0.2	9/14 - 12/16	23	1	2003, 2005-2010
Forbes Creek	080242	100	0.03	9/18 - 12/25	15	1	1998, 2000-2002, 2007, 2010
Goff Creek	080285	447	0.1	9/18 - 12/18	17	1	2003-2007, 2010
Kelsey Creek	080259	13	2	9/13 - 2/3/11	84	3	1997-2010
		124	2.4	9/10 - 12/17	20	1	1997-2010
		120	3	8/30 - 9/29	13	1	1997-2010
		115	3.5	9/16 - 9/30	9	1	1998, 2004, 2010
		217	3.7	9/27 - 9/29	2	1	1999, 2010
		586	4.9	10/6 - 11/28	15	1	2004-2010
		45	5	9/18 - 12/15	27	1	1997-2000, 2003, 2006-2010
Lake Wa. Beach	080028	130	32.4	10/4 - 12/29	25	1	1998, 2007-2010
May Creek	080282	208	0.2	9/15 - 11/30	18	1	2001-2010
		432	0.5	9/15 - 11/30	18	1	2000, 2004-2010
Mercer Slough	080259	445	1.6	9/12 - 2/3/11	45	2	2001, 2003-2010
Richards Creek	080261	75	0.4	9/10 - 12/17	20	1	1998-2000, 2007-2010
		27	0.7	9/10 - 12/17	20	1	1997-2010
		80	1.6	9/28 - 12/17	12	1	1998, 2002-2010
Sunset Creek	-	446	0.1	9/28 - 12/17	12	1	2009, 2010
Valley Creek	080266	220	0.6	9/30 - 12/14	13	1	1999, 2000, 2002-2004, 2010
West Trib. Kelsey Cr.	080264	116	0.25	8/30 - 12/23	90	5	1998, 1999, 2001-2010
		506	0.9	9/25 - 11/28	26	2	2002-2010
		73	1.1	10/8 - 12/17	12	1	1998, 2000, 2004-2010

Salmonids were found in 4 of the 11 streams surveyed in 2010 (Table 10). Sockeye were observed in Kelsey Creek, May Creek, and Mercer Slough. A single coho was reported in May Creek. The only fish observed in Richards Creek were not identified to species. No fish were observed in Coal, East, Forbes, Goff, Sunset, Valley, or West Trib. Kelsey creeks or the one Lake Washington beach that was observed. No chinook were observed by volunteers in the East Lake Washington Basin during 2010.

**Table 10. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the East Lake Washington Basin for the 2010 spawning season.**

Stream	Site ID	RM	Chinook	Coho	Sockeye	Unid.
Coal Creek	46	0.8	-	-	-	-
	441	2	-	-	-	-
	442	2.1	-	-	-	-
East Creek	514	0.2	-	-	-	-
Forbes Creek	100	0.03	-	-	-	-
Goff Creek	447	0.1	-	-	-	-
Kelsey Creek	13	2	-	-	-	3 (1/16/11 - 1/18/11)
	124	2.4	-	-	2 (9/27 - 10/18)	6 (10/14)
	120	3	-	-	-	-
	115	3.5	-	-	-	-
	217	3.7	-	-	-	-
	586	4.9	-	-	-	-
	45	5	-	-	-	-
Lake Wa. Beach	130	32.4	-	-	-	-
May Creek	208	0.2	-	1 (11/24)	120 (10/9 - 11/14)	-
	432	0.5	-	-	27 (10/9 - 11/1)	-
Mercer Slough	445*	1.6	-	-	1 (10/17)	-
Richards Creek	75	0.4	-	-	-	-
	27	0.7	-	-	-	4 (11/29)
	80	1.6	-	-	-	-
Sunset Creek	446	0.1	-	-	-	-
Valley Creek	220	0.6	-	-	-	-
West Trib. Kelsey Cr.	116	0.25	-	-	-	-
	506	0.9	-	-	-	-
	73	1.1	-	-	-	-

\*Trout also observed at this location.

The observations of sockeye and coho in the East Lake Washington Basin determined from volunteer surveys are shown in Figure 6.

**Figure 6. Observations of salmonids in the East Lake Washington Basin**

See <http://your.kingcounty.gov/dnrp/library/water-and-land/salmon/salmonwatcher/2010/6-salmonid-observations-e-lake-washington.pdf>.

## West Lake Sammamish Basin

Volunteers surveyed 1 site on each of 2 streams in the West Lake Sammamish Basin in 2010 (Table 11). The site at Idylwood Creek, which has been watched almost annually since 2000, was observed only 4 times. The site at Vasa Creek was watched 36 times. Each site was monitored by 1 volunteer.

**Table 11. Stream number, site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed in the West Lake Sammamish Basin for the 2010 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
Idylwood Creek	080143	423	0.1	10/5 - 10/31	4	1	2000-2008, 2010
Vasa Creek	080156	641	0.4	9/18 - 12/31	36	1	2009, 2010

No fish were observed in the West Lake Sammamish Basin in 2010 by volunteers.

## Issaquah Creek Basin

Volunteers surveyed 4 sites in 3 streams in Issaquah Creek Basin in 2010 (Figure 2). The total number of surveys ranged from 11 to 32 per site (Table 12). Each site was monitored by 1 or 2 volunteers.

**Table 12. Stream number, site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed in the Issaquah Creek Basin for the 2010 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
Carey Creek	080218	635	1.7	9/7 - 12/14	32	2	2007-2010
E. Fork Issaquah Creek	080183	637	0.4	9/7 - 11/26	19	1	2007-2010
Issaquah Creek	080178	60	3.4	9/7 - 11/26	19	1	1997, 1998, 2005-2007, 2009, 2010
		642	6.8	9/21 - 12/11	11	1	2009, 2010

In 2010, a single sockeye and a single coho were reported in Issaquah Creek (Table 13). Chinook were seen in both Issaquah Creek and East Fork Issaquah Creek. No fish were observed in Carey Creek.

**Table 13. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the Issaquah Creek Basin for the 2010 spawning season.**

Stream	Site ID	RM	Chinook	Coho	Sockeye	Unid.
Carey Creek	635	1.7	-	-	-	-
E. Fork Issaquah Creek	637	0.4	23 (9/28 - 10/19)	-	-	-
Issaquah Creek	60	3.4	76 (9/7 - 10/19)	-	-	-
	642	6.8	-	1 (10/11)	1 (10/11)	-

The distributions of chinook, coho, and sockeye in the Issaquah Creek Basin determined from volunteer observations are shown in Figure 7.

### Figure 7. Observations of salmonids in the Issaquah Creek Basin

See <http://your.kingcounty.gov/dnr/library/water-and-land/salmon/salmonwatcher/2010/7-salmonid-observations-issaquah-creek.pdf>.

## North Lake Washington Tributaries

The North Lake Washington Tributaries are those streams flowing into the north end of Lake Washington (e.g., McAleer and Thornton creeks, the Sammamish River). Volunteers surveyed 21 sites in 9 streams in 2010 (Figure 2). From 1 to 8 sites were watched per stream, and the total number of surveys ranged from 2 to 46 per site (Table 14). Most sites were monitored by 1 or 2 volunteers, and one site had 3 volunteers.

**Table 14. Stream number, site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed in the North Lake Washington Tributaries for the 2010 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
Denny Creek	080228	5	0.1	9/21 - 12/7	17	1	1997, 2000, 2002, 2003, 2005-2007, 2010
Horse Creek	-	277	0.1	9/19 - 11/21	18	1	2003, 2005, 2006, 2010
Juanita Creek	080230	196	1.4	10/1 - 12/30	19	1	2000-2002, 2008-2010
		650	1.65	9/23 - 10/29	8	1	2010
Peters Creek	080104	47	0	9/16 - 12/20	42	2	1998, 2003, 2009, 2010
		452	0.5	9/20 - 12/19	27	1	2002-2010
Sammamish River	080057	66	5	11/2 - 11/16	2	1	1998, 2002-2004, 2010
		42	11.5	9/9 - 11/28	29	1	1998, 2002, 2003, 2009, 2010
		271	12.5	10/1 - 10/27	6	1	1997, 1999, 2001-2004, 2007, 2009, 2010
S. Fk. Thornton Cr.	080033	652	0.5	9/30 - 12/18	15	1	2010
		527	1.15	9/30 - 12/22	46	3	2002-2010
Thornton Creek	080030	183	0.1	9/21 - 12/21	24	2	1997, 2000-2010
		186	0.9	10/9 - 12/20	17	1	1997, 1999-2002, 2006-2008, 2010
		386	1.1	10/9 - 12/20	17	1	2002, 2005, 2007, 2008, 2010
		385	1.2	10/3 - 11/20	10	1	2000, 2001, 2004, 2005, 2010
		606	1.22	10/3 - 12/19	21	1	2010
		24	1.3	10/1 - 11/19	5	1	2009, 2010
		92	1.7	10/2 - 12/21	19	1	1998, 2007, 2010
		528	2.8	9/18 - 12/31	21	1	2002-2010
Willow Creek	-	649	0.3	10/9 - 12/19	21	1	2010
Woodin Creek	-	228	0.3	9/24 - 12/11	10	2	1999, 2002, 2003, 2006-2010

Salmonids were found in 5 of the 9 streams surveyed in the North Lake Washington Tributaries (Table 15). As with 2009, Chinook were observed in only Peters Creek. Sockeye were observed in the Horse, Juanita, Peters, and Thornton creeks and the Sammamish River. Coho were reported in Peters Creek and the Sammamish River. No salmonids were seen in Denny Creek, South Fork Thornton Creek, Willow Creek or Woodin Creek. No fish were reported in Denny, South Fork Thornton, Willow, or Woodin creeks.

**Table 15. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the North Lake Washington Tributaries for the 2010 spawning season.**

Stream	Site ID	RM	Chinook	Coho	Sockeye	Unid.
Denny Creek	5	0.1	-	-	-	-
Horse Creek	277	0.1	-	-	23 (9/26 - 11/5)	-
Juanita Creek	196	1.4	-	-	6 (10/1 - 10/6)	-
	650	1.65	-	-	-	-
Peters Creek	47	0	3 (10/2)	3 (9/26)	122 (9/22 - 10/23)	62 (9/16 - 11/29)
	452	0.5	-	-	-	-
Sammamish River	66	5	-	-	-	-
	42	11.5	-	1 (9/20)	36 (9/12 - 11/13)	13 (9/9 - 11/3)
	271	12.5	-	3 (10/13)	2 (10/1 - 10/3)	-
South Fk. Thornton Creek	652	0.5	-	-	-	-
	527	1.15	-	-	-	-
Thornton Creek	183	0.1	-	-	1 (10/15)	-
	186	0.9	-	-	-	-
	386	1.1	-	-	-	-
	385	1.2	-	-	1 (10/12)	-
	606	1.22	-	-	-	-
	24	1.3	-	-	-	-
	92	1.7	-	-	-	-
	528	2.8	-	-	-	-
Willow Creek	649	0.3	-	-	-	-
Woodin Creek	228	0.3	-	-	-	-

The distribution of sockeye, chinook, and coho in the North Lake Washington Tributaries determined from volunteer observations is shown in Figure 8.

**Figure 8. Observations of salmonids in the North Lake Washington Tributaries**

See <http://your.kingcounty.gov/dnrp/library/water-and-land/salmon/salmonwatcher/2010/8-salmonid-observations-n-lake-washington.pdf>.

## Sammamish River Tributaries

The Sammamish River Tributaries are those streams flowing into the Sammamish River from waters originating in Snohomish County (Little Bear, North, and Swamp creeks; Big Bear Creek is discussed separately above). Volunteers surveyed 15 sites on 2 Sammamish River tributaries in 2010 (Figure 2). Seven sites were watched on Little Bear Creek, and 8 sites were watched on North Creek. The total number of surveys ranged from 1 to 62 per site (Table 16). Each site was monitored by from 1 to 3 volunteers.

**Table 16. Stream number, site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed in the Sammamish River Tributaries for the 2010 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
Little Bear Creek	080080	114	0	9/20 - 12/21	41	2	1999, 2001, 2002, 2005-2010
		175	0.3	9/25 - 12/11	8	1	1997, 2000, 2002, 2006-2010
		311	0.4	10/11	1	1	1997, 2001, 2004, 2010
		312	1.5	9/21 - 10/16	8	1	1997, 2002, 2003, 2010
		176	1.6	9/17 - 11/2	21	2	1997, 2000-2007, 2009, 2010
		651	1.65	9/21 - 12/20	34	3	2010
		14	2.1	9/15 - 11/6	10	1	1999, 2000, 2002-2004, 2006-2010
North Creek	080070	112	0.9	9/24 - 10/29	6	1	1998-2010
		57	0.95	9/18 - 12/17	44	3	1998, 2001, 2004-2010
		113	1.5	9/29 - 9/29	1	1	1998, 2000, 2001, 2003, 2006-2010
		255	1.8	9/17 - 12/30	37	2	1999, 2000-2004, 2006, 2007, 2009, 2010
		425	2.6	9/16 - 12/5	25	2	2006, 2008-2010
		253	3	9/17 - 12/27	62	2	1997, 1999-2001, 2006-2010
		636	3.3	9/16 - 11/2	17	1	2007, 2010
		553	3.6	9/18 - 11/26	10	1	2003, 2006-2008, 2010

\*In 2004, site 408 was remapped; however, the river mile designations were not corrected. As a result, sites 57 and 408 have been numerically reversed since then. These numbers have now been corrected.

Chinook, coho, and sockeye were all reported in both streams surveyed (Table 17). Sockeye were seen at every site watched in both streams. Kokanee were also reported in both Little Bear and North creeks. However, professional surveyors found no kokanee in Little Bear or North creeks, so it is very likely the kokanee reported by volunteers in Little Bear Creek were actually residual sockeye (for more information, see the section on Kokanee below, page 28, as well as the 2008 Salmon Watcher report).

**Table 17. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in the Sammamish River Tributaries for the 2010 spawning season.**

Stream	Site ID	RM	Chinook	Coho	Kokanee	Sockeye	Unid.
Little Bear Creek	114	0	2 (10/12)	1 (9/26)	5 (10/20 - 11/16)	326 (9/26 - 11/11)	-
	175	0.3	-	-	4 (10/3 - 10/9)	32 (9/25 - 10/17)	5 (10/17)
	311	0.4	-	-	-	4 (10/11)	5 (10/11)
	312	1.5	-	-	-	30 (9/21 - 10/11)	-
	176	1.6	-	1 (10/16)	-	87 (9/17 - 10/28)	-
	651	1.65	-	-	-	84 (9/21 - 10/20)	-
	14	2.1	-	-	-	153 (9/15 - 10/19)	12 (11/6)
North Creek	112	0.9	-	-	-	70 (9/24 - 10/29)	-
	57	0.95	14 (10/29 - 11/16)	-	-	511 (9/18 - 10/29)	6 (10/23 - 11/12)
	113	1.5	1 (9/29)	-	-	2 (9/29)	-
	255	1.8	2 (10/4)	1 (9/28)	-	111 (9/23 - 10/29)	2 (9/23)
	425	2.6	-	-	4 (10/18)	233 (9/16 - 10/29)	16 (9/28 - 11/19)
	253	3	-	-	4 (10/11 - 10/28)	167 (9/17 - 10/22)	1 (10/11)
	636	3.3	1 (9/30)	-	-	177 (9/16 - 10/14)	2 (10/6 - 10/12)
	553	3.6	-	-	-	7 (9/18 - 10/2)	2 (10/2)

The distributions of chinook, coho, sockeye, and kokanee in the Sammamish River Tributaries determined from volunteer observations are shown in Figure 9.

**Figure 9. Observations of salmonids in the Sammamish River Tributaries.**

See <http://your.kingcounty.gov/dnrp/library/water-and-land/salmon/salmonwatcher/2010/9-salmonid-observations-sammamish-river.pdf>.

## Puget Sound Streams

Streams draining to Puget Sound that were surveyed during the 2010 Salmon Watcher season are both inside and outside WRIA 8 (Table 18). Those streams within WRIA 8 include Boeing Creek, Pipers Creek, and Venema Creek. Longfellow Creek, watched annually, is part of WRIA 9<sup>4</sup>. A total of 9 sites in 4 streams draining to Puget Sound were watched in 2010. All sites were monitored by 1 volunteer.

**Table 18. Stream number, site ID, site location (listed in river miles, RM), survey dates, total number of surveys, number of volunteers, and years the sites were watched for each stream surveyed in the Central Puget Sound for the 2010 spawning season.**

Stream	Stream #	Site ID	RM	Survey Dates	# Surveys	# Vols.	Years Watched
Boeing Creek*	080017	436	0.1	10/25 - 12/17/10	5	1	2000-2010
Longfellow Creek	090360	177	0.6	9/25 - 12/1/10	14	1	1999-2007, 2009, 2010
		179	0.8	10/10 - 12/31/10	12	1	1998-2010
		180	0.9	10/1 - 12/20/10	29	1	1999-2004, 2006, 2010
		380	1	9/30 - 12/20/10	30	1	2000, 2001, 2010
Pipers Creek*	080023	70	0	10/3 - 10/28/10	5	1	1999-2005, 2007, 2008, 2010
		181	0.2	10/11 - 10/30/10	6	1	1999-2002, 2004-2008, 2010
		98	0.4	10/20 - 12/14/10	16	1	1998-2002, 2007-2010
Venema Creek*	-	383	0.02	10/8 - 12/17/10	22	1	2000, 2001, 2004-2010

\*Streams within WRIA 8.

Adult salmon were seen in Pipers, Venema, and Longfellow creeks (Table 19). A single coho was reported in Longfellow Creek. Chum were observed in Longfellow, Pipers, and Venema creeks. No fish were seen in Boeing Creek. The observations of coho and chum in the Central Puget Sound streams determined from volunteer surveys is shown in Figure 10.

**Table 19. Site ID, RM, and fish counts (live and dead) with dates seen at each stream surveyed in Central Puget Sound for the 2010 spawning season.**

Stream	Site ID	RM	Chum	Coho	Unidentified
Boeing Creek	436	0.1	-	-	-
Longfellow Creek	177	0.6	-	1 (11/10)	-
	179	0.8	-	-	1 (11/12)
	180*	0.9	1 (11/3)	-	1 (12/1)
	380	1	1 (11/9)	-	-
Pipers Creek	70	0	4 (10/26 - 10/28)	-	-
	181	0.2	-	-	-
	98	0.4	-	-	2 (11/3)
Venema Creek	383	0.02	5 (11/2 - 11/5)	-	-

\*Trout also observed at this location.

### Figure 10. Observations of salmonids in Puget Sound basins.

See: <http://your.kingcounty.gov/dnrp/library/water-and-land/salmon/salmonwatcher/2010/10-salmonid-observatiosn-puget-sound-tribs.pdf>.

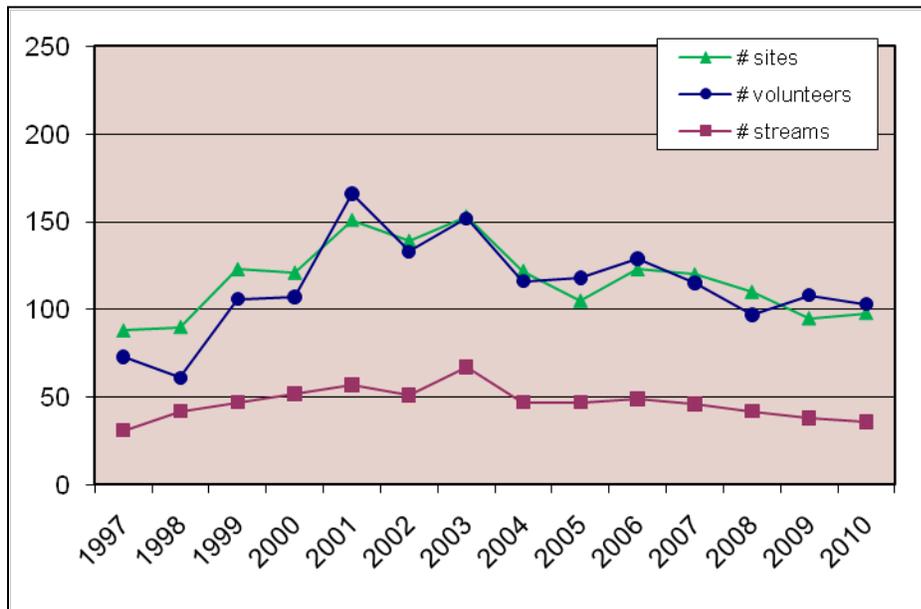
<sup>4</sup> Fautleroy Creek, a WRIA 9 stream that drains to Puget Sound, is also watched by volunteers; however, survey methods are different from those of this program. See Appendix B for a summary of salmonid observations at Fautleroy Creek in 2010.

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## Volunteer Activity

The trend in the number of volunteers participating in the Salmon Watcher Program has varied over the 15 years of the program (Figure 11; data for 1996 not cataloged). Many volunteers watch more than one site, and many sites have more than one volunteer watching at it. The trend since 2006 has been decreased volunteer participation, mostly with new recruits. In 2010, the Woodinville training, which is usually the most well-attended training session of the year, had an atypically small turn-out. Some recruiting opportunities were missed that have been employed in past years, and it is assumed the dip in attendance is a one-time phenomenon.

**Figure 11. Number of volunteers (defined as an individual, pair, or group) watching in the Lake Washington Watershed from 1997<sup>5</sup> to 2010.**



## Contact with Citizens

Volunteers were asked to keep track of how many citizens they came into contact with during their time by the streams. Salmon Watcher volunteers spoke with at least 681 citizens during the 2010 spawning season. Table 20 details the numbers of citizens who interacted with volunteers.

**Table 20. Number of citizen contacts made by all Salmon Watcher volunteers in each of the surveyed basins.**

Basin	Number of Citizen Contacts
Big Bear Creek	134
Cedar River	88
E. Lake Wash.	125
W. Lake Samm.	1
Issaquah Creek	17
N. Lake Wash.	78
Samm. River Tribs.	161
Puget Sound	77

<sup>5</sup> See previous Salmon Watcher annual reports for details on yearly participation.

## Time Spent by Volunteers

Salmon Watcher volunteers are asked to record the start and end times of each site visit. Those times are used to calculate the amount of time volunteers spend watching stream-side. Occasionally, some volunteers do not fill in that part of the data sheet. Additionally, some volunteers watched twice a day, and only one time period is included in these calculations. Time underestimates notwithstanding, Table 21 illustrates the approximate amount of time spent by volunteers in each basin. More than 734 hours were volunteered during the 2010 Salmon Watcher season.

**Table 21. Number of hours spent by Salmon Watcher volunteers in each of the surveyed basins.**

Big Bear Creek	Cedar River	E. Lake Wash.	W. Lake Samm.	Issaquah Creek	N. Lake Wash.	Samm. River Tribs.	Puget Sound
95.4	146.2	194.4	11.1	20.3	131.7	94.4	41.0

## Limitations of Volunteer Data

Individuals, citizen groups, non-profit organizations, and government agencies all use data from the Salmon Watcher Program for various reasons (for an extensive list of reasons, please see the report from the 2000 Salmon Watcher season, Vanderhoof 2001). However, several qualifications must be kept in mind when reviewing the data in this report and especially when using the data for any purpose other than describing fish presence. The level of expertise of the volunteers varies widely: some volunteers have past experience identifying fish through professional or school training, recreational fishing, or personal interest. Other volunteers learned to identify salmon for the first time from the Salmon Watcher training session. For additional discussion on the limitations of volunteer data, please see previous reports (e.g., King County 2004).

Every year volunteers from previous years return and new volunteers enter the program who must learn to identify the different species of salmonids they might encounter in their assigned streams. In 2010, 72 percent of Lake Washington Watershed volunteers were returnees (see the beginning of the Results and Discussion section above). The number of returning volunteers has remained somewhat consistent for the past 9 years, though with a drop in 2009; therefore, the level of accuracy has likely been relatively consistent during this time period.

Although training sessions are thorough, identification materials are provided, and technical experts are available for help with identification, some misidentifications will occur.

It is important to keep in mind that the absence of spawner sightings in a stream does not mean that spawning salmonids are not accessing that location. It does mean that fish were not seen by the volunteer at the site at the time of survey. Because of this important distinction and the other mentioned limitations of this type of survey, data in this report should be used only to indicate the presence of adult salmon at specific locations (species distribution). All other uses derived from the compilation of this data should be used cautiously and with the specific limitations of the data in mind. With very few exceptions, because most or all of these parameters are different for every stream surveyed from 1996 through 2010, comparisons of raw data likely would not yield valid information about changes in populations. Therefore, the best use for the fish data is in determining presence of fish and mapping fish distribution.

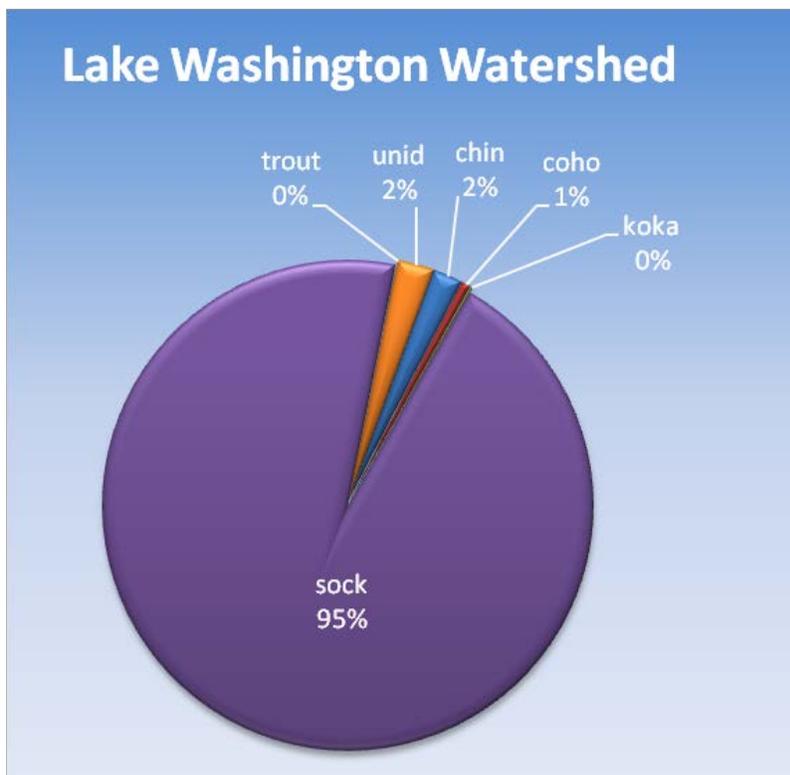
## Species Summary

Salmon Watcher Program volunteers recorded observations of all salmonid fish located during their stationary surveys, including chinook, coho, and sockeye salmon, kokanee, and trout (which may have been cutthroat or rainbow trout). The ratios of all fish observed (11,208 total fish), including unidentified fish, is depicted in Figure 12 for the Lake Washington Watershed. Only 11 fish were counted in WRIA 8 streams that drain to Puget Sound: 9 chum and 2 fish of unidentified species.

Of the 42 streams in the study area surveyed in 2010, sockeye were found in 17 streams. Coho were found in 11 streams, chinook in 9 streams, kokanee were reported in 3 streams, and trout were reported in 4 streams. Sockeye was the most abundant species counted by volunteers in the Lake Washington Watershed, followed by chinook then coho. Chum were observed in 3 streams draining to Puget Sound. No observed species ranges were expanded based on Salmon Watcher data in 2010.

If a volunteer was unable to positively identify what species a fish was, the fish was tallied as “unidentified” (reporting a fish as unidentified was preferable to misidentifying a species). Of the 11,226 total adult fish observed in the Lake Washington Watershed, other WRIA 8 streams, and other streams draining to Puget Sound in 2010, 273 were tallied as unidentified (2.4 percent). For more information, see “Trout and Unidentified Species” below.

**Figure 12. Percentage of total fish observed in 2010 by volunteers in the Lake Washington Watershed.**



## Marked Fish and Juvenile Fish

On the data forms, one column asked the volunteers to note the “# of fish without adipose.” Hatcheries in the Lake Washington Watershed remove the adipose fins of chinook and coho before

they are released into the stream. Volunteers were instructed to focus on species identification first and foremost and only try to report on adipose fin clips when possible. Most volunteers did not fill in this column, or sometimes they noted they could not tell. Generally, water clarity must be excellent and the fish must be close and somewhat still in order to determine the presence of an adipose fin on a live fish.

No sockeye have their adipose fins clipped. However, volunteers reported 8 sockeye without adipose fins (Table 22). Because sockeye are too small to have their adipose fins clipped when they are released from hatcheries, their adipose fins remain intact. Therefore, if sockeye are reported with missing adipose fins, either the fish are sockeye with adipose fins that were difficult to see in the stream, or the fish were another species such as coho who were missing their adipose fins. Because it is often hard to determine the presence of adipose fins, and because sockeye were by far the most abundant species in 2010, it is likely these fish were all sockeye with their adipose fins intact. When data were turned in that had sockeye marked as having their adipose fins clipped, the volunteers were often contacted about the discrepancy and the data corrected. The final number of sockeye reported as being clipped in 2010 was extremely low (0.08 percent of all sockeye).

**Table 22. Number of adipose fin clips as reported by volunteer Salmon Watchers.**

Stream	chinook	sockeye*	total
Cottage Lake Creek		3	3
Peters Creek		4	4
North Creek		1	1
East Fork Issaquah Creek	23		23
Issaquah Creek	55		55
<b>Total</b>	<b>78</b>	<b>8</b>	<b>86</b>

\*See text for discussion about sockeye reported with adipose clips.

In some years, certain species of salmon are tagged for scientific research when they enter the Ballard Locks. Fish tagged elsewhere may stray into the Lake Washington Watershed. It is also possible a fish was tagged when straying, then it returned to its birth stream in the Lake Washington Watershed. Volunteers are asked to record when they see tagged fish, and they are asked to notify a staff member. In 2010, no fish were tagged; however, one chinook in Cottage Lake Creek was seen with a tag.

Volunteers made note of 134 fry and/or juvenile fish in a total of 18 streams and 1 Lake Washington beach site in 8 basins.

## Chinook Salmon

Chinook were observed in 5 basins in the study area during the 2010 surveys (Figure 13). A total of 179 live fish and 41 carcasses were found in 9 streams throughout the Lake Washington Watershed. Streams in which chinook were reported include (in order of most to least fish seen): Issaquah Creek (76), Cottage Lake Creek (56), East Fork Issaquah Creek (23), North Creek (18), Taylor Creek (16), Cedar River (14), Big Bear Creek (12), Peters Creek (3), and Little Bear Creek (2).

**Figure 13. Distribution of chinook salmon in the program area based on Salmon Watcher observations.**

See: <http://your.kingcounty.gov/dnrp/library/water-and-land/salmon/salmonwatcher/2010/13-chinook-distribution-map.pdf>.

## Sockeye Salmon

Sockeye were by far the most numerous fish counted by volunteers. Sockeye were observed in 6 basins (Figure 14). A total of 9,223 live fish and 1,406 carcasses were observed in 17 streams (in order of most to least fish seen): Cedar River (5455), Big Bear Creek (1483), North Creek (1278), Little Bear Creek (716), Cottage Lake Creek (566), Taylor Creek (488), Cedar River Side Channel at Dorre Don (181), May Creek (147), Peters Creek (122), Rock Creek (120), Sammamish River (38), Horse Creek (23), Juanita Creek (6), Kelsey Creek (2), Thornton Creek (2), Issaquah Creek (1), and Mercer Slough (1).

The largest numbers of sockeye in the Lake Washington Watershed are typically in the Cedar River Basin and the Bear Creek Basin. Table 23 presents sockeye numbers observed by volunteers back through 1999. These numbers should be viewed with caution: they are only presented to provide a general comparison of what has been seen by volunteers in this program. The numbers are not useful for making statistically valid comparisons of returns or population trends, because too many variables are not controlled.

**Figure 14. Distribution of sockeye salmon in the program area based on Salmon Watcher observations**

See <http://your.kingcounty.gov/dnrp/library/water-and-land/salmon/salmonwatcher/2010/14-sockeye-distribution-map.pdf>.

**Table 23. Number of sockeye observed in Bear Creek and Cedar River basins from 1999 to 2010.**

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Bear Creek Basin fish	269	4,559	1,837	10,625	441	278	507	3,007	125	214	204	<b>2,049</b>
Bear Creek Basin hours	126.1	112.1	178.9	227.4	162.3	140.7	97.9	108.3	83.7	76.7	149.1	95.4
fish/hour	2.1	40.7	10.3	46.7	2.7	2.0	5.2	27.8	1.5	2.8	1.4	21.5
Cedar River Basin fish	3,952	12,713	7,827	13,254	5,675	5,298	3,734	4,381	2,413	840	591	<b>6,244</b>
Cedar River Basin hours	139.2	257.0	270.2	266.4	208.4	310.7	300.9	295.1	188.4	176.4	94.8	146.2
fish/hour	28.4	49.5	29.0	49.8	27.2	17.1	12.4	14.8	12.8	4.8	6.2	42.7

## Coho Salmon

Coho were observed in 6 Lake Washington Watershed basins (Figure 15). A total of 65 live coho and 3 carcasses were reported in 10 streams in the Lake Washington Watershed, 1 stream that drains to Puget Sound, and in 1 stream outside the official watch area (in order of most to least fish seen): Cedar River (43), Taylor Creek (5), Sammamish River (4), Big Bear Creek (3), Cottage Lake Creek (3), Peters Creek (3), Little Bear Creek (2), Issaquah Creek (1), Longfellow Creek (1), May Creek (1), North Creek (1), and Tributary 070272 to Tuck Creek (1).

**Figure 15. Distribution of coho salmon in the program area based on Salmon Watcher observations.**

See <http://your.kingcounty.gov/dnrp/library/water-and-land/salmon/salmonwatcher/2010/15-coho-distribution-map.pdf>.

## Kokanee

Kokanee were observed in 2 basins (Figure 16). A total of 19 live fish were counted in 3 streams: Little Bear Creek (9), North Creek (8), and Sammamish River (2). No sites were watched along Lewis Creek, which is typically the stream where most kokanee are seen each year by volunteers. The fish reported as kokanee in Little Bear and North creeks may have been residual sockeye; for

an explanation of residual sockeye, please see the 2008 Salmon Watcher report (King County 2009).

**Figure 16. Distribution of kokanee in the program area based on Salmon Watcher observations.**

See <http://your.kingcounty.gov/dnrp/library/water-and-land/salmon/salmonwatcher/2010/16-kokanee-distribution-map.pdf>.

## Chum

Chum were observed in very low numbers in 3 streams. In Pipers Creek, 4 live were reported, and in Venema Creek, 5 dead chum were observed. Two dead chum were reported in Longfellow Creek.

## Trout and Unidentified Species

Seven live trout were reported in 3 creeks in the Lake Washington Watershed and also in Longfellow Creek in 2010.

Fish of unidentified species were observed in 10 streams in 5 basins in the Lake Washington Watershed, 1 WRIA 8 Puget Sound stream, and Longfellow Creek: 141 live fish and 132 carcasses were unidentifiable. The number of fish that went unidentified was approximately 2.4 percent of fish reported.

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## Appendix A

### Data Collection Form used in 2010



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## Appendix B

### Fauntleroy Creek Salmon Watch 2010 Summary

Five Salmon Watch volunteers, two school groups, ten visitors at the viewpoint, zero coho spawners.