

Miller and Walker Creek Chronicle

Record of Events Shaping the Ecology and Fish Populations of the Streams

Last updated January 24, 2011

The purpose of this document is to record significant events affecting the ecology and fish populations in Miller and Walker Creeks in southwest King County, Washington. Recorded events may have positive, negative, or unknown effects.

Recording these events as they occur is intended to:

- Record progress and setbacks in restoring the creeks and the surrounding watersheds
- Help identify factors affecting adult fish populations (for example, floods during the incubation period for a year-class affecting the number of outmigrants, which in turn affects the number of adults returning in future years)

It is important to note that some events may become “significant” only in hindsight and thus recording should err on the side of inclusion rather than exclusion.

Information is listed by calendar year but some relevant information may be available in alternate time periods. For example, stream flow information is organized by the water year, which begins October 1 and concludes September 30.

Data prior to 2007 were compiled largely by Trout Unlimited (Andy Batcho) using e-mails, data collections, newspaper article clippings, etc. Some of these entries include information on Des Moines Creek. Data from 2007 on were compiled by Basin Steward Dennis Clark from a wide variety of sources and is limited to Miller and Walker Creeks.

Also useful are average and instantaneous maximum reading for flow gages in the “42” series operated by King County and available at:

<http://green.kingcounty.gov/wlr/waterres/hydrology/GaugeTextSearch.aspx>

2011

Hatchery Fry Outplanting

On Saturday, January 22, 2011, volunteers from Trout Unlimited and the Highline community outplanted coho fry at multiple locations along Miller and Walker Creeks. The fry incubated from eyed eggs provided by the WDFW hatchery on Soos Creek. Eggs were delivered in December 17, 2010 to the TU hatchery on the grounds of the Southwest Suburban Sewer District Plant in Normandy Park. Eggs were incubated in well water. The fish were released when the fish had completed “buttoning up” (absorbing their yolk sacks) and were not fed during the incubation period in the hatchery.

Water quality parameters for 0730 to 1000, January 22, 2011

Incubation water at the hatchery: 9.3 C (pH of 7.87)

Miller Creek at Southwest Suburban Sewer District plant/TU hatchery: 6.9 C (pH of 7.72)

Walker Creek at 13th Ave. S.W. (Snake Road) in Normandy Park: 7.7 C (pH of 7.80)

Sequoia Creek at Snake Road in Normandy Park: n/a

Des Moines Creek at Marine View Drive S.W.: 6.8 C (pH 7.66)

Salmon Creek at Shorewood Drive S.W.: temperature n/a (pH 7.97)

Samples from Miller, Walker, and Des Moines Creeks were analyzed for the presence of anionic LAS and ABS detergents using Hach test kit model DE-2. Results for all three streams were negative.

Ambient weather: light to moderate rain Friday; broken clouds and sun on Saturday.

Locations and numbers outplanted were:

- Miller Creek at S. 144th St. (10,200 fry)
- Miller Creek at 269 S. 163rd Place (6,800)
- Miller Creek at Three Tree Community Church, 16261 First Ave. S. (6,800)
- Miller Creek at Fish House, 801 S.W. 168th St. (3,400)
- Miller Creek on Elsey Creek tributary at 6th Ave. S.W. (1,700)
- Miller Creek at hatchery at Southwest Suburban Sewer District (3,400)
- Walker Creek at Des Moines Memorial Drive (6,000)
- Walker Creek at Ambaum Blvd. at S. 172nd St. (10,200)
- Walker Creek at S.W. 171st St. half a block west of First Ave. S. (3,400)
- Walker Creek at John Nelson property, 226 S.W. 171st St. (1,700)
- Walker Creek at “beaver pond” at the Cove (6,000)
- Sequoia Creek behind the baseball diamond at Normandy Park City hall (3,400)
- Sequoia Creek (Walker Creek tributary) at S.W. 174th St. just downstream of the culvert (800)

Total outplants on Miller Creek were 32,300 fry. Total outplants on Walker/Sequoia Creek were 31,500 fry. Outplants on Des Moines Creek were 27,200 at about eight locations. In addition, for the third year a row, salmon (5,100 fry) were outplanted on Salmon Creek in Burien.

2010

Significant Storm Events/Flow Conditions

- January was 4 degrees C (7 degrees F) warmer than average for the month. January rainfall was 6.17 inches compared to the 30-year norm of 5.13 inches.
- February was somewhat warmer than average with slightly below average precipitation. February rainfall was 3.52 inches compared to the 30-year norm of 4.18 inches.
- The spring was uncharacteristically cool and wet from March through June. March rainfall was 3.76 inches compared to the 30-year norm of 3.75 inches. April rainfall was 3.49 inches compared to the 30-year norm of 2.59 inches. May rainfall was 2.83 inches compared to the 30-year norm of 1.78 inches. June rainfall was 2.49 inches compared to the 30-year norm of 1.49 inches.
- July and August were uncharacteristically dry and slightly warmer than usual. July rainfall was 0.31 inches compared to the 30-year norm of 0.79 inches. August rainfall was 0.64 inches compared to the 30-year norm of 1.02 inches.
- Early September saw rain and cool weather. September rainfall was 4.80 inches compared to the 30-year norm of 1.63 inches.
- October 9-10 saw 1.79 inches of rain. October rainfall was 5.24 inches compared to the 30-year norm of 3.19 inches.
- November 1 saw 1.56 inches fall as of 10 p.m. November rainfall was 5.05 inches compared to the 30-year norm of 5.90 inches.
- Saturday, December 11 saw 1.42 inches of rain and Sunday, December 12 saw 2.19 inches of rain fall at SeaTac International Airport as a “pineapple express” came through. There was substantial flooding at the Cove and Snake Road was closed as Miller Creek flooded over the road and across the Kludt property. December rainfall was 8.69 inches compared to the 30-year norm of 5.62 inches.
- For 2010, 46.99 inches of rain fell compared to the 30 year average of 37.07 inches. July was the driest month and August was the warmest month. November and December were tied as the coldest months. December was the wettest month and December 12 was the wettest day.

Spills and Sedimentation/Turbidity Events

- No anthropogenic events noted.

Hatchery Fry Outplanting

On January 23, 2010, volunteers from Trout Unlimited outplanted coho fry at multiple locations along Miller and Walker Creeks. The fry incubated from eyed eggs provided by the WDFW hatchery on Soos Creek. Eggs were delivered in December 2009 to the TU hatchery on the grounds of the Southwest Suburban Sewer District Plant in Normandy Park. Eggs were incubated in well water. The fish were released when the fish had completed “buttoning up” (absorbing their yolk sacks) and were not fed during the incubation period in the hatchery. Average fry length at time of outplanting was 25 mm.

Water quality parameters for 0900, Saturday, January 23, 2010

Incubation water at the hatchery: 11.1 C (pH of 8.05)

Miller Creek at Snake Road in Normandy Park: 8.4 C (pH of 8.04)
Walker Creek at Snake Road in Normandy Park: 8.3 C (pH of 8.15)
Sequoia Creek at Snake Road in Normandy Park: 9.1 C (pH of 8.09)
Ambient weather: light to moderate rain in hours immediately prior to outplant; previous day saw no precipitation.

Locations and numbers outplanted were:

- Miller Creek at S. 144th St. at 12th Place S. (7,000)
- Miller Creek at 269 S. 163rd Place (14,000)
- Miller Creek at Three Tree Community Church, 16261 First Ave. S. (3,500)
- Miller Creek at hatchery at Southwest Suburban Sewer District (3,500)
- Walker Creek at 4th Ave. S. and S. 171st St. (7,000)
- Walker Creek at Ambaum Blvd. at S. 170th St. (2,000)
- Walker Creek at Ambaum Blvd. at S. 171st St. (3,500)
- Walker Creek at S.W. 171st St. half a block west of First Ave. S. (7,000)
- Walker Creek at "beaver pond" at the Cove (3,500)
- Sequoia Creek (Walker Creek tributary) at S.W. 174th St. just downstream of the culvert (7,000)

Total outplants on Miller Creek were 28,000. Total outplants on Walker/Sequoia Creek were 30,000. Outplants on Des Moines Creek were 42,500 (11 locations). In addition, for the second year a row, 5,000 fish were outplanted on Salmon Creek in Burien.

Fish Observations: Juveniles

No methodical counting effort occurred this season.

Andy Batcho reported that at the [Stewards of the Cove](#) work party on Saturday, March 13, I noticed 8 to 10 salmon fry in Walker Creek (in front of the Cove Building). I checked several places in that section of stream and found fry in nearly every section. Several others saw them also, Elaine & Tony Cassarino, Doug Osterman to name a few. The fry were about 1" to 1-1/4" long. Not sure if they were planted or wild coho or out migrating chum fry. I check the stream quite often & I had not seen fry in this area until last Saturday.

Tip from Basin Steward Dennis Clark: To tell coho and chum fry apart, look for the "parr marks," vertical bands on the side of the fish. On chum, the parr marks are above the "lateral line" only. The lateral line is a visible line that runs from the middle of the head to the middle of the tail on each side of the fish. With coho, the parr marks are located both above and below the "lateral line." Chum also have a blue-green color and stand out a bit more than coho. Of course, with such small, quick little fish, discerning these differences is no small task!

Volunteers at the Walker Preserve on March 20 observed juvenile fish, presumably coho or chum fry, in the section of stream restored in August 2009.

On March 27, Andy Batcho observed that he was still seeing lots of fry in Walker Creek at the Cove. ~1 – 1-1/2” long. They must be coho since they seem to have taken up “favorite spots” instead of moving along to the Sound.

Community Salmon Investigation (“CSI”) teams observed juvenile salmonids during most surveys beginning in October 2010. Fewer juveniles were seen as the CSI surveys continued into November and December.

Fish Observations: Adults

Community Salmon Investigation for Highline (“CSI: Highline”) volunteer training occurred October 8 at Normandy Park City Hall. Daily monitoring by two-person teams began October 9 and concluded December 23. The first live adult coho was seen on October 11 and the last live adult coho was seen on December 10. The first live adult chum was seen on November 7 and the last live adult chum was seen on December 23.

Reports from this program are listed here:

<http://www.kingcounty.gov/environment/watersheds/central-puget-sound/miller-walker-creeks/salmon-monitoring.aspx>

Restoration/Stewardship Work

- Miller/Walker Stewardship with the Basin Steward: public projects included:
 - 8 volunteers at one events at the Walker Preserve in Normandy Park (project begun in March 2008) focused on ivy, holly, and laurel removal
 - Work several times during the summer weeding native plants on Miller Creek at S. 144th St. in Burien with Waskowitz Environmental Leadership Semester program students
 - Removal of English ivy from 70 linear feet of streambank on Miller Creek at the Southwest Suburban Sewer District plant on September 28. On October 16, 23 volunteers planted 32 shrubs and 4 trees in this area. Volunteers also removed ivy from mature trees on the grounds of the sewer plant.
- The Village at Miller’s Creek Homeowners Association, in partnership with Basin Steward Dennis Clark, undertook one stewardship event March 27 along Miller Creek between Ambaum Blvd. and First Ave. S. to remove ivy from a few remaining trees and pull ivy farther back from trees cleared in 2009.
- The Normandy Park Swim Club conducted stewardship parties on July 8, July 28, August 19, and September 13 to mulch and weed native trees and shrubs planted along Walker Creek in 2009.

Other Significant Events/Activities/Observations

- A beaver cut down some of the Hooker’s willows at the NE corner of the duck pond on Walker Creek at the Cove in March. This was first observed by Andy Batcho and Tony Cassarino on March 11 and confirmed by Basin Steward Dennis Clark on March 12.
- Blue-green algae were observed by King County staff working with Lake Burien neighbors on invasive plant control on August 16. They took a sample of the algae and analyzed it during the week. The type of blue-green algae found on Lake Burien

produce toxins that harm the liver, known as hepatotoxins. The analysis showed this type of toxin present at a concentration of 5.72 micrograms per liter. This concentration was just below the state's proposed recreational guideline "caution level" of 6 micrograms per liter. Note that this sample represented a shoreline concentration as opposed to a whole lake average. Because the toxin is concentrated mostly in the algae, in this case found along the shore, concentrations of the toxin in the open water of the lake may well have been lower. Lake residents were advised of the issue and subsequent results sampling through Don Warren, Lake Burien Shore Club President and Lake Steward. Samples continued to be taken through the algae growing season.

Readings for the season:

November 17	1.15 micrograms per liter for clear lake water from south shore
November 3	0.81 micrograms per liter for clear lake water from south shore
October 21	41.0 micrograms per liter for thin scum on south shore
October 13	815 micrograms per liter for very thick scum on south shore
October 5	563.0 micrograms per liter for very thick scum on south shore
September 28	4.09 micrograms per liter for clear lake water from south shore; 6.47 micrograms per liter from light scum at northeast outlet stream
September 21	698.0 micrograms per liter for very thick scum at lake outlet
September 14	2.68 micrograms per liter
September 7	6.0 micrograms per liter
August 30	9.4 micrograms per liter
August 16	5.72 micrograms per liter

2009

Significant Storm Events/Flow Conditions

- January 7-8, 2009: heavy rainfall (severe flooding in other parts of King County)
- Beginning in July on Walker Creek, periodic high flows caused by removal of beaver culvert/dam blockages. Occasional high flows occurred through October 16 as the culverts were periodically cleared. Four beavers were removed from the Walker wetland in mid-October. At least one more beaver was removed in December.
- Extremely dry summer. The period of June – August rainfall was the sixth driest on record at Sea Tac although August was close to normal. September rainfall was normal although marked by 0.91 inches of rain on September 6, 2009.
- Per a September 11, 2009 report from the Port of Seattle to the Department of Ecology, “The NOAA rain gauge at Sea-Tac International Airport recorded 24-hour precipitation total of 0.91 inches and maximum 1-hour precipitation total of 0.41 inches at 11:30. This resulted in erosion control BMP failures at various locations on multiple construction projects. The Port notified the Ecology Spill Line at 19:57 and the report number is 09-2957. The BMP failures were identified through Port inspections. The failures resulted in elevated turbidity stormwater discharges to Northwest Ponds, Miller Creek and Walker Creek.”
- Major storm on October 17, 2009 with intense showers totaling 1.24 inches of rain at SeaTac Airport. Water in Walker Wetland increased from 5.1 or 5.2 feet to 6/29 feet from 8 a.m. to Noon. This was partly due to blocked northern culvert.
- Major storm on October 26, 2009 had 1.21 inches of rain.
- October precipitation totaled 5.54 inches (average for month = 3.19 inches). First substantial rain (0.51 inches) of the month occurred October 14.

Spills and Sedimentation/Turbidity Events

- Beginning in July and lasting through December on Walker Creek, periodic high flows caused by removal of beaver culvert/dam blockages at Des Moines Memorial Drive; these caused turbidity downstream as high flows kicked up sediment/organic material on the stream bottom.
- Continuing a long-term phenomenon, there were several instances during the year of large amounts of foam being observed in Miller Creek. These events mostly corresponded to periods of rain. Efforts to track down the source of the foam were unsuccessful. Foam occurs both from natural and human causes. Basin steward Dennis Clark purchased a detergent detection kit to help with ascertaining whether the foam was generated by detergents but was not able to use it during any of the foam events during the fall of 2009.

Hatchery Fry Outplanting

On January 17, 2009, volunteers from Trout Unlimited outplanted coho fry at the following locations along Miller and Walker Creeks. The fry incubated from eyed eggs provided by the WDFW hatchery on Soos Creek. Eggs were delivered on December 10, 2008, to the TU

hatchery on the grounds of the Southwest Suburban Sewer District Plant in Normandy Park. Eggs were incubated in well water with temperatures ranging from 52 to 56 degrees F. The fish were released when the fish had completed “buttoning up” (absorbing their yolk sacks) and were not fed during the incubation period in the hatchery. Average fry length at time of outplanting was 25 mm.

Locations and numbers outplanted were:

- Miller Creek at the Pet Lodge at S. 140th S. (6,800 fish)
- Miller Creek at S. 144th St. across from Ajax Parking @ 12th Pl. S. (6,800)
- Miller Creek at Highway 518 ramp at Des Moines Memorial Way (3,400)
- Miller Creek at 269 S. 163rd Place (6,800)
- Miller Creek at Three Tree Community Church, 16261 First Ave. S. (6,800)
- Miller Creek at Fish House, 801 S.W. 168th St. (1,700)
- Miller Creek on Elsey Creek tributary at 6th Ave. S.W. (1,700)
- Walker Creek on Des Moines Memorial Way between S. 171st and S. 176th St. (3,400)
- Walker Creek at 4th Ave. S. and S. 171st St. (6,800)
- Walker Creek at 17023 4th Ave. S. (6,800)
- Walker Creek at Ambaum Blvd. at S. 171st St. (6,800)
- Walker Creek at 16901 2nd Ave. S.W. (3,400)
- Walker Creek at S.W. 171st St. half a block west of First Ave. S. (6,800)
- Walker Creek at “beaver pond” at the Cove (3,400)
- Sequoia Creek (Walker Creek tributary) at S.W. 174th St. just downstream of the culvert (3,400)

Total outplants on Miller Creek were 34,000. Total outplants on Walker/Sequoia Creek were 40,800. Outplants on Des Moines Creek were 47,600 (seven locations). In addition, for the first time in many years, 5,000 fish were outplanted on Salmon Creek in Burien on January 16.

Fish Observations: Juveniles

No methodical counting effort occurred this season.

On May 15, 2009, Andy Batcho observed large numbers (~50 in groups of a dozen or so) fry (2”) in Walker Creek. Hadn’t seen them earlier. On Sunday, May 17, they were gone. He assumed they were Chum fry on their out bound migration. I saw the same situation last year about the same time. [Dennis comment: It’s unlikely they were chum because chum should have out migrated in January-February or March at the latest. They are probably coho.]

In August 2009, a stretch of Walker Creek where Walker Preserve is and the private property just to the south of it was restored. It consists of about a 200 foot stretch of water. In order to do the work on the stream, the contractors created a bypass each day (for 4 days) and removed the fish from that stretch of water. Notable findings:

- presence of large cutthroat > 8"
- a relatively healthy juvenile coho population

- an abundant crayfish population
- absence of sculpin and lamprey

The following table summarizes fish collected between August 14 and August 20, 2009:

Summary			
Species	Number	Mortalities	Size Range
Cutthroat	233	2	25-275mm
Coho	126	1	65-90mm
Crayfish	314	1	ND
Total	673	4	

Fish Observations: Adults

On October 10, Terry Christine’s daughter saw an adult salmon in Miller Creek at the Cove.

On October 13, Jim Buchman was walking on the bridge on the beach at the cove during high tide (stream was full of water) and saw a school of about 15 salmon come underneath the bridge. They were jumping and moving around on the stream side of the bridge. About 15 minutes later, he saw a school (probably the same one) head back out to the sound, once again jumping. He thought it was interesting as they came in and then went back out and also that they stayed in a group. He did not see any single fish or any others, just the one group which seemed to stay together.

On October 15, 3 p.m., Andy Batcho made the following observation: tide was high, not raining (had rained the day before), stream off color due to flow from Walker Creek. Miller Creek pretty clear water. Temp. mid-50’s.

- Observed one ~12”, ~½ lb., Male, Jack, Coho with adipose fin; ~50-yards below the confluence of Miller/Walker Creeks in Miller Creek. Fish was recently dead...took a photo...upon inspection, had well developed milt sacks...took a photo. No signs of physical injury on the fish. Cut a twig and pinned the carcass into the stream bed to allow decomposition.
- Observed 7 Coho, mix of male & female, large, approx. 7 – 10 lbs., bright red sides, swimming inside the mouth of Miller Creek, ~30-50 yards above the mouth of the stream in front of the Longridge home. They ventured from downstream of the Longridge bridge up into the outfall of the “beaver pond”, then they would return. Quite a bit of jumping activity in the stream. I’m certain there were more than 7 fish in the pool, but I only saw 7 physically swim by while standing on the bridge.
- No fish observed jumping in Puget Sound.
- A fisher was fishing at the mouth of Miller Creek...a resident from south of the Cove property on the beach. He said friends had caught a limit (4) Coho the day

before and had caught/released several Cutthroat Trout. He just bought a rod and was giving it a try...no fish seen while I observed him fishing...~15-minutes.

- Sediment pond / stream feeding the Beaver Pond. Fish movement seen in the large sediment pond but fish themselves not seen...water off color/dark.
- No fish seen swimming/jumping in the Beaver pond.
- No fish seen in Walker Creek at the Swimming Pool.
- No fish seen from "John's Bridge" downstream to the Backstop bridge on Miller Creek except for the one jack described above.

On October 15, Nancy Cantrell observed one adult salmon in Miller Creek at S. 163rd Place just downstream of SR 509.

On October 17, Brett Fish observed heavy rains and stream turbid, raging. Included photo of coho, about 15-16", probably female, adipose fin attached, found mouth agape, partially out of the water. Brett's assessment: mouth agape indications usually means copper or zinc coating and suffocating the gills. (Brett attached photos to his e-mail.)

On October 18, Brett Fish observed that the weather was sunny with no rain and that stream conditions were fairly clear with foam/suds swirling in side pools. He wonders whether this is more "overflow" from sheeting at rental car facility. He observed a larger coho nearly 30 inches, adipose fin clipped, anal tube not extended, color bled out, gills brown 29.7", dead 24+ hours. Also observed a smaller coho or steelhead (blue head) at 23+ inches, adipose fin attached, anal tube not extended, heavy spots like steelhead, shorter mouth, gills mostly browning. 12? hours dead.

October 18, 2009, 1 p.m., Andy Batcho made the following observation while the weather was partly cloudy, mild 57-degrees, tide out:

- No fish sighted at the mouth of Miller Creek, the tide was out.
- People at the Cove reported seeing salmon "fining" in the "beaver pond"....I did not see them.
- No fish sighted at the confluence of Miller / Walker.
- Miller & Walker creeks running slightly high & clear....yesterdays rains had the creeks at flood stage on Saturday, running over their banks. Miller muddy, Walker tannic colored.
- Clark Brant (NP City Councilman) reported seeing 4 Coho (smallish, 4-6 lbs.) at the Swim Club on Walker Creek, at the culverts under the road. If they sense someone around....they dash into the culvert...then slowly drift out again.

On October 19, Josh Feigin, Port of Seattle, saw two coho salmon while inspecting the creek a little south of S. 160th St. Looked like a male and female. Male was in his spawning color, about 25". Light was too low to get details.

On October 21, Darren at SWSSD observed one adult salmon with belly slit and head missing. Also observed one healthy silver bright fish swimming.

On October 23, Brett observed that yesterday, the foam had a distinctive rainbow, colors indicative of soap. Today, there was no observable rainbow colors. Found 2 dead male coho, adipose fin clipped, 1 with fairly bright gill color, both in the 22-23" range. Photos attached. One coho male had very odd markings on its side, disease or worms (see photo). 5 out of 6 dead males discovered so far are adipose fin clipped. It might be well to remember that the Southwest Suburban Sewer District did a lot of stream restoration work two years ago and imported rock, lots of it. It had a distinctive odor to it like sewage and does not look like our local rock, many looking like lava rock. I mention this as a possible explanation for why we are getting several adipose fin clipped returning coho so far. The stream probably smells like the place the rock was imported from. This could also explain why during the third runway construction and Miller Creek rechanneling, reconstruction that we had similar occurrences. Actually, most of the fish were not ours.

On October 23, Dennis and Brett observed pre-spawn mortality at the Fish House on Miller Creek occurring when a female coho swam in circles and jumped out of the water (and over Dennis' boot) before lying on her side in the shallows and dying.

On October 27, Josh Feigin at the Port saw a total of seven adult coho in Miller Creek and heard a few more in riffles. Several (at least three) of the fish were above the waterfall located just south of 157th. These are the first fish he has seen make it past this natural barrier. The water level and flow must have been just right during the big rain events of the past few days. Josh also found one dead female coho of apparently wild-origin (not a hatchery fish).

On November 6, Dennis observed at least four coho salmon in the pool between the culverts and the downstream gravel bar on Walker Creek. I suspect they came upstream on the tail end of last night's tremendous thunderstorms. At least three were males and two of them were small enough to be "jacks" (immature males who return a year before their age cohort normally would).

On November 8, Brett observed the first chum of the season at the "Fish House" on Miller creek. The chum were exhibiting odd behavior with males digging the redds, females watching. One large, very athletic chum spooked and tore off down stream so fast he beached himself with his momentum. Female was very small, estimated 16-18 inches.

On November 13, 2009, Brett found a juvenile coho dead. He also observed large amounts of foam with iridescent sheen/smell. On November 16 (following Monday), Dennis laid out his investigations into foam to date and proposed next steps.

Benthic Index of Biotic Integrity (BIBI) Scores

Not yet available.

Restoration/Stewardship Work

- The Port of Seattle completed the last of its major stream/wetland restoration projects associated with the construction of the Third Runway. The Des Moines Nursery project consisted of wetland restoration (1.53 acres), wetland rehabilitation (0.60 acres), wetland enhancement (0.20 acres), and upland buffer enhancement (3.00 acres). The 5.16 acre project also included stream channel enhancements with the addition of large wood (tree trunks) to Miller Creek and in the surrounding wetlands. In addition, a portion of a piped storm drain was converted into an open vegetated swale for improved water quality treatment. The earthmoving was completed during August/September. Approximately 13,000 trees and shrubs were planted on the site in the fall.
- The City of Normandy Park restored a 200 foot stretch of Walker Creek on the property of the Walker Preserve and the (private) Short family property in August. Work included removal of invasive vegetation, reshaping of the banks, installation of spawning gravel, and installation of large wood. The purpose of the project was to improve spawning and rearing habitat for anadromous salmonids. The project was funded with grants from the Washington State Department of Ecology Coastal Protection Grant program and the Community Salmon Fund.
- Stewards of the Cove continued their work caring for riparian vegetation along Miller and Walker Creeks at the Cove during work parties from March – October.
- The Normandy Park Swim Club, in partnership with Basin Steward Dennis Clark, undertook two stewardship events along Walker Creek between Snake Road and the Cove:
 - On May 3, they removed invasive plants along the creek.
 - On October 25, they planted 160 native potted trees and shrubs and 100 Sitka willow stakes.
- The Village at Miller's Creek Homeowners Association, in partnership with Basin Steward Dennis Clark, undertook three stewardship events along Miller Creek between Ambaum Blvd. and First Ave. S.:
 - On March 15, HOA members began clearing ivy from the trunks of nearly all the trees on their property.
 - On May 2, HOA members finished clearing ivy from the trunks of nearly all the trees on their property. They also removed several hundred pounds of garbage from their property.
 - On October 24, HOA members planted 45 native trees on the north and south banks of the streams. Most of the plants were conifers -- hemlock, western red cedar, and grand fir -- to increase the diversity of trees along the creek, which is currently dominated by black cottonwood and red alders.
- Miller/Walker Stewardship with the Basin Steward: public projects included:
 - 36 volunteers at three events at the Miller Creek restoration at S. 144th Way in Burien (project begun in fall 2007)
 - 36 volunteers at three events at the Walker Preserve in Normandy Park (project begun in March 2008) focused on ivy removal
 - 11 volunteers at one event to finish cleaning up trash from Fox Creek (tributary to Miller Creek) in Normandy Park (completing work begun in 2008)

- Bohemian knotweed in riparian areas was systematically controlled at multiple locations on Miller Creek in August using stem injection of water-safe herbicide Rodeo by the King County Noxious Weed Program.

Other Significant Events/Activities/Observations

- Apparently in May, a family of beavers moved into the Walker wetland east of Des Moines Memorial Drive. Where they came from is unknown. Beginning in June, basin steward Dennis Clark monitored their activities, which initially focused on building two dams in the stream just west of Des Moines Memorial Drive. The downstream dam was at the location of a historic beaver dam (beavers had last been seen here about a decade prior.) Beginning in mid-July, the beavers began regularly blocking the two culverts under Des Moines Memorial Drive. When the culverts were nearly fully blocked, the level of the wetland would rise about three inches in a 24 hour period during completely dry weather. The wetland is fed by a series of springs on the Port property and under SR 509. Because the rising wetland was flooding a neighbor's driveway and threatening the functioning of his septic system, basin steward Dennis Clark and Burien staff periodically cleared the blocked culverts. This approach, while viable during the dry summer months, was unrealistic as a long-term management solution. Failure to keep the culverts clear during the rainy months could lead to more serious flooding of one or more neighbors and jeopardize the integrity of the subgrade of Des Moines Memorial Drive. During the fall of 2009, the beavers were trapped and euthanized. The last beavers were removed in December.
- The pedestrian bridge over Walker Creek providing access to the Walker Preserve from 2nd Ave. S.W. was closed at the beginning of 2009 when the alder logs that provided the main supports rotted and/or were undermined.
- During the June inspection of Miller Creek by the King County Noxious Weed Program, a number of possible fish passage barriers were observed. Basin Steward Dennis Clark applied for a Hydraulic Project Approval to allow their partial removal/disassembly where necessary to ensure adult fish passage. Fish can get past what most people would perceive to be an impassable fish barrier. Moreover, log jams provide structure to the stream, create pools, and offer shelter to juvenile fish. Consequently, WDFW Area Habitat Biologist Larry Fisher worked with Dennis and several stream volunteers to analyze each barrier. One barrier was downstream from the sewer plant, five were between the sewer plant and First Ave. S., and one was just upstream of First Ave. S. On September 21 and 24 and October 2, the six upstream barriers were partly disassembled with volunteer help. (Property owner permission was not received to remove the most downstream barrier, which evidently was not significant judging by the fish passing it in the fall.) Wood from the barriers was left in the stream where it could provide shelter for juvenile fish. Throughout October, Basin Steward Dennis Clark checked the locations to make sure movement of wood/sediment had not re-established the barriers. Based on adult fish observations (see above), at least some adult coho were able to pass all of the structures as modified.

2008

Significant Storm Events/Flow Conditions

- November 12, 2008: heavy rainfall (flooding in other parts of King County)

Spills and Sedimentation/Turbidity Events

- October 20, 2008: report from George Hadley that the water in Walker Creek (as opposed to Miller and Sequoia Creeks) seemed noticeably turbid late this afternoon; it seemed significantly worse by the NP Swim Club than at SW 171st and 2nd SW; even at SW 171st and 2nd SW it seemed worse than in Miller or Sequoia; basin steward investigated on October 21 and could not identify source

Hatchery Fry Outplanting

On January 19, 2008, volunteers from Trout Unlimited outplanted coho fry at the following locations along Miller and Walker Creeks. The fry incubated from eyed eggs provided by the WDFW hatchery on Soos Creek. Eggs were delivered on December 18, 2007, to the TU hatchery on the grounds of the Southwest Suburban Sewer District Plant in Normandy Park. Eggs were incubated in well water with temperatures ranging from 52 to 56 degrees F. The fish were released when the fish had completed “buttoning up” (absorbing their yolk sacks) and were not fed during the incubation period in the hatchery. Average fry length at time of outplanting was 25 mm.

Locations and numbers outplanted were:

- Miller Creek at the Pet Lodge at S. 140th S. (14,500 fish)
- Miller Creek at S. 144th Way above the culvert (3,600)
- Miller Creek at 269 S. 163rd Place (7,300)
- Miller Creek at 801 S.W. 168th St. (7,300)
- Miller Creek adjacent to the hatchery at the sewer plant (3,600)
- Walker Creek at 4th Ave. S. and S. 171st St. (7,300)
- Walker Creek at 4th Ave. S. and S. 170th St. (7,300)
- Walker Creek at Ambaum Blvd. at S. 170th St. (7,300)
- Walker Creek at S.W 177th St. one block west of First Ave. S. (7,300)
- Walker Creek at 12th Place. S.W and S.W. 178th St.(3,600)
- Sequoia Creek (Walker Creek tributary) at S.W. 174th St. just downstream of the culvert (3,600)

Total outplants on Miller Creek were 36,300. Total outplants on Walker Creek were 36,400. Outplants on Des Moines Creek were 50,680. An additional 30,000 coho were raised at the Des Moines Marina netpen. These fish are a year old and do not come from the TU hatchery stock. They spend a few months in the saltwater net pen to imprint them to the Des Moines area, which tends to keep them from migrating to Alaska. It's thought that the mature adults use local streams for spawning.

Fish Observations: Juveniles

No methodical counting effort occurred this season.

Individual observations:

- April 14, 2008: The constructed Juvenile Salmon Rearing Pond (aka, “the beaver pond”) on the Cove property showed significant fish activity. Many coho smolts (~4” long) were observed feeding/jumping in the pond. These smolts will be leaving soon. They have spent 12-18 months in the Walker/Miller watershed. (source: Andy Batcho)

Fish Observations: Adults

No methodical counting effort occurred this season.

As of December 15, 2008, 65 adult fish had been reported to Staci McLaughlin at the Normandy Park Community Club and no further sightings were reported for the rest of the season. As of November 17, the count was 26, all believed to be coho. This is an informal counting technique that relies on interested people taking the time to report what they see. There is probably some double-counting and not all fish are observed. However, the practice of reporting fish in this manner has occurred for a number of years and it provides one indication of relative abundance.

Individual observations:

- October 7, 2008: Walker Creek between Snake Road and the Normandy Park Swim Club - coho (silver) salmon estimated at 4-5 pounds (source: Tony Cassarino)
- October 16, 2008: Miller Creek at “Fish House” just upstream of sewer plant – one (?) coho (source: Brett Fish)
- November 3, 2008: Miller Creek - three coho seen; Walker Creek - three coho seen; no signs of pre-spawn mortality (source: Andy Batcho)
- November 7, 2008: Miller Creek on SeaTac International Airport property – coho captured on video taken by Port of Seattle videographer
- November 21, 2008: Miller Creek at “Fish House” just upstream of sewer plant – two chum seen; also six coho seen

Benthic Index of Biotic Integrity (BIBI) Scores

Not yet available.

Restoration/Stewardship Work

- Reconstruction of Fox Creek (Miller Creek tributary) on the grounds of Southwest Suburban Sewer District. This was mitigation for some previous un-permitted work on the stream.
- Systematic control of weeds in the basin by the King County Noxious Weed Program. Targeted weeds were policeman’s helmet, giant hogweed, purple loosestrife, and Bohemian knotweed. This work was funded with a grant from the

Port of Seattle and, this year only, with additional grant support from the King Conservation District. Staff controlled 43,505 square feet of weeds on approximately 101 parcels. This can be further broken down into control of 85+ knotweed populations, 30 purple loosestrife populations, 45 policeman's helmet populations, and 3 giant hogweed populations.

- Stewards of the Cove: 502 hours contributed by 63 persons per Tony Cassarino; work occurred on the first Saturday of the month during March-October
- Miller/Walker Stewardship with the Basin Steward: at least 250 hours of labor at the following projects (several star volunteers worked multiple times at a given site or at multiple sites):
 - 39 volunteers at three events at the Miller Creek restoration at S. 144th Way in Burien (project begun in fall 2007)
 - 34 volunteers at four events at the Walker Preserve in Normandy Park (project begun in March 2008) focused on ivy removal and planting of conifer trees
 - 10 volunteers at one event to clean up trash from Fox Creek (tributary to Miller Creek) in Normandy Park (see detailed info below)

Other Significant Events/Activities/Observations

- Stream physical habitat survey of Miller Creek from mouth to Snake Road using U.S. Forest Service Scientific Method of Stream Survey was performed by Stewards of the Cove volunteers on August 9, 2008. Andy Batcho summarized the data on parameters including substrate type, stream-width, stream-depth, riffle to pool ratios, pool quality index, large-woody-debris, and habitat 100' on either side of the stream.
- There were several sightings of a deer in Normandy Park in the latter half of the year.
- About a ton of trash/recyclables were removed from Fox Creek below the Sylvester Bridge in Normandy Park on October 25, 2008. The haul included 13 tires, multiple computer monitors/TVs, several bicycles, assorted furniture, two car doors, a car battery, many spray cans, bottles, cans, and various other detritus. The following citizens volunteered: Andy Batcho, Councilmember Clarke Brant, Jim Burrows, Tony Cassarino, Dave Evans, Brett Fish, Chris Gower, Councilmember George Hadley, Stuart Jenner, and Colin Nardine. Washington Conservation Corps member Liz Esikoff also participated. King County Fire District 2 ([external link](#)) crew Ernie, Dave, and Jim helped out by installing ropes to the bottom of the ravine, using their winch to haul up the 13 tires, and belaying Jim Burrows so that he could safely clean a steep slope. Not all trash was removed – a pile of what could not be hauled up was created underneath the bridge and will need to be removed in 2009.
- There were several sightings and at least one photo taken of a river otter in the Juvenile Salmon Rearing Pond (aka, “the beaver pond”) at the Cove.

2007

Significant Storm Events/Flow Conditions

- January 2, 2007: high flows with instantaneous maximum stream flow of 175 cubic feet per second (cfs) at Miller Creek gage 42a at S.W. 175th Place culvert
- January 7, 2007: high flows with instantaneous maximum stream flow of about 153 cubic feet per second at Miller Creek gage 42a at S.W. 175th Place culvert
- December 3, 2007: heavy flooding with instantaneous maximum stream flow of 222 cubic feet per second at Miller Creek gage 42a at S.W. 175th Place culvert; Helen Kludt reports it is the worst in 50 years; this followed 1.37 inches of rain on December 2 and 4.14 inches of rain on December 3 (recorded at Miller Creek Regional Detention Facility at north end of SeaTac International Airport); peak flows included 68 cfs at gage 42b (MCRDF), 135 cfs at gage 42j (where Miller Creek leaves STIA), and about 220 cfs at gage 42a (the latter reading was at 2 p.m., the probable peak)

Spills and Sedimentation/Turbidity Events

- October 3, 2007: Rained hard last night and today. Walker Creek is running high, clear / tannic color. Miller Creek is running very high & muddy. Doesn't appear to be "fresh" mud, like Walker Creek on September 30, it is darker color mud. Tony Cassarino and Andy Batcho went up Miller Creek this evening to see if we could find the source of muddy/turbid water. We checked the new settling pond at 1st Ave. [in Burien], it was dark brown water not clear water. We checked Miller Creek as it crosses Ambaum...although we couldn't see to well, the water looked dirty. Then we checked upstream at the bridge that goes to the north end of the airport...water was dirty there also. Then went up to about 142nd, (old horse pasture that is now filled and a construction project), with a flashlight we could see that the stream was pretty muddy there also. We followed the stream up to Arbor Lake, there was no/little water flowing from Arbor Lake, but I'm sure the Hermes & (other) depressions were pumping lots of street runoff into the stream given all the rain today. The place to see the definite contrast in water color is at the mouth of Miller/Walker.

Hatchery Fry Outplanting

On January 20, 2007, volunteers from Trout Unlimited outplanted coho fry at the following locations along Miller and Walker Creeks. The fry incubated from eyed eggs provided by the WDFW hatchery on Soos Creek. Eggs were delivered on December 18, 2006, to the TU hatchery on the grounds of the Southwest Suburban Sewer District Plant in Normandy Park. Eggs were incubated in well water with temperatures ranging from 52 to 56 degrees F. The fish were released when the fish had completed "buttoning up" (absorbing their yolk sacks) and were not fed during the incubation period in the hatchery. Average fry length at time of outplanting was 25 mm.

Locations and numbers outplanted were:

- Miller Creek at the Pet Lodge at S. 140th S. (7,400 fish)
- Miller Creek at SR518 ramp at Des Moines Memorial Drive (3,700)
- Miller Creek at 269 S. 163rd Place (3,700)

- Elsey Creek (Miller Creek tributary) at 16444 6th Ave. S.W. (1,850)
- Miller Creek adjacent to the hatchery at the sewer plant (7,400)
- Walker Creek at 4th Ave. S. and S. 171st St. (3,700)
- Walker Creek at 4th Ave. S. and S. 170th St. (3,700)
- Walker Creek at Ambaum Blvd. at S. 170th St. (7,400)
- Walker Creek at S.W 177th St. one block west of First Ave. S. (7,400)
- Walker Creek at 12th Place. S.W and S.W. 178th St.(3,700)
- Sequoia Creek (Walker Creek tributary) at S.W. 174th St. and 12th Ave. (Pl.?) S.W. (3,700)

Total outplants on Miller Creek were 24,050. Total outplants on Walker Creek were 29,600. Outplants on Des Moines Creek were 9,250. An additional 40,000 coho were raised at the Des Moines Marina netpen. These fish are a year old and do not come from the TU hatchery stock. They spend a few months in the saltwater net pen to imprint them to the Des Moines area, which tends to keep them from migrating to Alaska. It's thought that the mature adults use local streams for spawning.

Fish Observations: Juveniles

No methodical counting effort occurred this season.

Individual observations: none recorded.

Fish Observations: Adults

No methodical counting effort occurred this season.

Individual observations:

- September 30, 2007: first coho of the year seen at the Cove
- October 3, 2007: four coho seen so far at the Cove (source: Andy Batcho)
- October 12, 2007: Miller Creek mouth at the Cove -- Tide near high and outgoing. I observed a large (possibly 50-100) school of salmon (*too dark to tell if they're Coho or Chum, but they are LARGE!*) at the mouth of Miller creek in saltwater tonite. They were jumping everywhere! Not sure if they're bound for Miller Creek or just passing by, but they seem to be hanging out at the creek mouth, so hopefully they're our fish. Also not sure if they'll come in tonight, or are just "ripening" and waiting for the next rain to move in. (source: Andy Batcho)
- October 23, 2007: Miller Creek at the sewer plant – Saw a chum carcass, and towards the lower end a coho carcass as well as a pair of live spawning coho. (source: George Ritchotte, WSDOT)
- October 25, 2007: Miller and Walker Creeks at the Cove - saw five salmon in Miller Creek this afternoon, below the confluence with Walker Creek. They were hard to spot, I heard them first. They're hanging out in the deep pools and it takes much patience to observe them swirling in & out of the pool. I think they're Coho, but the lighting wasn't the best & they didn't give me much time to identify the species. They may be Chum, but the size tells me they're Coho? I saw no salmon jumping in

the saltwater at the mouth of the stream. I did observe 3 large fish swirl & heard one other jump with a large splash in the Pond. I couldn't get a very good look at them, but these are likely salmon (source: Andy Batcho)

- November 14, 2007: Miller Creek at "Fish House" just upstream of sewer plant – Pre-heavy rain, carcasses of two fish, prespawn mortality in evidence. No discharge of eggs or milt. There was a lot of soapy foam passing over the nest-digging couples. Later in the day, I saw three pairs of spawning coho, notably sluggish in their work. (source: Brett Fish)
- November 22, 2007: 44 fish seen at the Cove so far. This is an informal counting technique that relies on interested people taking the time to report what they see. There is probably some double-counting and not all fish are observed. However, the practice of reporting fish in this manner has occurred for a number of years and it provides one indication of relative abundance.
- November 25-26, 2007: Miller Creek at "Fish House" just upstream of sewer plant – 3 dead coho, 2 females, 1 male, no evidence of having spawned, no extension of anal tube [which would indicate spawning]. One of the females measured out at 27". Also November 25, 2 live coho were seen spawning but weakly, listless, not vigorous! November 26, 2 more dead coho, male/female 22/24". I forgot to check for adipose fins. (source: Brett Fish)
- November 26, 2007: 12 salmon in Miller & Walker Creeks today; 5 Coho, all in Miller Creek throughout the length of the stream on the Cove property. All dead. 3 females, 2 males. All without adipose fins. (meaning strays, hatchery coho but not raised in TU Miller Creek hatchery...those fish are released as fry & fins are NOT clipped.) 4 to 7 lbs. One female spawned out, the rest had not spawned or had not completely spawned. 7 Chum Salmon in Miller & Walker Creeks. All alive. A pair with a female digging a redd in Miller Creek 50 feet below the Walker confluence. Three near the mouth of Miller creek working their way upstream. One in the Juvenile Salmon Rearing Pond (aka, "the beaver pond") inlet stream, 40' below the inlet from Walker creek. One in Walker creek downstream of the tennis courts, moving quickly upstream. (source: Andy Batcho)
- December 1, 2007: 104 fish seen at the Cove so far.
- December 31, 2007 (or January 2008): 168 fish seen at Cove this year.

Benthic Index of Biotic Integrity (BIBI) Scores

Not yet available.

Restoration/Stewardship Work

- Reconstruction of Miller Creek upstream by Southwest Suburban Sewer District occurred during September 2007. This was necessary to cover up four sections of the 30 inch sewer line that runs underground underneath the stream. These sections presumably had been exposed during winter storms in 2006-2007. A 72-foot long Sikorsky helicopter with a 10,000-pound lift capacity airlifted all the materials-pumps, hoses, boulders, large woody debris, rootwads, streambed gravel and anchoring components to the multiple project sites. To keep the disturbance to the

environment at a minimum, a Spyder Hoe “walked in” in to the worksite to place all the materials. A significant amount of “foreign” substrate was installed in the creek, which could have changed how the stream smells to returning fish.

- Restoration completed of 150 foot section of Walker Creek in front of the Cove building.
- Riparian vegetation restoration begins in September on 300 feet of Miller Creek at S. 144th Way in Burien. (No earth movement or in-stream work occurred.)
- Restoration (mitigation) of Miller Creek on SeaTac International Airport property completed by Port of Seattle.
- Systematic control of weeds in the basin by the King County Noxious Weed Program. Targeted weeds were policeman’s helmet, giant hogweed, purple loosestrife, and Bohemian knotweed. This work was funded with a grant from the Port of Seattle. Staff controlled 92,744 square feet of weeds on approximately 118 parcels.
- Miller/Walker Stewardship with the Basin Steward: public projects included:
 - 123 volunteers at two back-to-back events at the Miller Creek restoration at S. 144th Way in Burien

Other Significant Events/Activities/Observations

None reported.

2006

Significant Storm Events/Flow Conditions

- January 10, 2006: high flows with instantaneous maximum stream flow of about 202 cubic feet per second at Miller Creek gage 42a at S.W. 175th Place culvert
- January 30, 2006: high flows with instantaneous maximum stream flow of about 206 cubic feet per second at Miller Creek gage 42a at S.W. 175th Place culvert
- November 6, 2006: high flows with instantaneous maximum stream flow of about 232 cubic feet per second at Miller Creek gage 42a at S.W. 175th Place culvert
- December 27, 2006: high flows with instantaneous maximum stream flow of about 175 cubic feet per second at Miller Creek gage 42a at S.W. 175th Place culvert

- 2006? Or 2007? Sea-Tac Airport experiences a detention pond failure, sending 1 million gallons of muddy water down Walker Creek.

Hatchery Fry Outplanting

Total outplants on Miller Creek were 40,385. Total outplants on Walker Creek were 34,600. Outplants on Des Moines Creek were 23,200. An additional 30,000 coho were raised at the Des Moines Marina netpen. These fish are a year old and do not come from the TU hatchery stock. They spend a few months in the saltwater net pen to imprint them to the Des Moines area, which tends to keep them from migrating to Alaska. It's thought that the mature adults use local streams for spawning.

Fish Observations: Adults

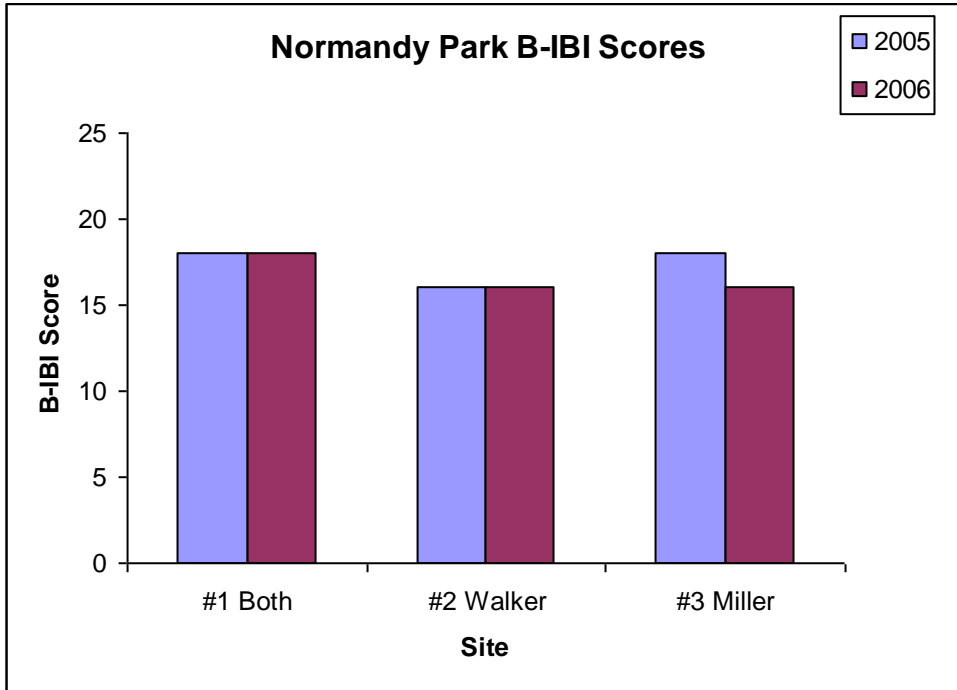
Individual observations:

- Oct. 15, 2006 First two Coho seen at the Cove. Muramatsu
- Oct. 17, 2006 Pre-Spawn mortality noted. Hadley
- Nov. 20, 2006, salmon seen north of 160th on Port property –Robin Kordik

Benthic Index of Biotic Integrity (BIBI) Scores

- Nov. 21, 2006 Miller/Walker BIBI scores 16-18. These scores indicate “severely impacted” insect (macroinvertebrate) populations that are common in urbanized streams.

SITE	BIBI SCORE	
	2005	2006
#1 Both	18	18
#2 Walker – Normandy Park Swim Club	16	16
#3 Miller – 13 th Ave. S.W. culvert	18	16



Restoration/Stewardship Work

- Systematic control of weeds in the basin by the King County Noxious Weed Program. Targeted weeds were policeman’s helmet, giant hogweed, purple loosestrife, and Bohemian knotweed. This work was funded with a grant from the Port of Seattle. Staff controlled 54,475 square feet of weeds on approximately 98 parcels.

Other Significant Events/Activities/Observations

None reported.

2005

- **Fish Plants: 2005--Miller-44200--Walker-27200--Des Moines-23800--Netpen-20000**
- **Nov. 2, 2005** Visited the site of the fish migration blockage on the Kiwanis property (behind Sylvester School). BIG log across stream with plunge onto rocks. It's been removed. Saw Coho pair spawning above the old blockage area. Batcho
- **Nov. 2** Coho returning thru new Juvenile Salmon Rearing Pond (aka, "the beaver pond") at the Cove. Many seen today. Batcho
- **Nov. 17, 2005**, 5 Coho carcasses, 2 live seen between 8th & 160th, Port property. 14 redds seen. Bob Wright DOE.
- **2005** Tony Cassarino starts "Stewards of the Cove" to implement & maintain stream restoration projects.
- **Nov. 21-30** 18 salmon seen at Cove. Muramatsu
- **Nov. 22** Fish count at Cove was 129
- **Nov. 23** Two large Chum at Fish house. Fish
- **Nov. 23** Miller Creek spikes from 2 cfs to 12 cfs per County gages at Kludt's. Small spike at Lk. Reba station, big spike at gage at Helen Kludt's house. ¼" of rain in 24hrs. Dirty Water. Dan Smith
- **Nov. 26, 2005** Two Chum at Fish house. Fish
- **Nov. 30, 2005** Five Chum spawning at the Cove/Miller Creek. Batcho
- **Dec. 1** Port Environmental staff tours Cove stream projects.
- **Dec. 8, 2005** Sudden (5-min), 2" rise of muddy water in Miller Creek on a clear (no rain) day, turbidity 5-10 ntu's. Fish
- **Dec. 23, 2005** Flooding in Miller Creek. Fish [Basin Steward note: King County gage 42a shows instantaneous maximum of 140 cubic feet per second on Miller Creek on December 24]

Date	# of fish	Total Fish	
10/2/05	1	1	
10/12/05	2	3	
10/13/05	1	4	
10/14/05	2	6	
10/15/05	4	10	
10/16/05	4	14	
10/17/05	3	17	
10/18/05	5	22	
10/19/05	1	23	
10/20/05	0	23	no reports today
10/21/05	0	23	no reports today
10/22/05	0	23	no reports today
10/23/05	0	23	no reports today
10/24/05	4	27	
10/25/05	7	34	
10/26/05	12	46	
10/27/05	3	49	
10/28/05	20	69	adjustment to meet Cove count.
10/29/05	1	70	
10/30/05	8	78	
10/31/05	6	84	
11/1/05	3	87	
11/2/05	6	93	

11/3/05	0	93
11/4/05	0	93
11/5/05	0	93
11/6/05	0	93
11/7/05	6	99
11/8/05	0	99
11/9/05	0	99
11/10/05	4	103
11/11/05	0	103
11/12/05	0	103
11/13/05	6	109
11/14/05	0	109
11/15/05	3	112
11/16/05	0	112
11/17/05	5	117
11/18/05	0	117
11/19/05	6	123
11/20/05	0	123
11/21/05	6	129
11/22/05	0	129
11/23/05	4	133
11/24/05	0	133
11/25/05	0	133
11/26/05	6	139
11/27/05	0	139
11/28/05	4	143
11/29/05	0	143
11/30/05	5	148
12/1/05	0	148
12/2/05	0	148
12/3/05	5	153
12/4/05	0	153
12/5/05	4	157
12/6/05	0	157
12/7/05	2	159
12/8/05	3	162
12/9/05	1	163
12/10/05	3	166
12/11/05	3	169

I left for Indiana here and didn't get any more data. (No data collected/recorded after this date.)

12/12/05	0	169
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Source: Andy Batcho (11/20/08 e-mail to Dennis Clark)

- **Total Fish count at Cove was 169 this year as of 12/11...likely ~200 by year end.**
- See also page 25 in the “2005 Volunteer Salmon Watcher Program - Lake Washington Watershed, Puget Sound WRIA 8 Streams, and Vashon Island” by King County (<http://www.kingcounty.gov/environment/animalsAndPlants/salmon-and-trout/salmon-watchers/reports/2005.aspx>)

- December 2005 – City of Burien purchases the 21.06 acres of the Walker Creek headwaters between Des Moines Memorial Drive and SR 509 for \$425,000; part of funding paid for through King Conservation District grant

2004

- **Fish Plants: 2004--Miller-39600--Walker-36300--Des Moines-29700--Netpen-30000**
- **Summer June 2004, Cove wetlands rebuilt**
- **Summer 2004, June 13, 2004 Pond seined to start new Juvenile Salmon Rearing Pond (aka, “the beaver pond”) project. Digging started Aug. 16th. 1200 cu. yds. removed (100 dump truck loads) Aug. 20, 2002, digging complete, logs installed, refilling new beaver pond with water. New Cove Juvenile Salmon Rearing Pond ready.**
- **Aug. 4, 2004 B. Fish notes huge muddy flow in Miller Cr. Upon researching finds Water Dist. 49 & DOT pumping muddy water into a storm drain at 8 Pl. S.W. while doing road work. Water muddy out into Puget Sound...subsided at 5PM. Photos taken.**
- **Oct. 9 First Coho seen in Walker & Miller Creeks. Batcho/Evans**
- **Nov. 6, 2004 Saturday, 3 Coho in Miller Creek near the mouth. Batcho**
- **November 07, 2004 7 Coho in Miller Creek (from the new Scout Bridge to just below Helen’s place), 6 Coho in Walker Creek (in the Swim Club property & the pool just below 12th Ave.), Salmon spawning below the confluence of Miller/Walker & in the Swim Club property today. Batcho**
- **Dec 20, 2004 Log jam blocking 1st Ave. culvert is gone by now per email memo.**
- See also page 27 in the “2004 Volunteer Salmon Watcher Program - Lake Washington Watershed, Puget Sound WRIA 8 Streams, and Vashon Island” by King County (<http://www.kingcounty.gov/environment/animalsAndPlants/salmon-and-trout/salmon-watchers/reports/2004.aspx>)

2003

- **Fish Plants: 2003--Miller-40000--Walker-40000--Des Moines-40000--Netpen-30000---(this is a guess because records are gone)**
- **Feb 6, 2003** Seattle P-I article “**Our Troubled Sound: Spawning coho are dying early in restored creeks**” about pre-spawn mortality & street run off.
- **May 2003:** Washington Trout (now Wild Fish Conservancy) surveys Miller and Walker Creeks for fish presence and to record habitat conditions; data available at: <http://www.washingtontrout.org/kcpuget/index.shtml>
- **May 23, 2003** Brett Fish reports seeing “white stuff” on rocks in Miller Creek. Thinks it’s hydroseed fertilizer. Pictures, samples taken & report from DOE. Sent by Fish.
- **Oct. 8, 2003 First Coho seen.** October 8, 2003, Wednesday, it rained hard, Miller Creek was pure mud during the day but by 5:55 P.M. it settled down a little to just turbid with less than 2" of visibility. Taking a temperature measurement of 59.0 F degrees suddenly a 16" salmon darted away from the walk bridge at the Cove. There is more heated water in Miller Creek from paved surfaces

and butchered canopy upstream. Walker Creek was silty, a little bit turbid and cooler at 56.9 F degrees. Fish

- **October 20, 2003: high flows with instantaneous maximum stream flow of about 296 cubic feet per second at Miller Creek gage 42a at S.W. 175th Place culvert (about 5 inches of rain fell this day)**
- **November 18, 2003: high flows with instantaneous maximum stream flow of about 250 cubic feet per second (cfs) at Miller Creek gage 42a at S.W. 175th Place culvert**
- **Nov. 24, 2003 7 redds seen at Kludt house bridge. Fish**
- **Nov.25, 2003 3 Chum seen spawning at Fish House, videoed. Fish**
- **Nov. 30, 2003 Repair work done on Walker Cr. / 1st Ave. Culvert after serious earthquake damage was discovered. Rep. Shay Burke newsletter.**
- See also page 25 in the “2003 Volunteer Salmon Watcher Program - Lake Washington Watershed and Vashon Island” by King County
(<http://www.kingcounty.gov/environment/animalsAndPlants/salmon-and-trout/salmon-watchers/reports/2003.aspx>)
- **Work on Walker Creek / 1st Ave. culvert????**

2002

- **Fish Plants: 2002--Miller-45500--Walker-45500--Des Moines-21000--Netpen-30000**
- **Jan. 2002 TU hatchery changes from planting fed fry to non-fed fry...first year...so as not to compete (size wise) with naturally spawning fry. More fry are planted way upstream to avoid natural fry production lower in the stream. 140,000 non-fed fry were planted in Miller/Walker/Des Moines Creeks in Jan/Feb. 2002. Of those planted in Miller Cr. 50% were planted above 1st Ave.; 50% below 1st Ave. In previous years, fed fry were planted previously in stages, plant some, fed the rest, plant some, feed the rest, etc. This strategy protected the fish from disasters in the stream or hatchery. Largest fry were fed to ~1-1/2” size in the past. Info from Feb. 2002 TU newsletter.**
- **Jan 18, 2002 Story about Miller Creek / 1st Ave culvert being perched by 4’ in the early days and WDFW finding Cutthroat in Tub Lake & upper Miller Creek.**
- **Oct. 4, 2002 First Coho seen in Miller Cr. Dead, adipose fin clipped, 20” female. Did not spawn.**
- **Nov. 12, 2002 Fish videos four Coho spawning at Cove. Fish**
- **Nov. 12, 2 dead adipose fin clipped Coho females seen at Kludt house. Both died w/o spawning. Fish**
- **Nov. 12, 4 dead Coho, adipose fin clipped, biggest 28”, eaten by otters/racoons. Did not spawn. Several more Coho upstream acting sluggish. Suds in stream. Fish**

2001

- **Fish Plants: 2001--Miller-35800--Walker-33950--Des Moines-18375--Netpen-30000**
- **March 2001 Brett Fish reports “white stuff” coating the rocks in Miller Creek. Cat-flock from the Port? Pictures taken, research done, many emails on the subject.**
- **April 13/14, 2001 Hundreds of juvenile fish killed at Fish house. Ph high. B. Fish videoed.**
- **Oct. 29, 2001 Brett Fish videos otters and eagles feeding on Coho in Miller Creek. Coho showing signs of pre-spawn mortality.**

- Nov. 25, 2001 2 Chum seen at Cove. Hadley
- **It appears that Chum runs may now self-sustaining since last hatchery plants were in 1993/94 season.**
- Dec. 2001 Des Moines TU chapter hatchery receives 140,000 Coho eggs. Fish will not be fed this time, the first time. Eggs hatch and non-fed fry are planted.

2000

- **Fish Plants:** 2000--Miller-45000--Walker-35000--Des Moines-15000--Netpen-30000
- **Sept. 2, 2000. Seattle P-I article:** Low levels of pesticides can disrupt the ability of salmon to smell, potentially diminishing their survival, new research from scientists at the National Marine Fisheries Service indicates.
- **Nov. 2, 2000** I spent a better part of the day at the SWSSD filming spawning activity and even got a milt release on film!!!! No migrations, just spawning, about 6 couples total in that area, some very active such as the couple I filmed all afternoon and others pretty lack luster. Brett
- *Dan Bath from the City of Burien wrote the following e-mail, probably November 2, 2000:*
 Yes, I can fill in some of the holes. Hermes Pond and the pond at S 132nd (on 4th S) are pumped out and through an area adjacent to Kennedy High. From there, flows combine and are piped to an undeveloped area on the NE corner of SW 136th and Des Moines Memorial Dr., then through the City of Seatac to Miller Creek. Both Hermes and the 132nd ponds use infiltration as well as pumping to provide storm water flood control. I'm not aware of any sampling that has been done at the outlets. The water from the 142nd St. Depression is pumped (as capacity allows) by the SW Suburban Sewer Utility folks to their facility at the mouth of Salmon Creek where it is treated. Most runoff, however is infiltrated at the depression itself. The system is currently being upgraded. As for catch basin cleaning; there are "critical drainage areas" that have their catch basins cleaned once or twice a year. The rest are cleaned less frequently due to the large numbers that are involved. The goal is all cleaned during a three year period. The catch basin inserts mentioned (for silt and oil removal) were discussed, but the decision to use them is on hold pending a look at maintenance required and best locations. Hope this helps a little.
 > -----Original Message-----
 From: Brett Fish [SMTP:bzdiving@yahoo.com]
 Sent: Wednesday, November 01, 2000 10:53 PM
 To: Dean Tatham; Dan Bath
 Subject: Re: Catch Basin Cleaning
 Hi Dan and Dean,
 Excellent questions posed by Andy Batcho here, can you shed any light on this and copy us in on what you might know? The fish are running, some are living to spawn this year, and then some are getting a bad case of pre-spawn mortality again. Every little bit helps.! You may have heard that Des Moines Marina had 23 Drain Mates installed, those sediment and petroleum filters in the storm drains. Charles Martin

organized it with Planet CPR. I'd sure like to see Burien get the local kids involved, raise the awareness and actually make a dent in these issues. Thank you, Brett Fish-Hammered Miller Creek

- **Oct 2000** TU Chapter spearheads installation of “grate mates” on all DM Marina storm drains.
- **Nov. 5, 2000** Good returns of Coho salmon are evident in Miller Creek this year, **maybe a record** for **recent** times. That's the good news, the **bad news** is PRE-SPAWN MORTALITY rates are very high. Brett Fish report.
- **Nov. 2000 Adult fish kills (pre-spawn mortality?) at Fish house Miller Creek. Tom Cropp observed, B. Fish filmed.**
- **Nov. 30, 2000 Des Moines Creek report by Brett Fish**
- **The “Fish” Report-Des Moines Creek:** by Brett Fish
- [November 30, 2000-](#)
- A third large migration run began November 28th... additional information:
- After a tenth inch rain on 11/29 and reports of chocolate brown water in Des Moines Creek a fish inventory was done Nov. 30. The dissolved oxygen was reported to be 10.5, pH at 7.5, temps at 7.7-8.1C, 45.9-46.4F. The visibility was good to about 5”.
- From the tide/bridge to the culvert 64 dead coho salmon were seen. All were hatchery fish with the adipose fin clipped. The mix was fairly even between males and females. A second salmon watcher reported counting 60 dead fish.
- The sizes ranged mostly from 20-30 inches with one each 14” and 31” males.
- About 50-60% of the dead fish had spawned to varying degrees estimated from 10% to 80%. None of the salmon lived long enough to grow the customary white fungus that comes after spawning. Approximately 55 of the 64 dead fish still had red gills and 45 were in “ocean fresh” condition, 19 were more than 24 hours dead, probably normal dieoffs. They appeared to have spawned to some degree as well and also lacked the customary white fungus.
- It is this observer’s opinion that there have been very good returns of coho this year but that there are **still obvious water quality problems causing pre-mature deaths of the fish.**
- Seven live fish were seen at the culvert, six were coho, one was chum about 27 inches. Three more live coho, one female, two males, were seen spawning. The two males were fighting and biting, this up stream of the Senior Center. Two more coho were seen spawning under the walk bridge furthest upstream, totaling twelve healthy live fish.
- Three large males included in the 64 dead were 29-31 inches and were crimson to bright red. One of these males was filmed in its final moments of life. It appeared to have partially spawned, its belly was still partially enlarged.
- The usual receptors were present including ducks, seagulls, blue heron, and crows.
- The usual foam and suds on Des Moines Creek were absent.
- **Oct 4, 2000 30,000 Chinook smolts delivered to DM marina net pen project.**
- **Oct. 2000 From TU newsletter: A large run of salmon in Miller Creek, observers set up the video camera, more than 90 salmon seen in one day.**
- **Nov. 2000 From TU newsletter: Another large run of salmon: Observers see & video record 90 salmon in Miller Creek in 3-hours!**
- **Cove Security Guard (John Jennings) who’s camper is located behind the Cove building; says the number of salmon he sees returning during the day is only surpassed by the numbers of fish he hears splashing during the night.....so many that they keep him awake!**
- **Fish counts over 400.**

1999

- Oct. 5, 1999 30,000 Chinook smolts arrive at the Des Moines TU net pen in the Des Moines marina. They will be fed twice a day.
- Jan. 3, 1999 30,000 Chinook released from DM net pen project.
- April 21, 1999 Another distribution of fed fry from hatchery to Walker, Miller, Des Moines, McSorley, & Barnes Creeks.
- May 8, 1999 20,000 Coho fed fry brought to NP Cove for kids to plant in Miller/Walker creeks.
- Dec. 31, 1999 230,000 coho eggs delivered to SWSSD hatchery.

1998

- Jan. 2, 1998 230,000 Coho eggs delivered to T.U / SWSSD hatchery. 300 eggs to Olympic Elementary school refrigerated aquarium.
- 1998 TU “Salmon in the Classroom” refrigerated aquarium in 6th grade classroom project is expanded from one school to four schools.
- May 26, 1998 Des Moines & Madrona Elementary students release their classroom raised Coho (~600) in Des Moines Creek at 200th.
- 1998 Andy Batcho working with Scout on Eagle project involving in-stream structures & native plantings. Mark Story makes Eagle rank based on the project.
- Feb. 1998 WDFW does not have Coho available this year for the DM marina net pen project. None raised this year.
- Oct. 6, 1998 30,000 Chinook smolts delivered to DM marina net pen from Soos Creek hatchery.
- Nov 1, 1998 Batcho sees 8 live Coho & 2 dead Coho in Miller Creek. Two dead fish are adipose fin clipped (strays from another hatchery). He notes that there appears to be two distinct runs of salmon coming back to the creeks. A run of small Coho (2-4lbs.) that come in Oct., these fish show much tendency for per-spawn mortality. A second run of fish in late Nov/early Dec. that are larger (8-12 lbs.) that do not show pre-spawn mortality issues.
- 1998 Based on Wa. Fish & Wildlife input and US/Canada Treaty agreements; Gov. Locke & Canada agree to cut Coho & Chinook fisheries drastically to help restore Puget Sound & Thompson river depleted stocks.

1997

- March 9 1997 TU members walk Miller Cr. from SWSSD to 1st Ave. Salmon migration barrier noted on Kiwanis property. Large log across stream with plunge pouring onto large rocks. From April TU newsletter.
- March 12, 1997. New Des Moines Red Robin donates first days proceeds (\$5600) to DM TU. Dr. John Muramatsu Chapter President plans to use the money to buy refrigerated aquariums for local schools. The “Salmon in the Classroom” program begins. 6th graders raise salmon from eggs, then plant them in local streams.
- April 1997 TU members plant 7-coolers of Coho fed fry (~5000) in Miller Creek. 2 coolers full at the Arbor Lake outfall...the headwaters of Miller Creek. From notes in April '97 TU newsletter.
- June 1997 Most of the 140,000 Coho fed fry have been released into Miller/Walker/Des Moines Creeks from the TU hatchery.
- June 1997 30,000 Coho smolts will be released soon from the Des Moines marina net pen project.
- Oct. 21, 1997 30,000 Chinook smolts in marina net pen. First year that smolts are wire tagged.

- Nov. 1997 TU members plant native plants along upper Des Moines Creek on golf course property.

1996

- Fall 1996 Des Moines Trout Unlimited receives ~10,000 Chum eggs from Soos Creek hatchery to raise / plant from their SWSSD hatchery. Approx. 100,000 Coho are also raised and released as fed fry.
- Feb. 24, 1996 ~19,000 chinook released from DM marina net pen. Chinook were delivered from Marblemount hatchery at 1095 pounds. At 17 to the pound it came out to 18,621 fish. Started feeding 10# of food twice a day. (quickly to 14# / feeding) Low losses, 246 fish, less than 1%. Used 1950 lbs of feed. Fish started at .94 oz. ea; were 4.63 oz. ea. upon release. Total of 5,038 lbs. of fish (18,329) released. Otters in net pen problem has been solved several years back by screening net pen.
- April 9, 1996 20,000 coho delivered to marina net pen. 19 to the pound, 1052 pounds delivered.
- April 1996 TU mentors scout Kevin Washburn as he installs logs & native plantings; in April he receives his Eagle badge.
- 1996 Des Moines Creek Basin committee formed. David Masters from King. Co. John Muramatsu.
- July 13, 1996 DM TU works in-stream projects (12 logs installed) in Miller Cr at the Cove. Phil Schneider (WDFW) reviewed the projects and pronounced them as GREAT! A 13# Atlantic Salmon (an escapee from a commercial net pen failure) was spotted in the stream and removed.
- July 13, 1996 After the Cove project above, TU members worked on Carl Hansen's property installing logs, planting native plants. TU did the design, got the permits, and a \$17,000 grant to repair this section of stream that was washing soil out of Carl's yard and threatening the neighbors (Hall) house foundation. Dan Sullivan now owns the house.
- July 19th 1996, Eagle Scout candidate Micah Benson completed his in-stream project work for his Eagle badge.
- 1996 "Scouts & Trouts" This year DM TU worked with Boy, Girl & Cub Scouts. Troop 50 & 1660 cleared brush and built a native plant nursery for the Girl Scouts; Troops 1660 & 1482 took native plant cuttings and planted them in the nursery; "Sign of the Sun" Award for 11-year old Beth Peter for trail building to protect the stream bank; Troop 62 (9 year old girl scouts) rerouted 25' of trail along Miller creek to prevent erosion; "Silver Award" for 8th grade Jenny Wilson "highest award for Junior Cadette Scouts" for stream bank re-vegetation along Miller creek; World Conservation Badge for Peter Miller, age 8, for relocating 25' of trail away from Miller Creek and planting new native plants; Community Service Project for Cub Scout pack 36 for cleaning hatchery trays and planting fish; Kevin Washburn, Andy Guant & Micah Benson all made Eagle Rank for their stream projects. A great year of TU mentoring with the Scouts!

1995

- Sept. 1995 Chapter works with Girl Scouts to build a native plant nursery at the Cove that stocked with clippings.
- **Fall 1995 Excellent fish returns to Miller Creek this year. Totals:
245**
- Many redds seen.

1994

- Jan 18, 1994 TU/SWSSD hatchery receives 230,000 Coho eggs and 40,000 Chum eggs from Soos Creek hatchery. Chums are beginning to hatch a few days later. Planted into Miller/Walker/Des Moines Creeks. From hatchery feeding/planting records. Hatchery fungus issue kills many eggs, nearly half.
- Jan. 1994 Betsy Castle, King Co. Surface Water Management meets with TU team to teach us about invasive species and native plant re-vegetation techniques.
- Jan. 29th, 1994, chapter releases 30,000 chinook at 8 fish / pound at net pen.
- 1994 Chapter works with it's first Eagle Scout candidate, Rick Madsen, who will do native plant restoration on Miller Creek.
- Summer 1994. Members of the Des Moines Chapter of Trout Unlimited perform the U.S. Forest Service Scientific Method of Stream Survey, Fish/Habitat relationships on the entire length (~5-miles) of Miller Creek, saltwater to headwater (Kennedy High School) under the tutelage of Bob Furstenberg, King Co. The survey took 6-months of Saturday mornings. Thousands of data points were recorded and are available from Andy Batcho or Dennis Clark (King Co.)
- Summer 1994 A beaver dam is found on Miller Creek just above Ambaum Blvd. Great salmon rearing habitat being provided by the beaver.
- No Chum raised fall of this year....**1993/94 last year for Chum at the hatchery.**
- May 1994 DM Chapter submits Andy Batcho stream restoration plans for WDFW permits. 2000' of Miller creek in-stream and native plant designs. State Wildlife Biologist reviewed the plans and site saying; "These are about he BEST plans we've ever received!" State was interested in videoing the designs and project implementation as a "best practice" to show to others interested in restoration. Shawn McEvoy, NP Community Club spoke to a joint meeting of the Burien / NP City Councils about our project. It was well received.
- June 4th, 1994, chapter releases 30,000 coho at net pen, 10 fish / pound.
- July 1994 Stream Restoration permits received from WDFW for 5-years. Jim Frazier WDFW supported and said the plans were excellent.
- July 6, 13, 20, 27, 1994 Chapter "Weed out" projects along Miller Creek.
- July 1994 TU chapter members volunteer at Saltwater park, we move 20 Tons of gravel in wheelbarrows to make new trails.
- Nov. 13, 1994 50 fish sighted so far. One noted within a mile of 1st Ave. So.
- **1994 Fish Counts Miller Creek. Totals 114**
- Sept. 1994 TU meets with Joe Dusenberry Harbor Master. He ok's more space for our net pen. We increase net pen size by 40%.
- Fall 1994, net pen receives 30,000 coho at 22 fish / pound.
- Fall 1994 DOE contacts Andy Batcho in the early AM. Fuel spill in Miller Creek. They need help finding access to set oil booms. The spill was from a residents' above ground heating oil tank. A fitting cracked leaking ~100 gallons of heating oil into the stream.
- Fall 1994 Upon checking, Beaver in Miller Creek above Ambaum is gone. Fuel spill ran him out.
- Sept. 3, 1994 Newspaper article by Carol Chang; TU members do first in-stream work on Miller Creek.

- 1994 TU chapter appeals decision by Burien city council to not require an environmental impact statement for the proposed construction of a bridge across a Miller Cr. tributary near Camp Schoenwalk, Kiwanis Camp.

1993

- Feb. 20, 1993 Al Miller contacts Bob Fuerstenberg at King County and he will be giving us a seminar on stream restoration at the Kiwanis Camp Hall on Miller creek.
- Aug. 1993 Wayne Lewis, NOAA fish cop tells us the Navy can now ID and stop pirate high seas drift net boats netting salmon in the north pacific.
- Winter 1993 30,000 Chum eggs to TU/SWSSD hatchery. Released in Walker/Miller/Des Moines Creeks when hatched. From Hatchery feeding/planting records.
- 1993 First Miller Creek “Fish Watch” by TU. First salmon seen Nov. 6, 1993. Last fish seen Jan. 1, 1994. No fish seen above 1st Ave. Steady stream of fish thru Nov. & Dec. Dick Thomas Productions videoed them. 87 total fish seen, mostly Coho.
- Log jam in 1st Ave. So. culvert, Miller Creek, still exists at this point.
- Trout Unlimited applies U.S. Forest Service method of stream survey to Miller Creek from the mouth some 24,000' (~5 miles) to the headwater of Miller Creek behind John F. Kennedy High School in north Burien. Parameters measured include width, depth, substrate, wood, etc.
- **1993 Fish counts in Miller creek. Totals 91 fish.**

1992

- No records found, but hatchery & net pen projects continue planting fish.
- Oct. 8, 1992 40,000 chinook arrive at DM marina net pen.
- Sept. 1992 Excellent Coho fishing season this year in central Puget Sound.
- 1992 Members strategized a “Community Plan” with other Des Moines Chapter leaders (Al Miller) on how to “help” communities restore their streams. Discovered & acted on “road-blocks”. 1. Plans/Designs for restoration. 2. Filling out & obtaining Permits. 3. Writing Grant Applications & obtaining Funding. 4. Ultimately involving the Community in restoring their own streams.
- Our Chapter of Trout Unlimited decided early on that we could best serve our Community by helping them overcome roadblocks by becoming subject-matter-experts to empower the Community to take ownership of their environment.
- 1992 Des Moines TU Chapter members seek Subject-Matter-Experts from Wa. Dept. of Fish & Game, King County, University of Washington, to learn stream restoration, including: U.S. Forest Service Scientific Method of Stream Survey, Native Plant Re-vegetation, In-Stream Structure Design, & Scale Sample Analysis.

1991

- No records found, but hatchery & net pen projects continue planting fish.
- Dec. 1991 King Co. Council expands SWM services to include comprehensive plans for 37 watersheds, complete \$94M in capital projects, ID & solve neighborhood flooding problems, develop & enforce regulations to prevent flooding, pollution & erosion problems, protect and improve wetlands, streams & water quality.

1990

- Dec. 1, 1990 18,000 Chinook placed in DM marina net pen.
- Dec. 23, 1990 230,000 Coho eggs to SWSSD/TU hatchery.

1989

- No records found, but hatchery & net pen projects continue planting fish.

1988

- No records found, but hatchery & net pen projects continue planting fish.

1987

- Jan. 28, 1987 DM Chapter wins TU Conservation award and a \$1,371 grant from the Burlington Northern Foundation to build a new hatchery building at the SWSSD property. The district is planning secondary treatment expansion and the new hatchery is included in the plans. Federal reviews and grant money sources are impressed that the District will be “the first to raise salmon in a sewer treatment plant” and heartily approve the expansion plans. Contractor donates the slab, power & water lines; TU members build the new hatchery building & outfit it with hatchery equipment in two weekends. Source: Highline Times-News article.
- March 11, 1987 30,000 coho smolts delivered to marina net pen project. Severe otter problems, getting in net pen eating the salmon. Fixes being discussed.
- April 1987 Coho fry have been planted from chapter stream side hatchery boxes. 75,000 to Miller Creek, 25,000 to Des Moines Creek.
- Summer 1987 Chapter plans to build new permanent hatchery on SWSSD. Contractor pours pad, runs water & electric lines.
- Sept. 1987 Excellent coho salmon fishing in central Puget Sound this year.
- 1987 King Co. Council forms Surface Water Management (SWM) program to address flooding, erosion, and polluted storm water.
- Nov. 4, 1987 “County will fix urban streams” Dave Clark, King Co. SWM. Studies have been done on Hylebos, Des Moines & Miller Creeks. Miller Creek has serious water quality issues. County plans 14 projects of retention/detention and improved Arbor lake outlet at a cost of \$2.034M. Source: Highline Times article by Randy Black.

1986

- Jan. 15, 1986 Craig Baker (DOE) finished and submitted his report on the Olympic Pipeline jet fuel spill into Des Moines Creek. \$15,000 penalty assessed.
- February 2, 1986 From TU newsletter: Des Moines TU is feeding / releasing 30,000 Coho & 30,000 Chinook from the Des Moines Marina net pen. 150,000 Coho eggs are received & being raised /released from 2 TU stream side hatchery boxes in SWSSD. A new permanent hatchery is being discussed.
- In previous years, WDFW would plant Coho fed fry into Miller Creek at the 160th bridge. A tanker truck would pull up and dump the fry. The TU hatchery took over from that operation.
- March 1, 1986 Batcho & TU team including Alan Johnson from KC Metro & past WDF biologist hike Des Moines Creek after the Nov. 28, 1985 jet fuel spill. Two Cutthroat seen.

Moss & bug populations low, but some signs of life evident. Oily rainbows emanating from stirring mud were declining. 4" to 5" rainfall last month likely helped the situation.

- April 6, 1986 5,000 gallon jet fuel spill from Sea-Tac airport into Des Moines Creek. Bolts on a pipeline filter broke spewing fuel over the fence and into a storm drain. TU had just planted 5,000 Coho in DM creek to see how they would do after the Nov. '85 fuel spill. They seemed to be doing fine...all are dead now.
- 1986 DM Chapter members featured in a Robinson Newspaper Editorial Cartoon titled "Against All Odds!" by David Kelliher depicting a wall of pollutants from Sea-Tac Airport cresting over three Trout Unlimited members and their Des Moines Creek restoration project after a jet fuel spill in the creek.
- June 6, 1986 TU releases 30,000 Coho from net pen at DM marina.

1985

- Feb13, 1985 After 600 man hours over two-years working to find a site & making preparations, DM TU builds two stream side hatchery boxes w/ large water filtration box along Miller Creek on SWSSD property. 150,000 Coho eggs are provided by Soos Creek hatchery. Project manager, Dean Morris & Sewer District Commissioner Burt Larson helps put the first eggs into the hatchery boxes. Project wins WA. TU's "Silver Trout" award for best project of the year. Source: Highline Times, Feb.13,1985 by Chuck Mingori.
- Feb. 1985 Hatchery project manager, Dean Morris notes the smell of "fuel" in hatchery boxes. Sea-Tac airport discovers runway runoff pipes "crossed" and fixes the problem.
- April 1985 DM Chapter works with State TU & Jerry Pavletich on U.S. Canada Treaty. Jerry is the only sport fishing rep that testifies and is on the committee.
- July 1985 DM Chapter plants 50,000 Coho fry in each Miller & Des Moines creeks.
- Aug. 1985 Scout Ryan Jordan receives Eagle rank working on a TU mentored project to remove a fish barrier log jam on Miller Creek at the Kiwanis property.
- 1985 Vashon Island residents oppose 10,000 Atlantic salmon commercial net pens in Fern Inlet. Mark Holland, a geoduck harvester wants to build the first commercial net pen in Puget Sound.
- Sept. 1985 Des Moines TU members do a cleanup on DM Creek. Using two vehicles with winches; 7 extremely full truckloads area removed from ~1-mile of the stream above the sewer plant including; 36 tires, 3 hot water heaters, 2 refrigerators, 2 barbeques, 1-25" television, a roll of brown carpeting, a huge amount of plywood & plaster board, an automatic washing machine, bicycles, motorcycles, bed springs, sheet plastic, a barrel stove, a cable reel, bags of garbage, hundreds of beer cans and a complete truck load of 25 bags filled with asbestos. Source: Highline Times article.
- Oct. 9, 1985 30,000 Chinook arrive at DM marina net pen project. Twice daily feedings for 3-4 months.
- Nov. 28, 1985 34,000 gallons of jet fuel spill down DesMoines Creek due to rusted emergency shutoff valve failure in a storm drain at Olympic Tank farm at Sea-Tac airport. Electronic sensors sensed the spill, but couldn't active the rusted shut off valve. 50,000 Coho had just been planted in the stream, all were dead. A similar spill event occurred in 1973. Source: Highline Times

1984

- Southwest Suburban Sewer District Commissioner, Burt Lysen approves a TU salmon hatchery box installation at the SWSSD plant on Miller Creek.
- Feb. 1984 25,000 Chinook being reared in DM marina net pen.

- April 9, 1984, 30,000 Coho arrive at DM marina net pen.
- Aug. 1984 Commissioners of SWSSD invited DM TU member Dean Morris to be on Citizens Advisory Board to provide input on planned secondary treatment expansion of sewer plant.
- May 23, 1984 Governor John Spellman proclaims June 11 thru 17 “Trout Unlimited Week”!
- Oct. 20, 1984 8 Coho salmon seen spawning in Miller Creek above SWSSD property. Salmon also seen in DM Creek.
- Oct. 24, 1984 Des Moines chapter awarded \$3,000 from Shuck’s Million Dollar Salmon Derby. Chapter will use the funds to repair DM marina net pen & buy fish food. Chapter has planted ~225,000 fish in the Des Moines area, first returns seen in 1983. Source: Highline Times; Oct. 24, ’84 by Dick Benbow.
- Nov.15, 1984 21,000 Chinook arrive at DM marina net pen.
- Dec. 1984 DM TU Chapter begins regular meetings with the Muckleshoot Tribe targeting issues of hatchery fish, enhancement programs and habitat protection & improvement. Source: Chapter newsletter.
- Dec. 1984 Swarms of Coho salmon return to DM marina, local anglers catching them from DM fishing pier. Source: Fishing & Hunting News Dec. ‘84

1983

- March 3, 1983 Chapter Pres. Andy Batcho leads a team of members on a survey of Des Moines Creek. Just above DM Memorial drive a log jam is discovered that is a fish migration blockage. AB works with the State to bring unemployed loggers in to remove the blockage. Source: The Boeing News
- April 8, 1983 30,000 Coho arrive at DM marina net pen.
- May 5, 1983 Chapter members plant 20,000 Coho in Miller/Des Moines creek from Lauren Rice’s Highline Marine Technology Lab. in Seahurst.
- July 1983 Chapter member, Des Moines City Manager & scuba diver, Stan McNutt briefs the chapter on the newly placed underwater reef north of the DM fishing pier. Plant & animal growth is shown with series of underwater photos taken each month for a year. The new fishing pier was built in Des Moines.
- 1983 DM Chapter receives \$2100 grant from TU National for Des Moines Creek hatchery. Approvals have been obtained from Fisheries, Port of Seattle, hydraulics & project permits reviewed, designs completed. Location on the Golf Course rejected by the owner. Location at the Des Moines Sewer District: The Des Moines Sewer Dist Manager, Ron Henry rejects the idea prior to meeting with the Chapter members saying; “It’s an attractive nuisance”, “If anything happens we’re the goat!” and “his job is to flush sewage down the pipe, he didn’t care if another salmon ever swam in the waters of the world”. Sewer Dist. Commissioners Jack Hendrickson (who said he was a fisherman) & Joseph Stockdale refused to let Chapter members on the sewer district property to facilitate fish planting, saying; Fish in the stream may impact their permits for secondary treatment construction. Sources: Chapter newsletters, The “Trout & Salmon” Leader and Highline Times, Sunday June 26, 1983, by Margaret Bakken. Ron Nelson reads the article, he is outraged that the “most reasonable” request of TU is rejected and runs against Hendrickson in the next sewer commissioner election.
- Oct. 1983 First Des Moines TU chapter meeting at new hall, the North Hill Community Center.
- Oct. 18, 1983 First 25,000 Chinook come from the Skagit river hatchery to the DM net pen project.
- Dec. 1983 Coho salmon 6 to 15 pounds are swarming all over the Des Moines Marina. Returns from our net pen project. Fisheries estimates a 22 to 24% return rate.

1982

- 1982 30,000 Coho are raised in DM net pen project.
- June, 1982 Coho released from net pen.

1981

- 1981 Des Moines Chapter of Trout Unlimited started by first president Deryk Row.
- First project is a net pen in the Des Moines Marina to raise and release 1-year old Coho salmon smolts to enhance shore bound anglers opportunities to catch a salmon & encourage runs into local streams.
- DM Chapter Presidents; Deryk Row ('81-'82), Andy Batcho ('83 – '84), Lloyd Stafford ('85 – '86), Ollie Burns ('87), Bill Buss ('88), Bill Berg ('89 – '90), Mike Shaunessy ('91 – '92), Dick Mayer ('93), Dale Cap ('94), Al Miller ('95 – '96), Jim Mick ('97- '98), Dr. John Muramatsu ('99 – '08)