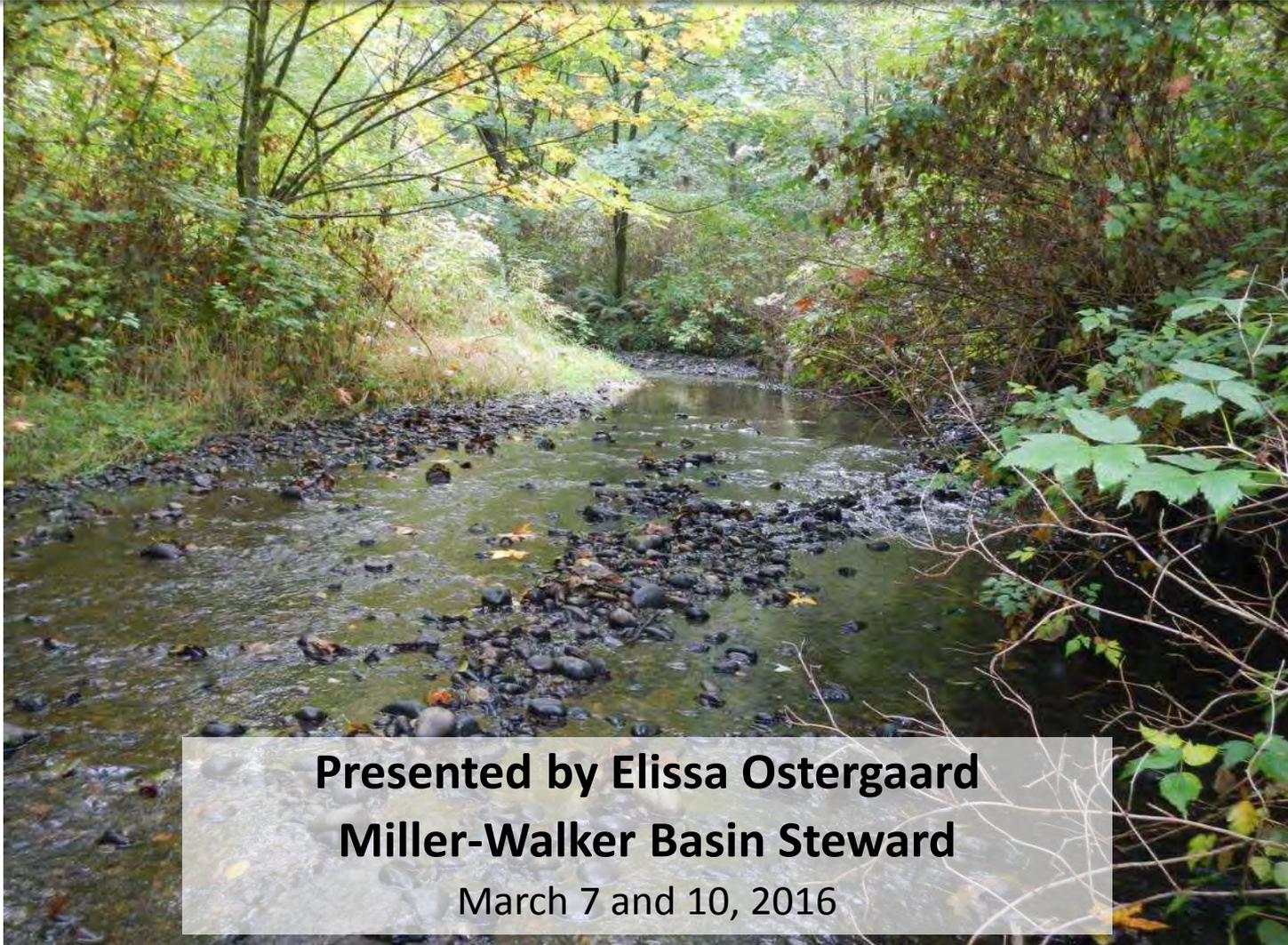


Community Salmon Investigation (CSI) for Highline: 2015 Findings



Presented by Elissa Ostergaard
Miller-Walker Basin Steward
March 7 and 10, 2016

Basin Boundaries for Miller and Walker Creeks

**Puget Sound
Starts Here**

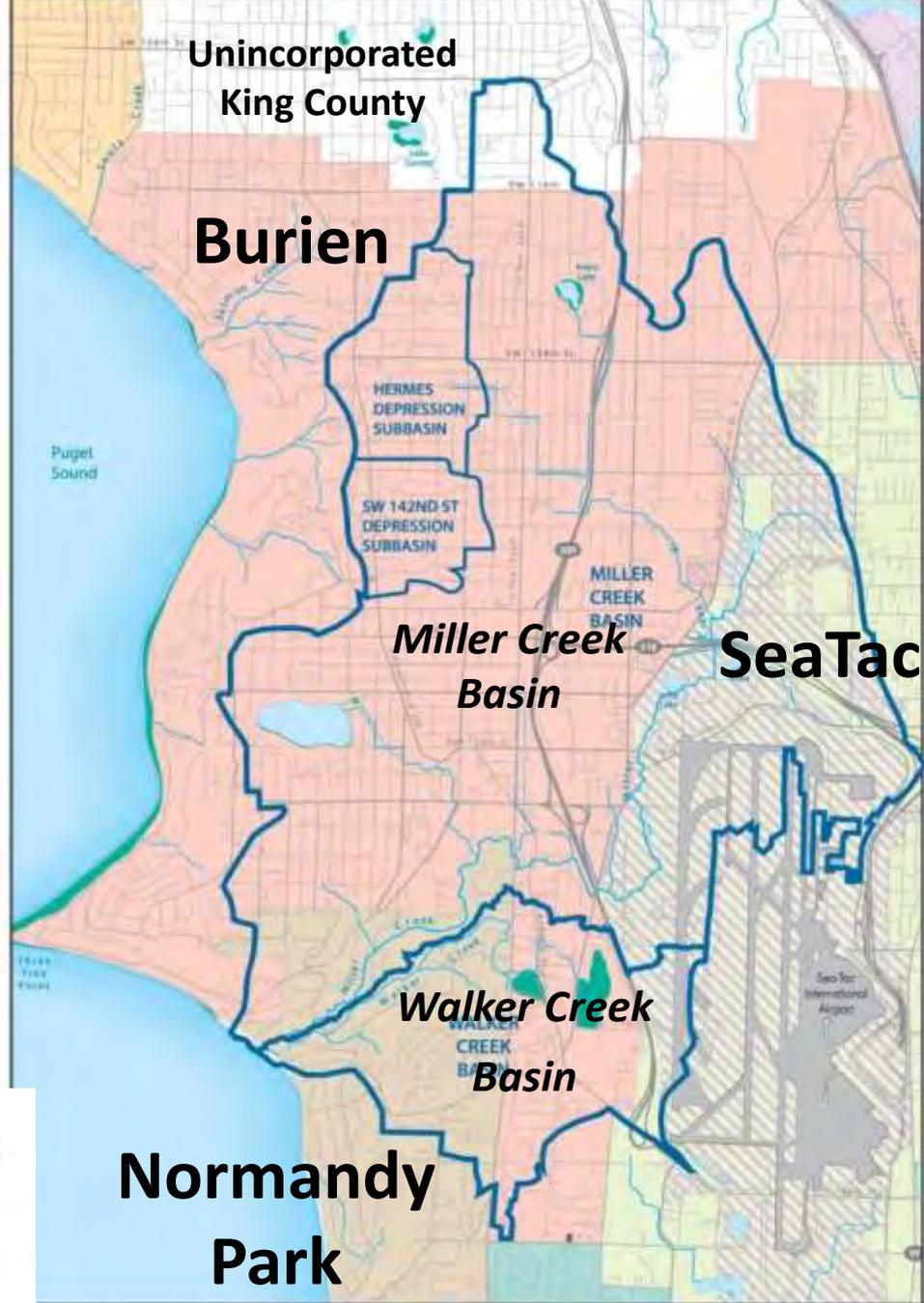
Legend

 Basin	 King County (unincorporated)	 Freeways & Arterials
 Normandy Park	 Port of Seattle Property	 Local Roads
 Seattle	 Basin boundary	 Railroads
 SeaTac	 Subbasin boundary	 Pipes
 Tukwila	 SNO Wetlands	 Other Significant Man-made Features
 Des Moines	 Streams & Waterline	



Basin Name:
The basin name is the name of the basin as it appears on the map.

Basin Source:
The basin source is the location of the basin's headwaters. It is the location where the basin's water enters the basin.



Miller and Walker Basins

Community Salmon Investigation for Highline - 2015 Results

1. Purpose of *Community Salmon Investigation: Highline*
2. How *CSI: Highline* works
 - Stream surveys
 - Necropsies
 - Survey locations
3. Results of October – December surveys
 - Summary data
 - Analysis
 - Weather and Wildlife
 - Thank you to volunteers
4. Plans for 2016
5. Factors affecting stream and salmon health
6. Our role!

1) Purpose of CSI



Coho

October 27, 2015

Photo courtesy of Laura Milleville

Draft 2006 Basin Plan

Recommendation on Monitoring

An on-going basin monitoring program should be started that will allow for trend analysis of:

- Stream flow (volume)
- Water quality
- Habitat data



**Port of Seattle water
quality sampling station
at Walker wetlands**

October 16, 2007

Basin Monitoring Coordination Workshops with Dennis Clark, Fall 2008



**Monitoring Workshop #1 at
Burien Community Center
September 24, 2008**

**Monitoring Workshop #3
in Burien
December 4, 2008**



Watersheds, rivers and streams

Central Puget Sound

You're in: [Central Puget Sound Watershed](#) » [Miller and Walker Creeks Stewardship](#) » [Monitoring Information](#)

Central Puget Sound Watershed

Vashon - Maury Island

Miller and Walker Creeks Stewardship

Stewardship Tips

Volunteer Calendar

Stream Blog

Miller Creek Photo Tour

Walker Creek Photo Tour

Basin Plan

Clean Stormwater

Monitoring Information

Salmon Monitoring Program - "CST: Highline"

Contacts

Hydrologic Modeling

Nearshore environments

Puget Sound Shoreline Stewardship Guidebook

Related organizations

News archive

Site Map

To offer a suggestion or report an error on the Water and Land Resources' Web site, please contact [Fred Bentler](#), webmaster.

Monitoring Information: How Are Miller and Walker Creeks Doing?

This page provides information on:

- [Current and Past Monitoring](#)
- [Community Salmon Investigation for Highline](#)
- [Monitoring Sampling and Analysis Plan](#)
- [Final Monitoring Coordination Recommendations](#)
- [Background Information on Monitoring Coordination Workshops in 2008](#)

Current and Past Monitoring

[General flow, water quality and other stream condition monitoring in 2012-2013](#) (Adobe PDF, 2MB)

Water Quantity (Hydrology or Flow)

[Stream Gage Information](#)

There are five active gages and additional inactive gages that record flow in Miller and Walker Creeks. At the King County website, type in the number "42" to list all gages on Miller and Walker Creeks. This Web site will allow you to display information in graph form to illustrate the dramatic peaks of stormwater runoff.

[Hydrologic Modeling](#)

While not a source of current data from the stream, this page provides background on how land uses affect flow in the streams by influencing the volume of stormwater runoff.

Water Quality

[2012 Miller Creek Water Quality analysis for Prespawn Mortality - King County](#) (Adobe PDF)

[Miller Creek Water Quality Information - Department of Ecology](#)

[Walker Creek Water Quality Information - Department of Ecology](#)

Habitat Quality

Miller and Walker Creeks Basin Plan - Appendix C: Habitat Characteristics and Identified Problems of Miller and Walker Creeks

Miller and Walker Basin Stewardship Sponsoring Jurisdictions

- [City of Burien](#)
- [City of Normandy Park](#)
- [City of SeaTac](#)
- [King County](#)
- [Port of Seattle](#)

Miller-Walker Creek Questions

- [Contact Elissa Ostergaard with questions about Miller and Walker Creeks, \(206\) 477-4792](#)

Lake Burien Questions

- [Direct questions about Lake Burien, including toxic algae testing, to Sally Abella, \(206\) 477-4605](#)

Why do *CSI: Highline*?



- Count adult salmon – indicators of the health of the ecosystem
- Document rate of coho “pre-spawn mortality” to see how pollution prevention helps
- Raise the awareness about the streams in the community

Stormwater is not treated



Testing highway runoff on adult coho



Photo courtesy of Tiffany Royal, Northwest Indian Fisheries Commission

2) How CSI Works

- **Methods: *Survey Plan for Adult Fish Counting and Coho Prespawn Mortality in Miller and Walker Creeks***
- **Methods developed by NOAA, National Marine Fisheries Service & U.S. Fish and Wildlife Service**
- **Examine dead female salmon for eggs (=not spawned) and video/photograph pre-spawn mortality symptoms**

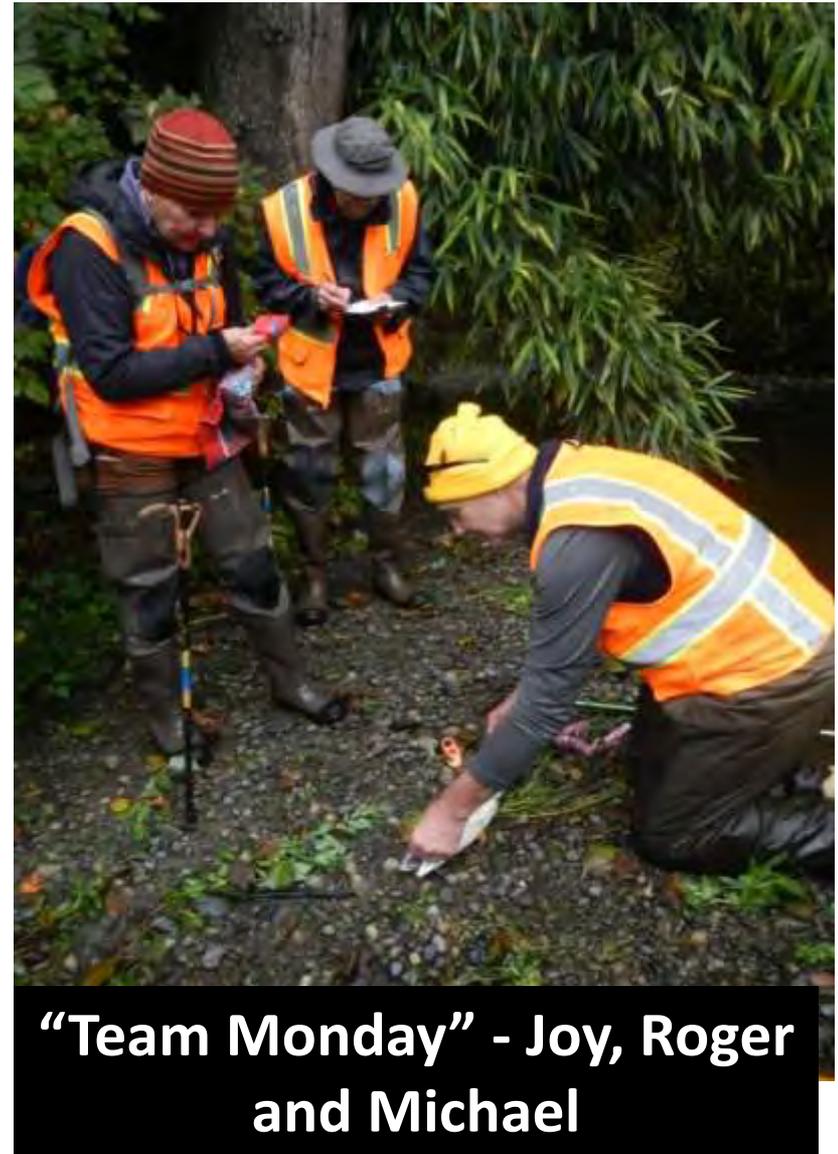


**“Team Thursday” Brenda and Dahli
survey Miller Creek**

October 8, 2015

CSI “Cast”

- 31 volunteers from Burien, Normandy Park, and Seattle
- Seven daily teams – one team for each day of the week
- Teams had 2-6 people – some surveyed weekly, some every other week
- Backups filled in



“Team Monday” - Joy, Roger and Michael

CSI Orientation Workshop

Steve Damm from U.S. Fish & Wildlife Service teaches necropsies

October 7, 2010



CSI *Style*

Polarized sunglasses for fish spotting

Back pack for supplies

“Team Thursday” Kay modeling survey attire on Miller Creek
Photo courtesy of Pam Silimperi

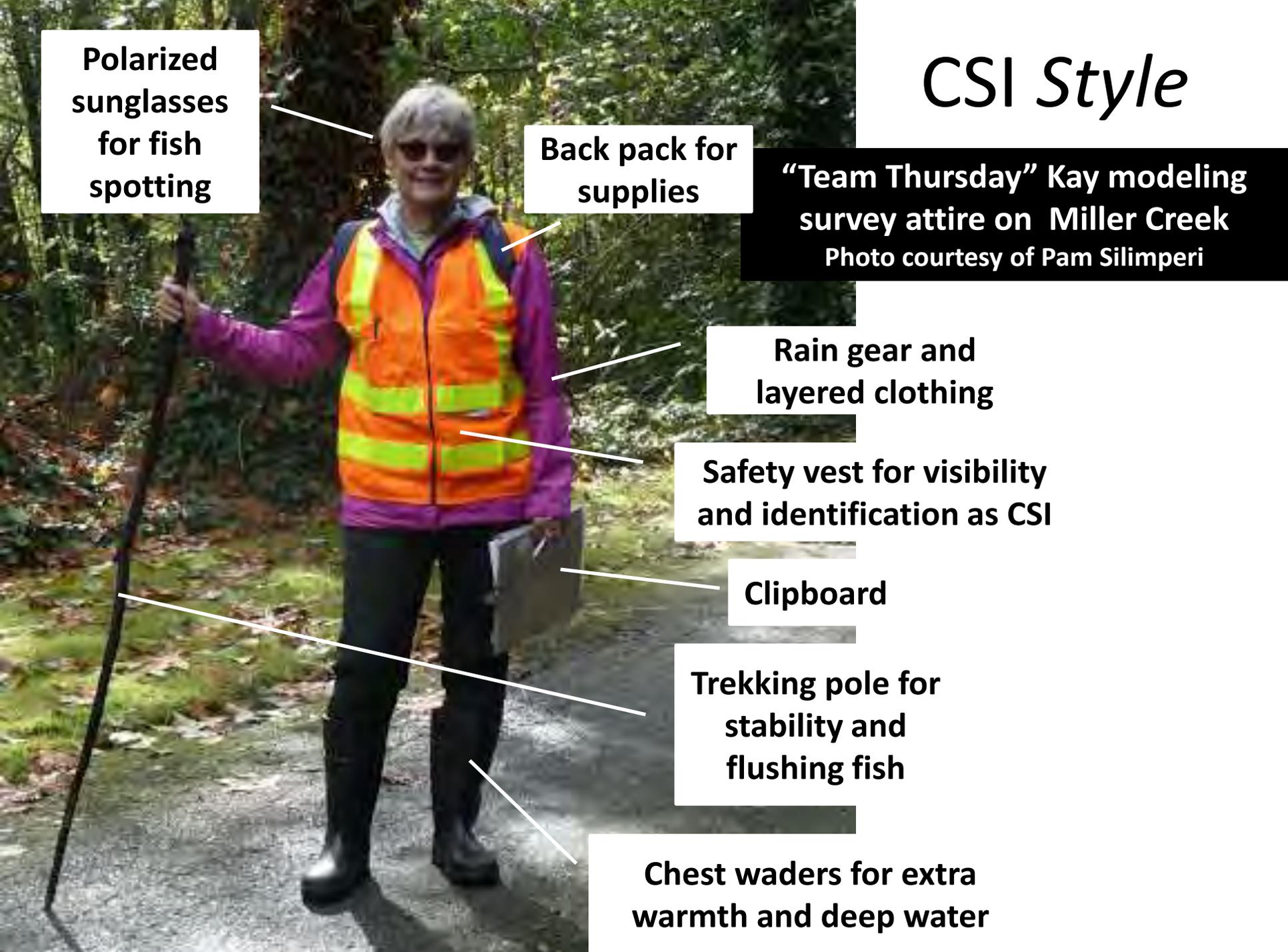
Rain gear and layered clothing

Safety vest for visibility and identification as CSI

Clipboard

Trekking pole for stability and flushing fish

Chest waders for extra warmth and deep water



CSI in Action

“Team Tuesday” Kristine and Liesl on the stream bank



CSI in Action

**Male and female coho
on Upper Miller Creek**

October 14, 2011

Photo Courtesy of Ed Nugent



CSI in Action

**“Team
Wednesday” Lee
measuring a
salmon carcass**



CSI in Action

**“Team Thursday” Pam cutting
open the carcass to look for eggs**

Photo courtesy of Pam Silimperi/Kay Larsen



CSI in Action

**Investigating egg retention –
this female spawned!**

Photo by L. Moyer



CSI in Action

**Investigating pre-spawn mortality – this is a male coho –
note white milt sacs**



CSI in Action

Each carcass was
“marked” by cutting off
the tail



Collecting Coho Heads for Coded Wire Tags



Image from Alaska Department of Fish and Game

CSI in Action



**“Team Sunday”
Drew, Jeremy and
Nick - it takes
teamwork**

Fall 2014

Photo courtesy of Robin Hoefer

CSI in Action

Chum building a redd

November 7, 2010



Property Owner Permission

Graciously Provided by:

- Clint Adams
- Ann and Stephen Backstrom
- Linda and Thomas Beffa
- Brett Fish
- Glen and Karen Gabrielson
- Mark and Sherri Henry
- Chris Longridge
- Susan Klein
- Normandy Park Community Club
- Normandy Park Swim Club
- Southwest Suburban Sewer District



CSI Survey Locations Topographic Map of the Miller and Walker Creek Drainages

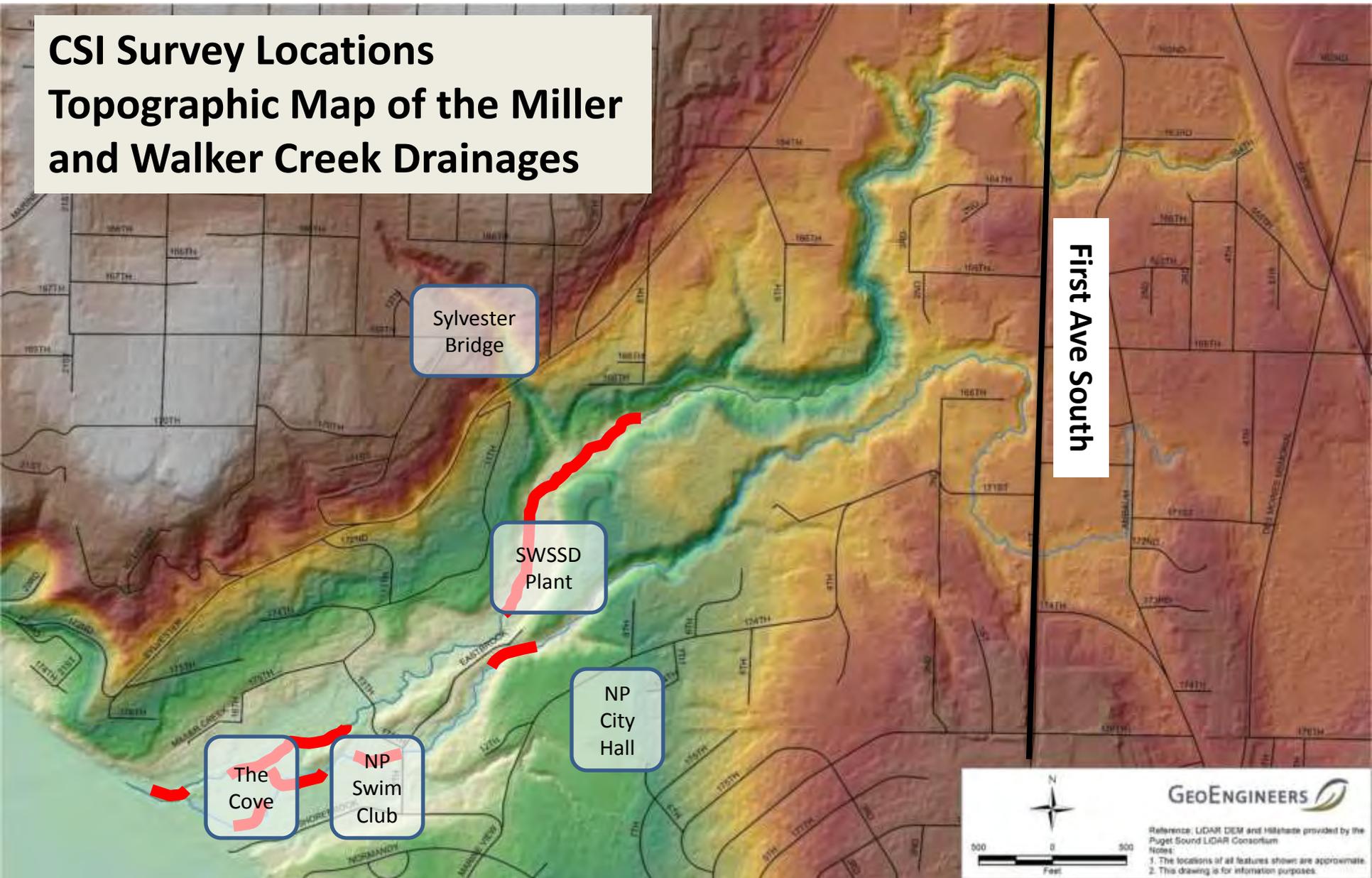


Image courtesy of GeoEngineers and Washington State Department of Transportation

Survey Locations

- Four locations
 - Two on Miller Creek
 - Lower Miller – Longridge, The Cove, and Adams property
 - Upper Miller – Sewer District and Fish property
 - (Above 1st Ave S. not surveyed – not many fish and difficult access)
 - Two on Walker Creek
 - Upper Walker – Beffa, Backstrom, Gabrielson, Henry properties
 - Lower Walker – The Cove, Swim Club

CSI Survey Locations Topographic Map of the Miller and Walker Creek Drainages

**Upper Miller
Survey Location**

**Lower Miller
Survey Location**

**Upper Walker
Survey Location**

**Lower Walker
Survey Location**

First Ave South

GEOENGINEERS

Reference: LiDAR DEM and Hillshade provided by the Puget Sound LiDAR Consortium

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes.

3) 2015 CSI Results

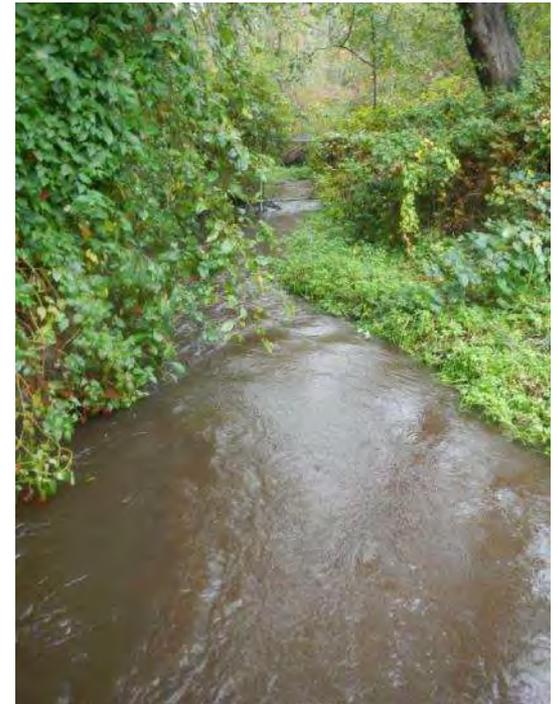


Coho carcass

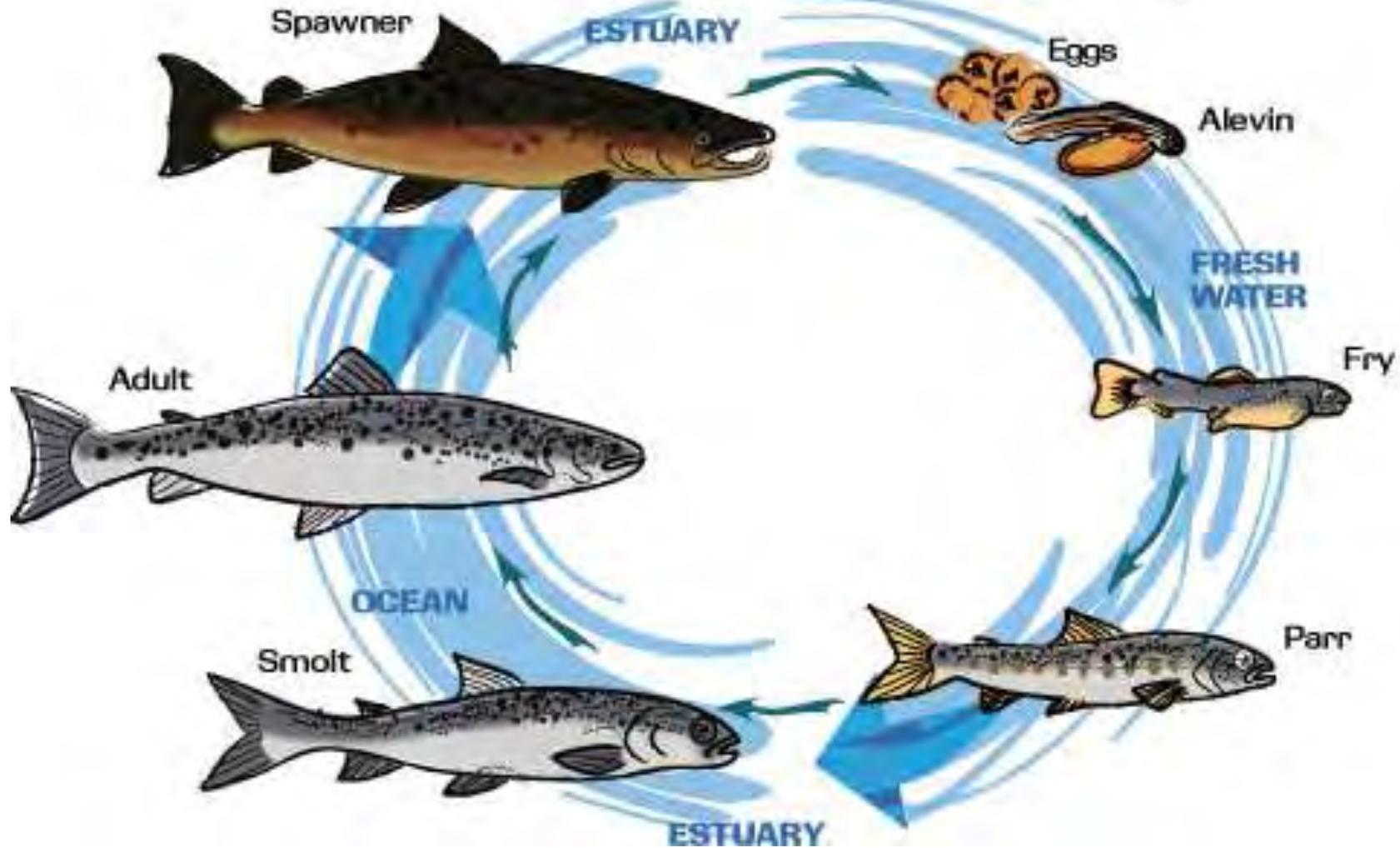
October 23, 2012

CSI Survey Days

- Surveyed October 8 – December 24, 2015
- 78 days in season
- Surveyed during daylight hours
- 12 days missed for bad weather
 - Rain & wind
 - High water, no visibility



Life Cycle of the Salmon





Coho: 3-year Life History

- October-Nov 2012 Spawned
- Early 2013 Hatched
- Early 2013 – early 2014 Rearing in stream
- Early 2014 Migration to salt water
- Early 2014– October 2015 Rearing in Puget Sound
and Pacific Ocean
- October – November 2015 Migration upstream,
spawning, death
- Early 2016 New fish hatch



Chum: 4-year Life History

- Nov. – December 2011 Spawned
- Early 2012 Hatched and migrated to salt water
- Early 2012 – Nov. 2015 Rearing in Puget Sound and Pacific Ocean
- Nov. – December 2015 Migration upstream, spawning, death
- Early 2016 Eggs hatch & migrate to Puget Sound

CSI Survey Locations Topographic Map of the Miller and Walker Creek Drainages

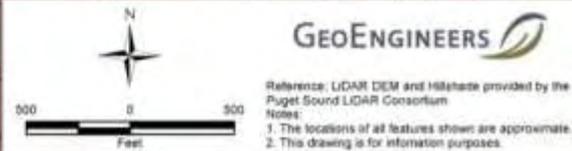
**Upper Miller
Survey Location**

**Lower Miller
Survey Location**

**Upper Walker
Survey Location**

**Lower Walker
Survey Location**

First Ave South



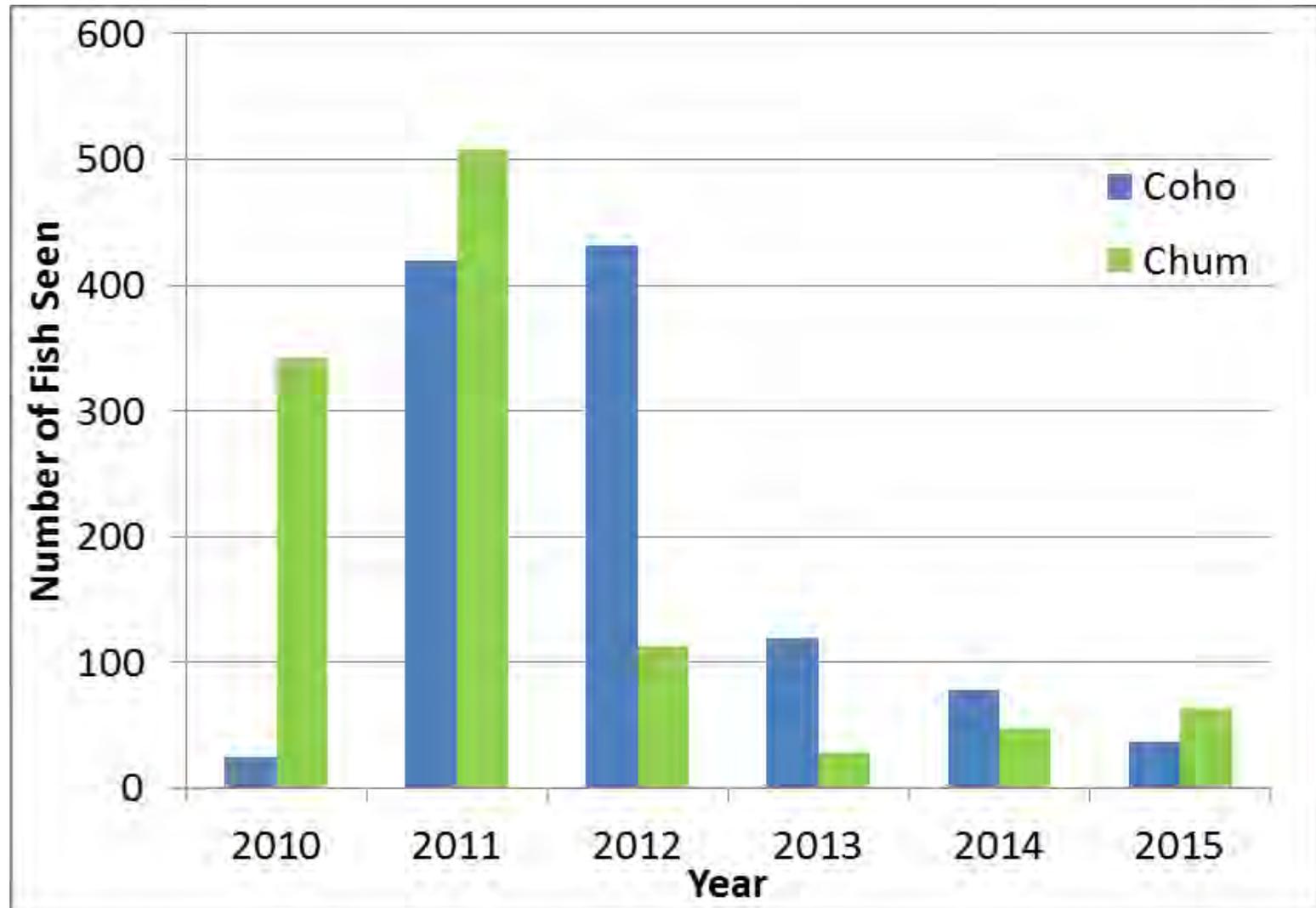
Results: Live Fish Observations

Species	Coho 	Chum 	Unidentified Adults
Miller Creek	32	54	38
Walker Creek	5	10	7
Total	37	64	45

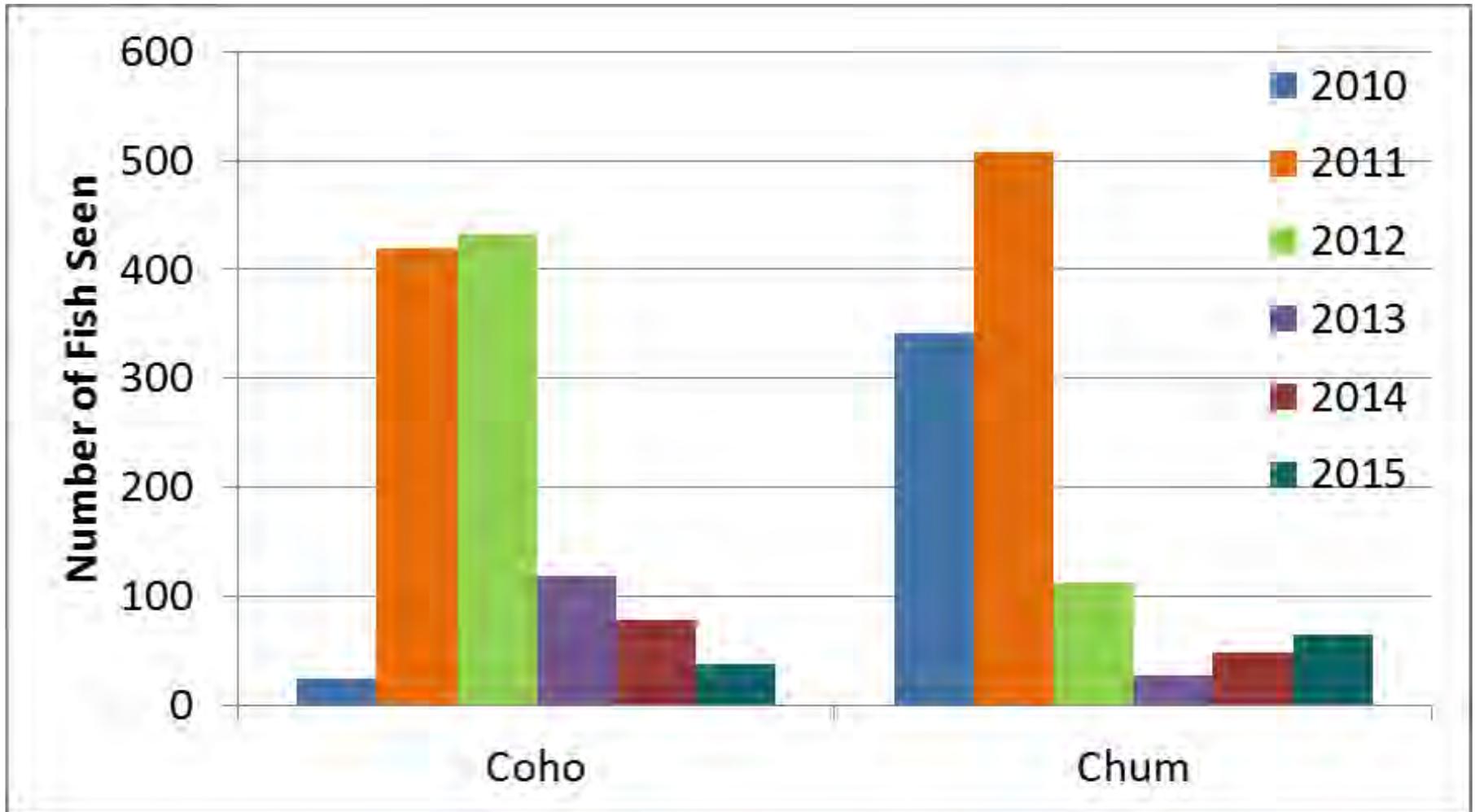
GRAND TOTAL: 146 live fish seen

Unidentified adults were 31% of total fish observed.

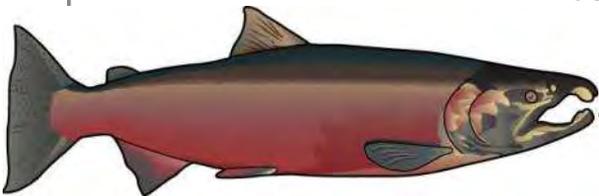
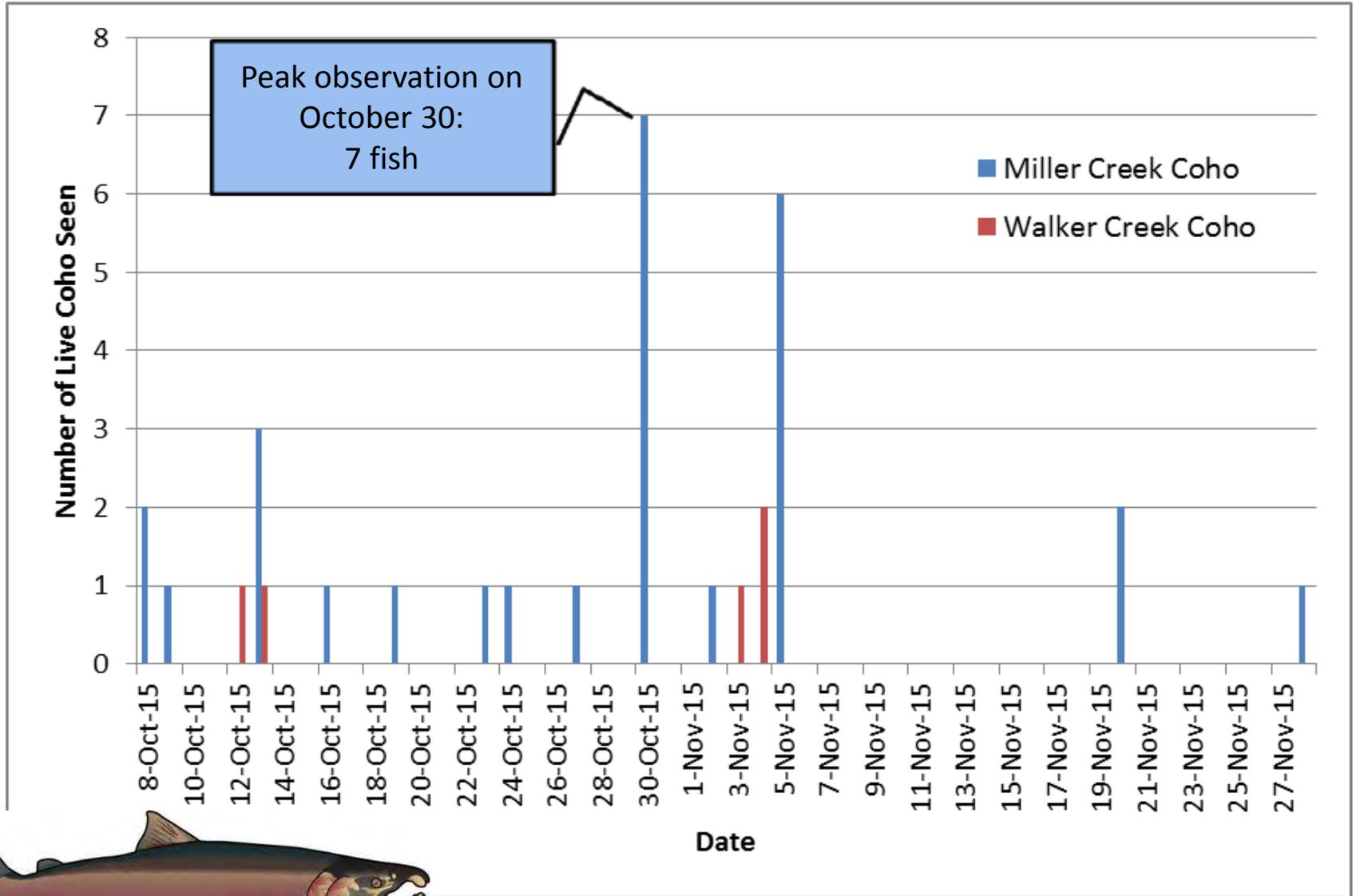
Results: 2010-2015



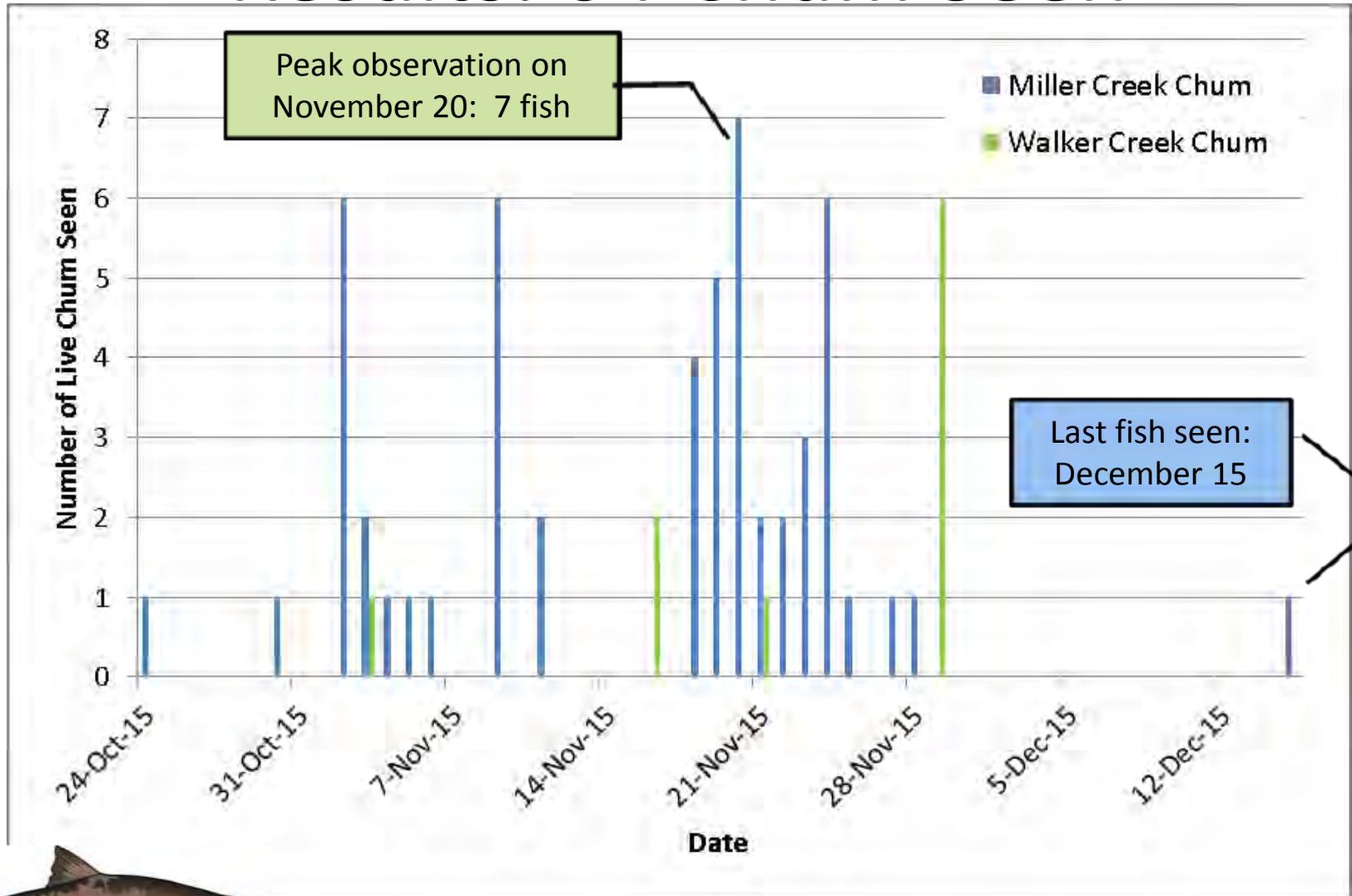
Results: 2010-2015



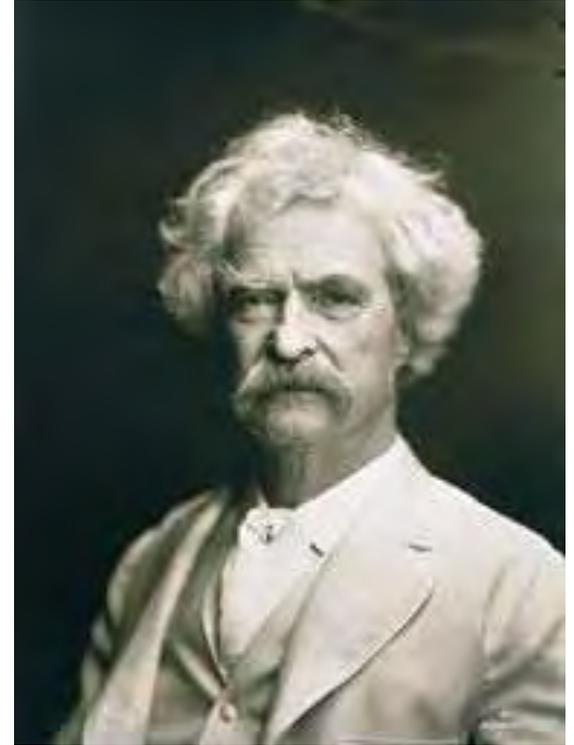
Results: 37 Coho Seen



Results: 64 Chum Seen

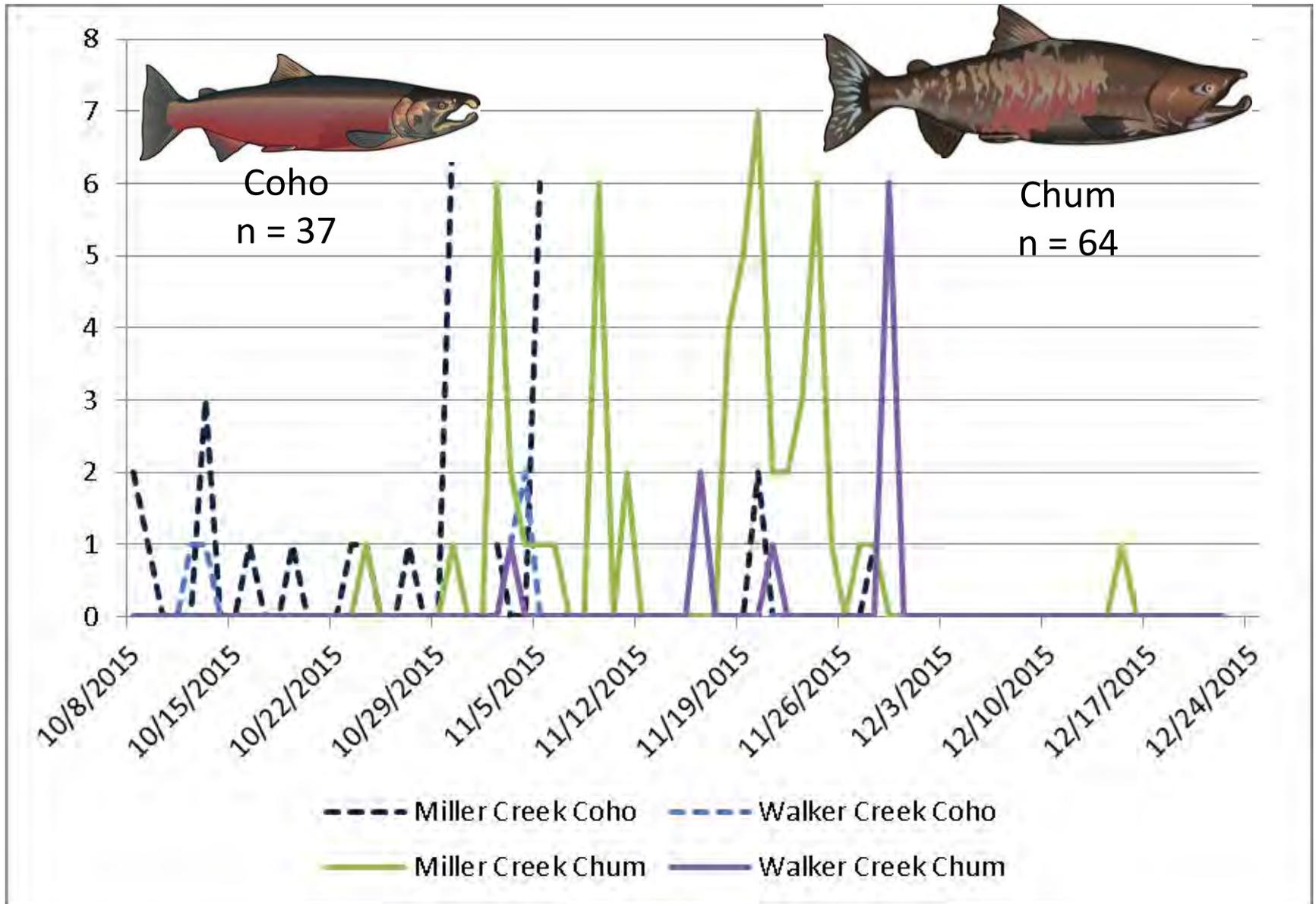


There is something
fascinating
about science.
One gets such
wholesale returns of
conjecture out of
such a trifling
investment of fact.

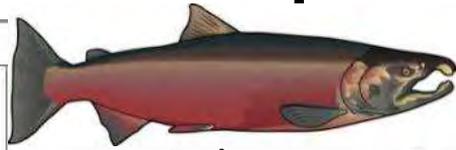


Mark Twain

Species by Stream



Species by Stream

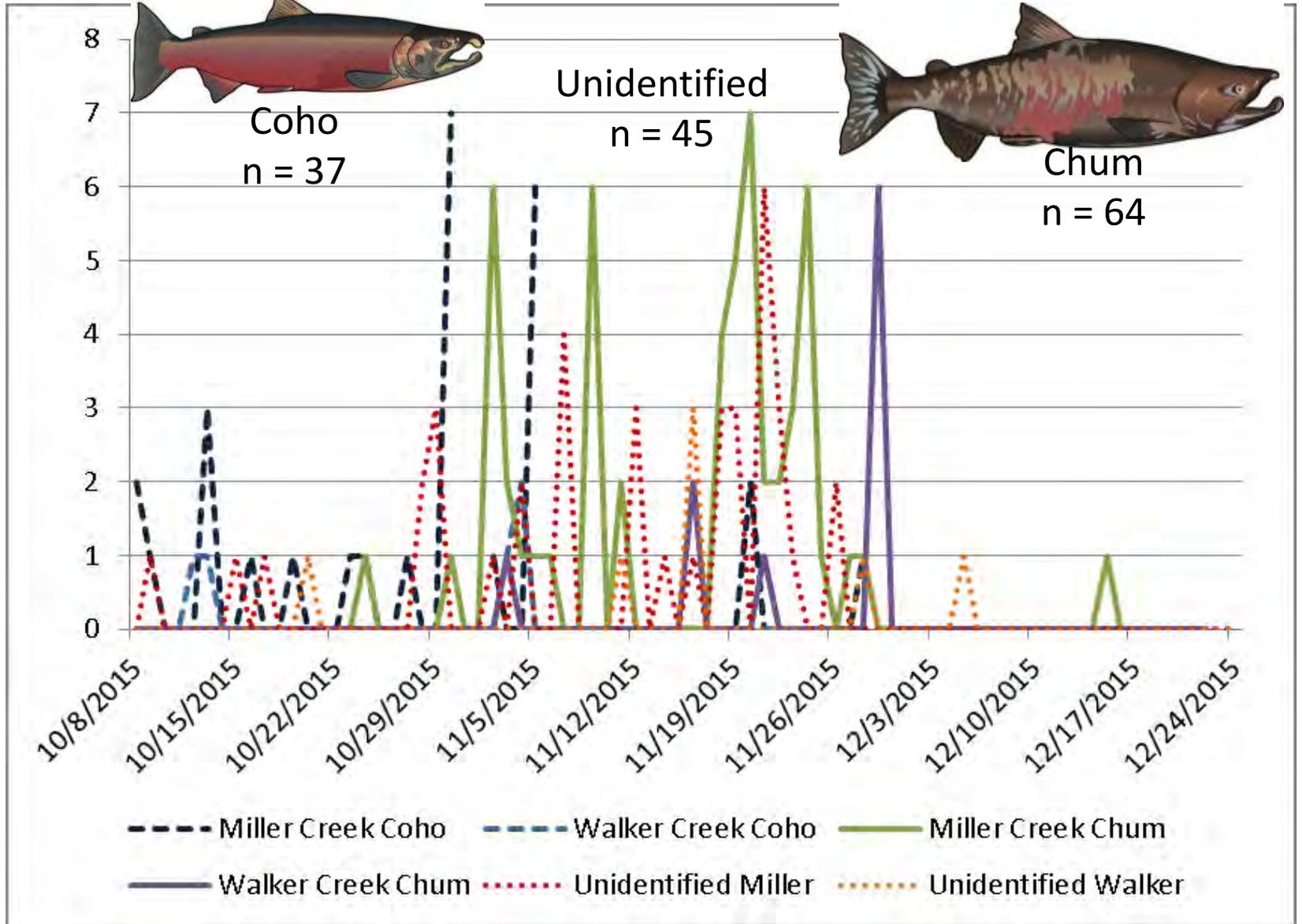


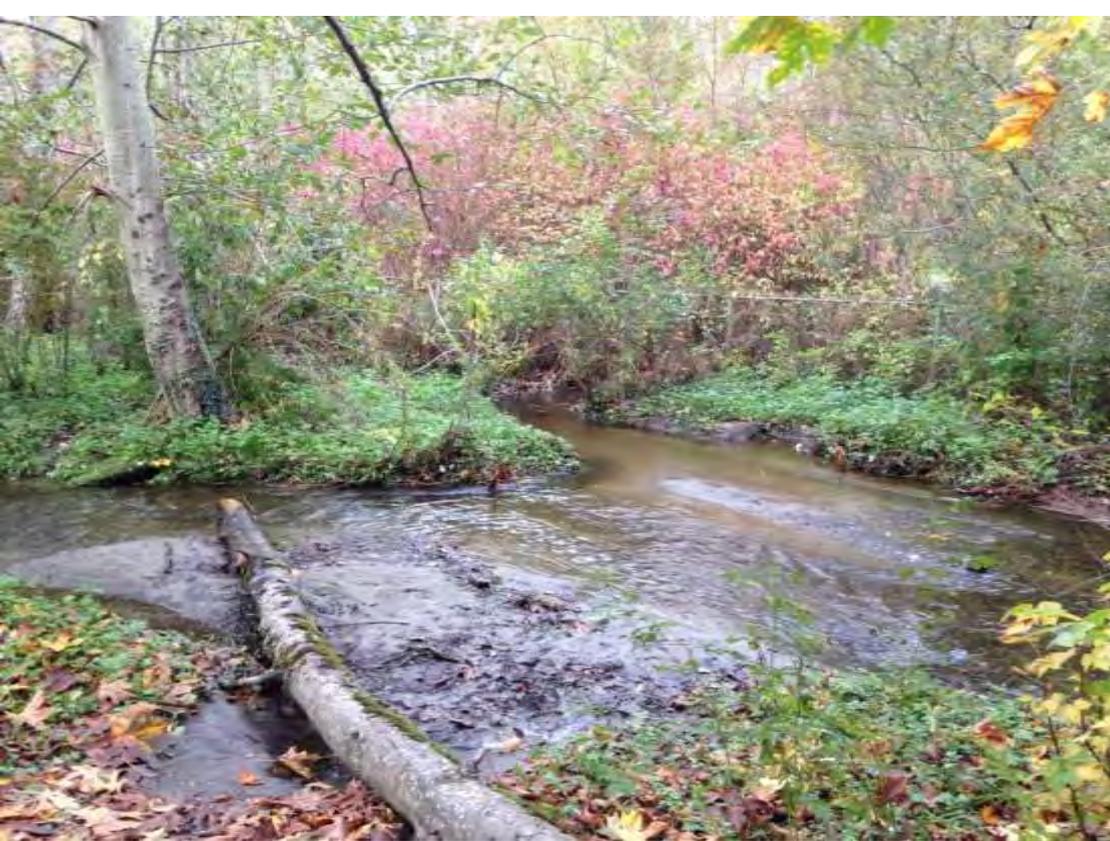
Coho
n = 37



Chum
n = 64

Unidentified
n = 45

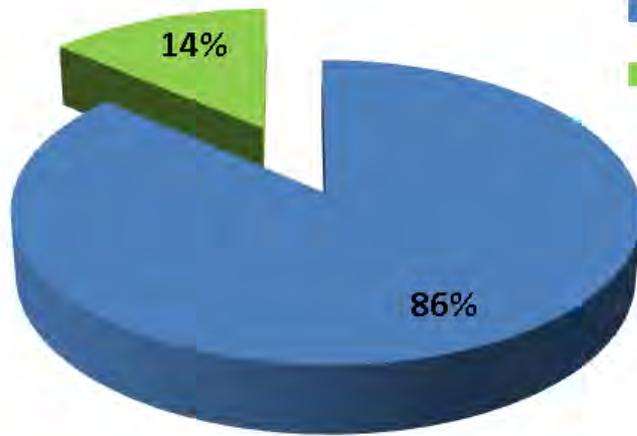




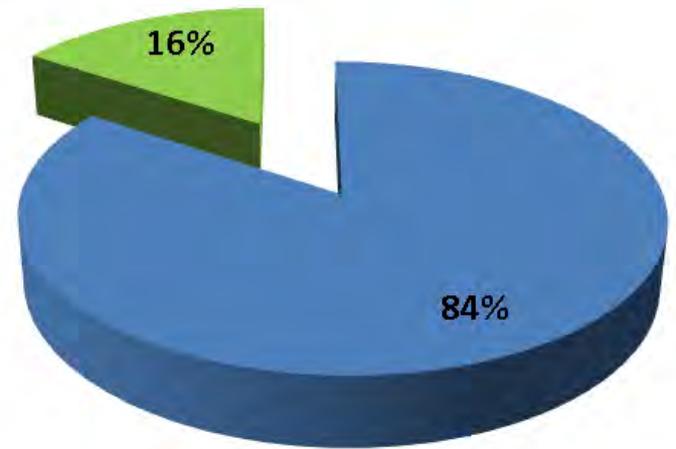
Walker Creek –
partial blockage

Species by Stream

Coho



Chum



■ Miller Creek
■ Walker Creek

n = 37



n = 64



Estimated *Population*

Species	Coho 	Chum 	Total
Miller Creek	21	37	58
Walker Creek	3	6	9
Total	24	43	67

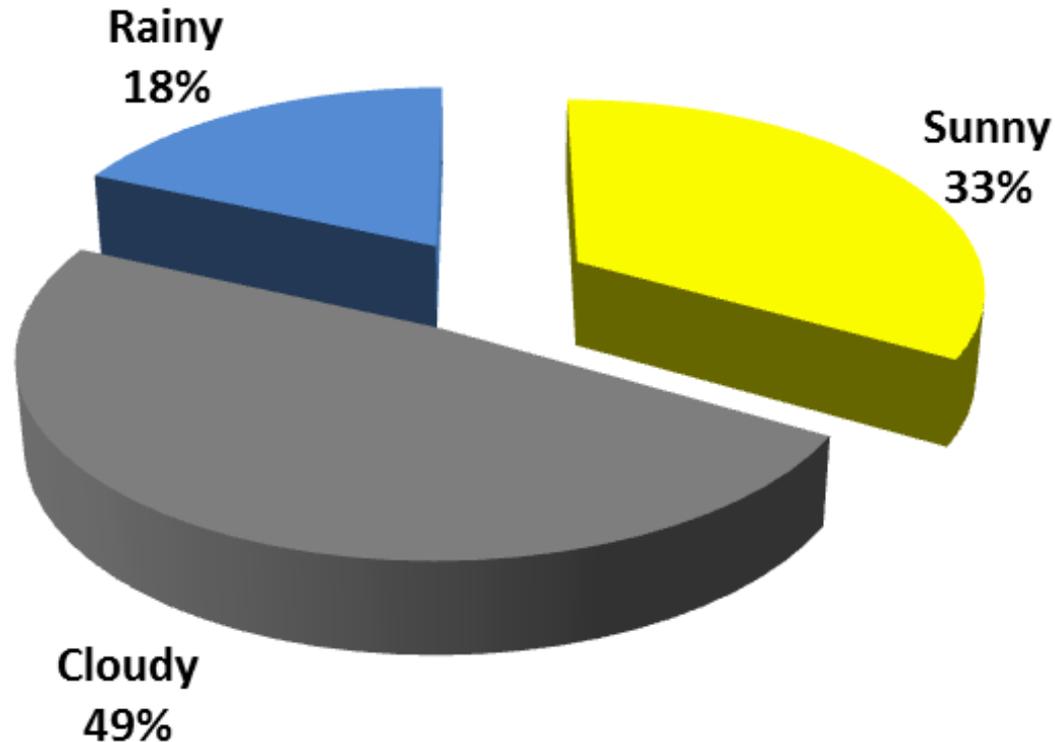
Assumptions:

- Using the area under the curve (AUC) and assuming each fish was in the creek for 2 days - or using the number of carcasses found if that number was higher than the AUC number - corrects for probable double-counting of fish.
- Salmon spend several days in the stream.

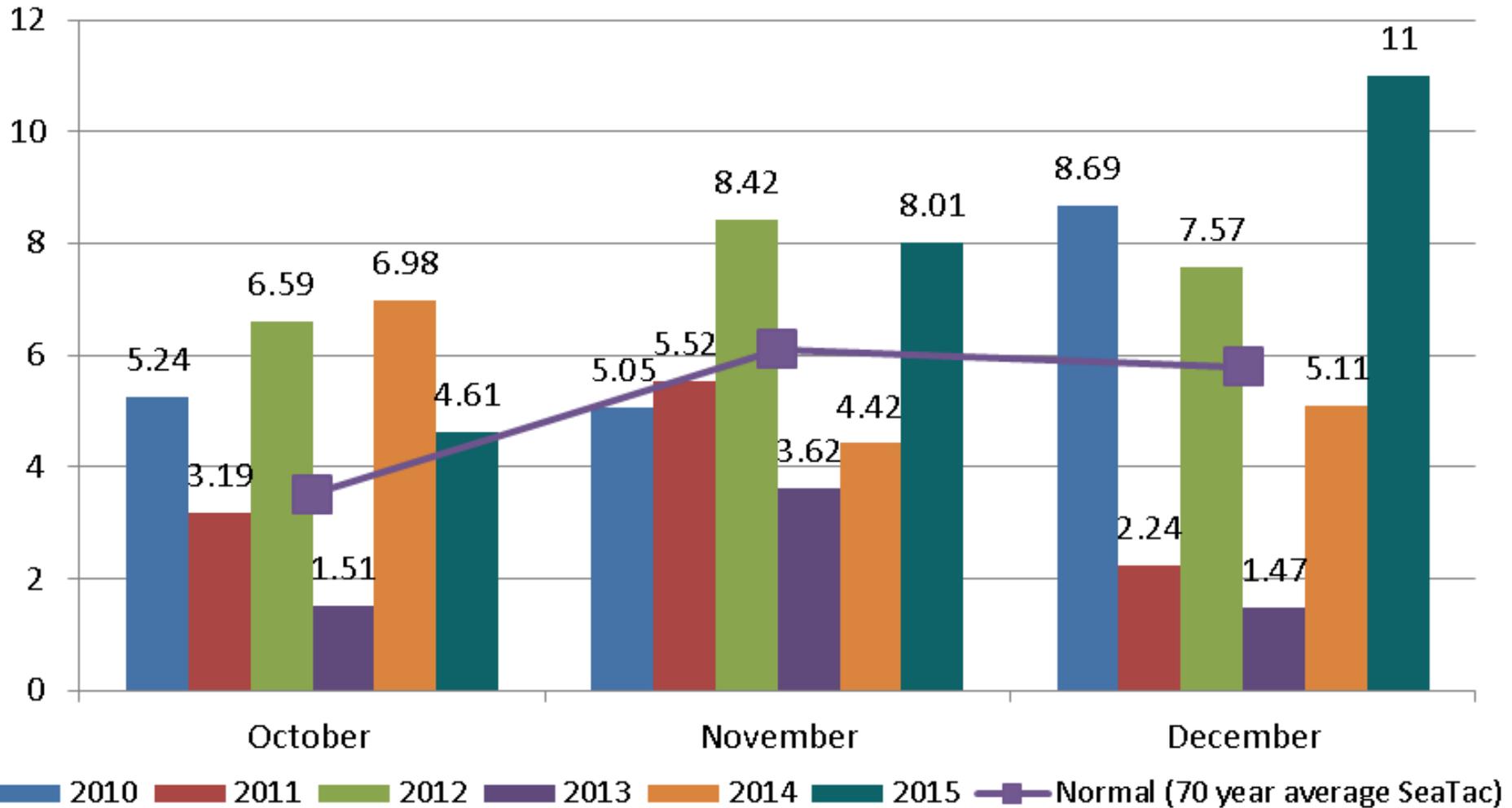
The estimated population is the “escapement estimate” – the actual number of fish that are likely to have spawned.

CSI Weather

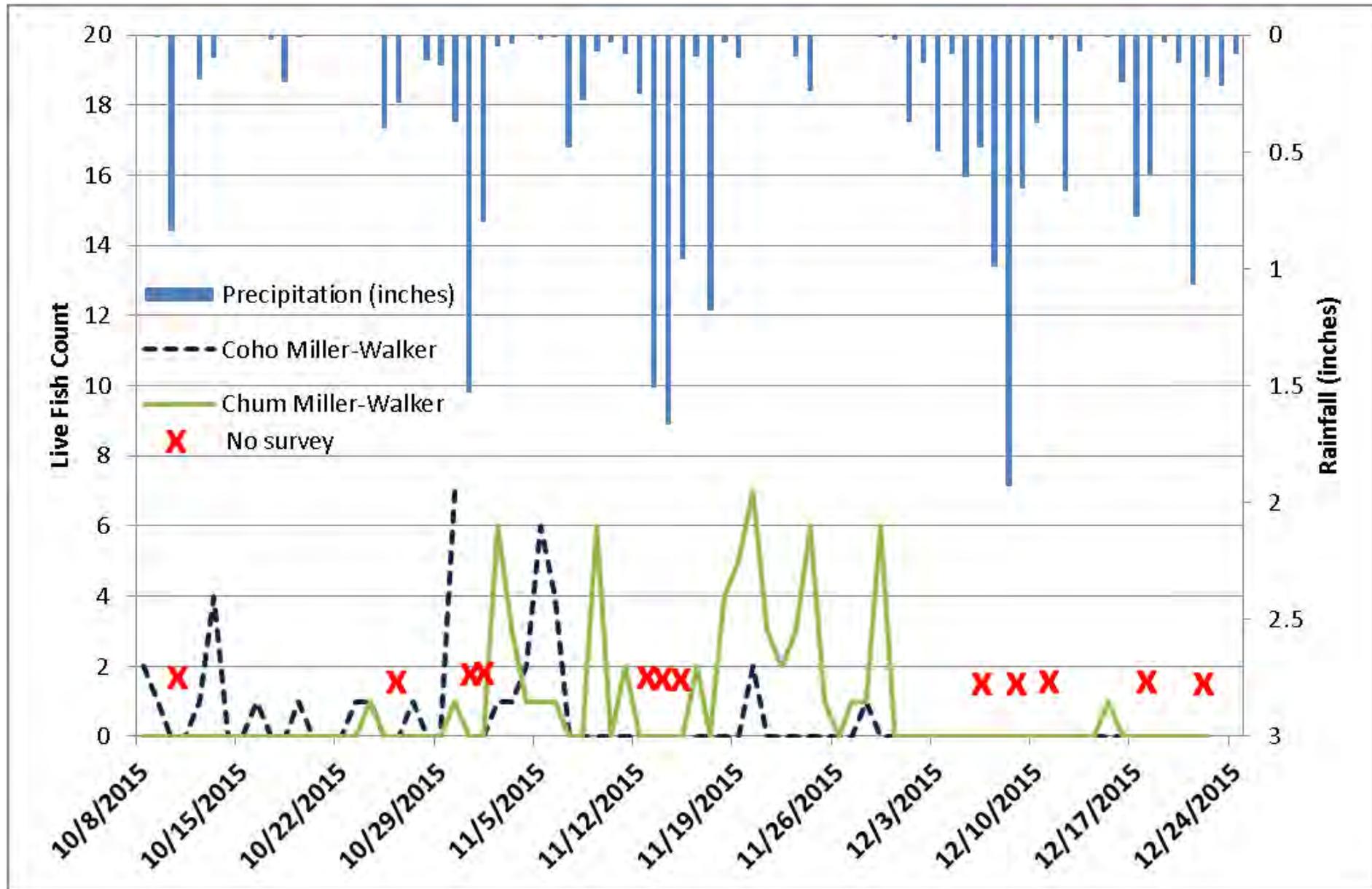
- Average survey time = 2 hours, 21 minutes
- Weather conditions (66 survey days):



CSI Weather – Monthly Rainfall (inches)



Rainfall and live fish - 2015

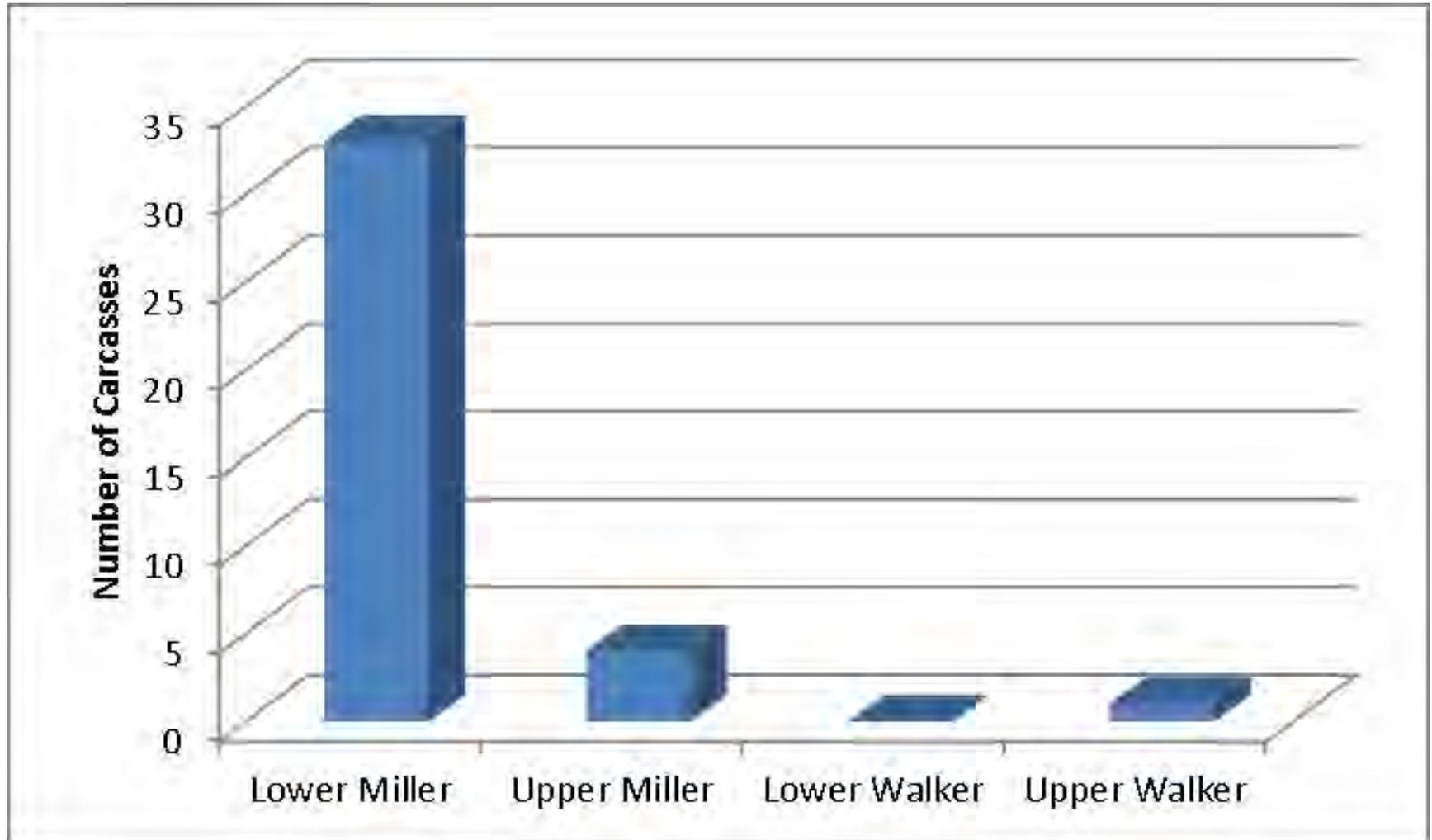


Carcasses Summary

Species	Coho 	Chum 	Unidentified Adults
Miller Creek	19	37	6
Walker Creek	0	1	0
Total	19	38	6



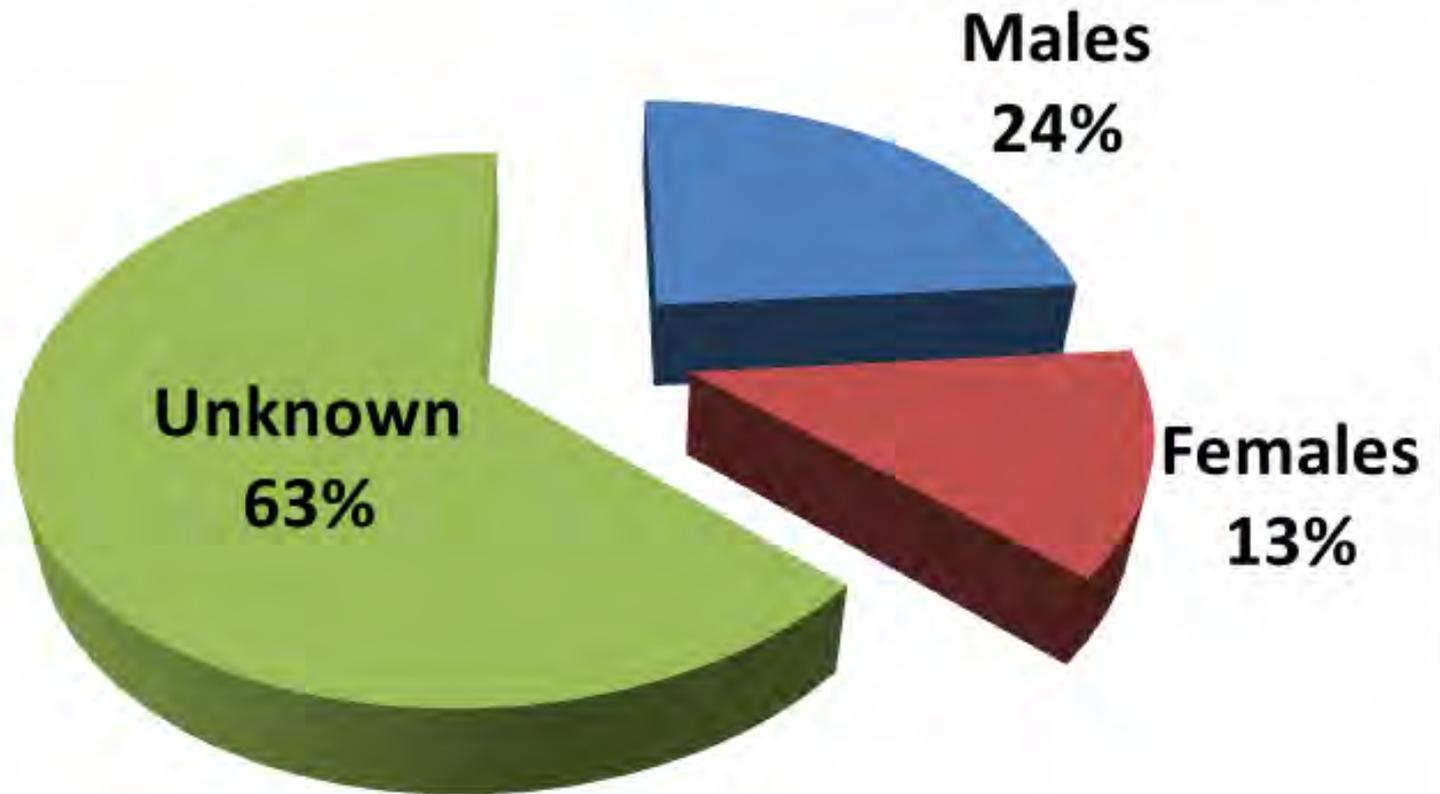
Chum Carcasses: Location



n = 38



Chum Carcasses: Sex



n = 38

Predation by wildlife



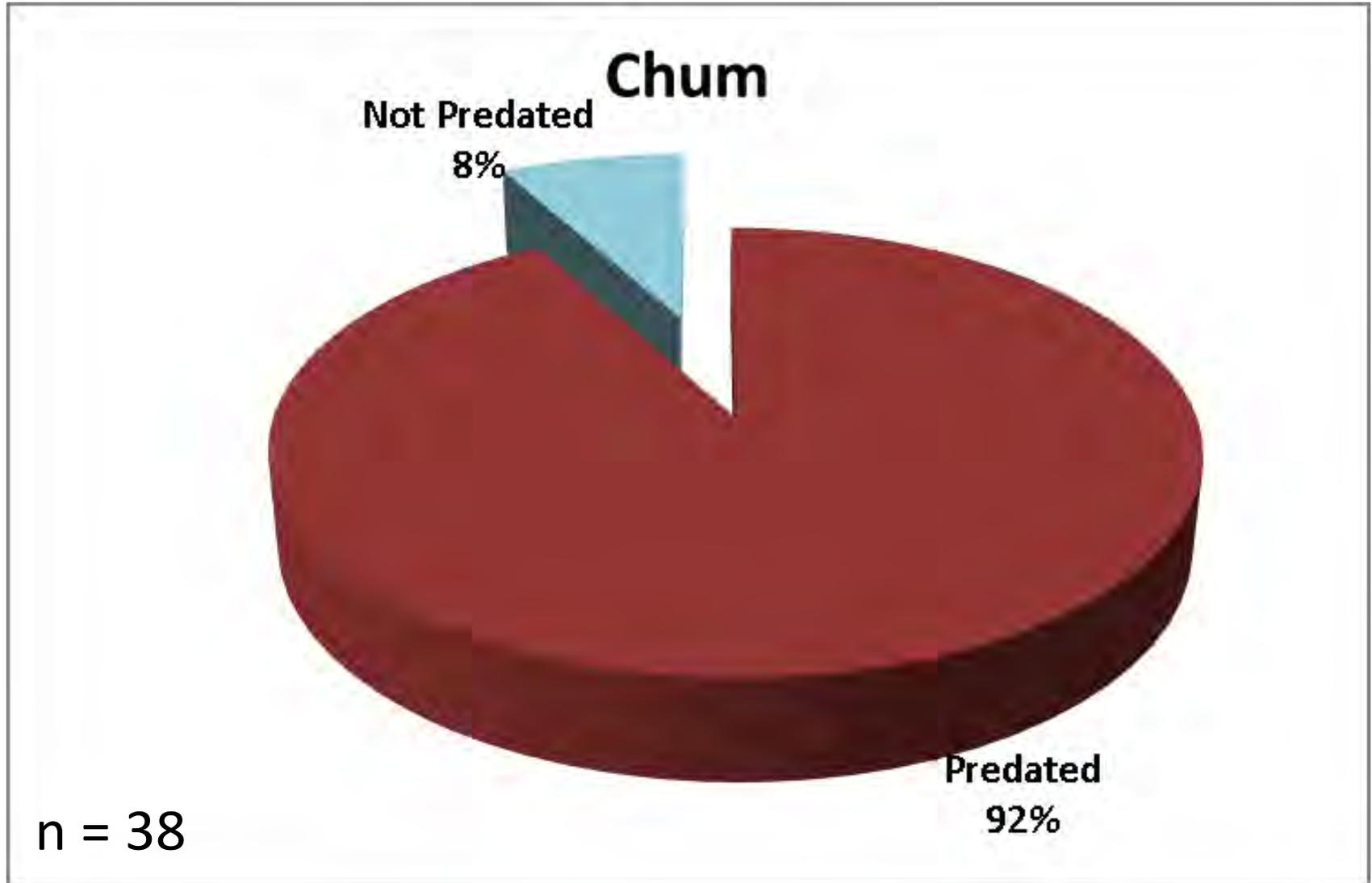
Predated chum carcass

Photo by Gary Wagner

November 7, 2014



Chum Carcasses: Predation



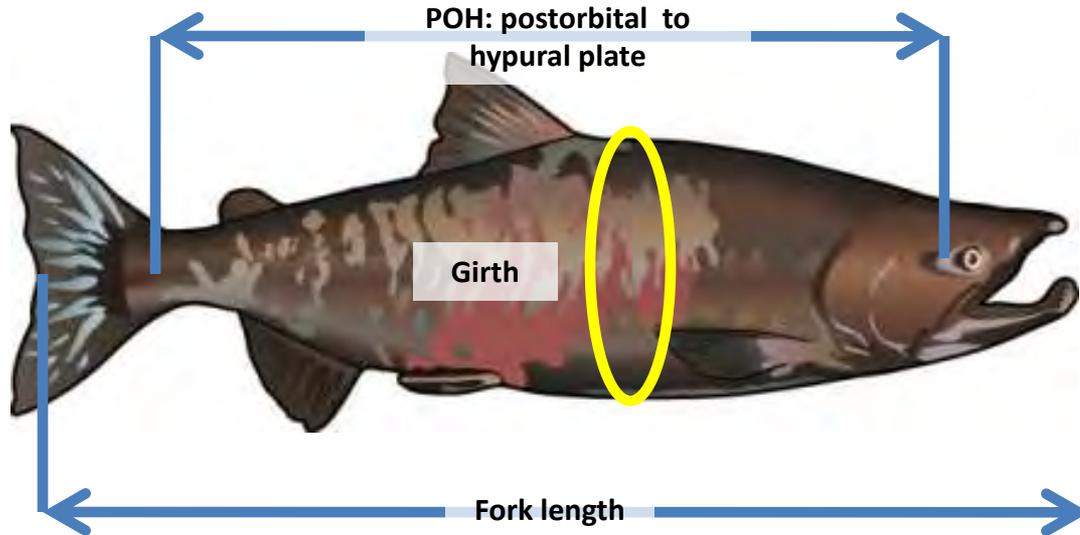
Chum: Hatchery Origin Unknown



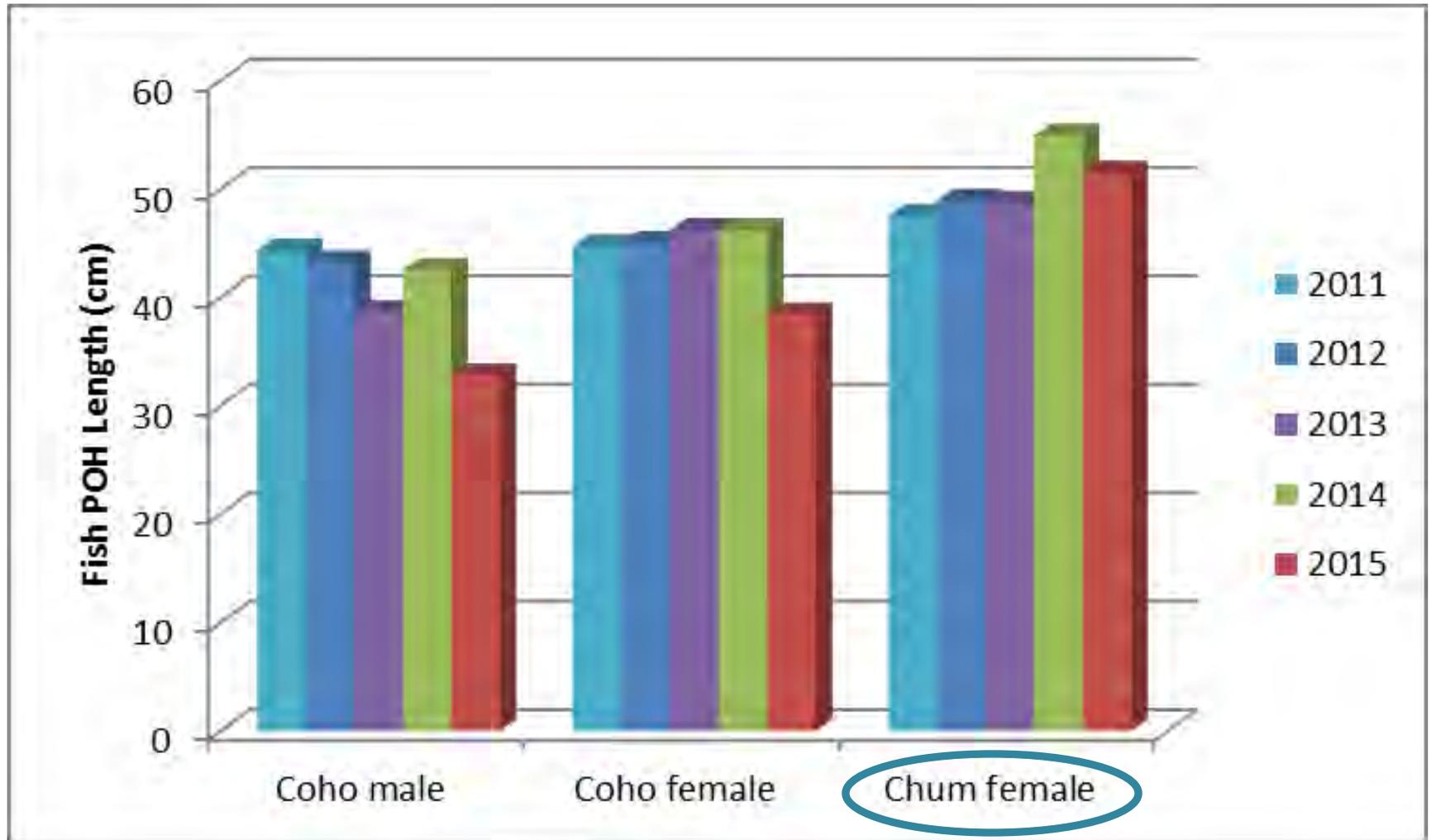
Adipose fin

Chum Carcasses: Size

	Fork length (cm)	POH (cm)	Girth (cm)
Male average	71.3	54.5	39.0
Female average	63.6	51.5	28.2



Fish Length



Coho Prespawn Mortality



**Coho experiencing
“prespawn” mortality at
Upper Miller survey location**

October 23, 2009

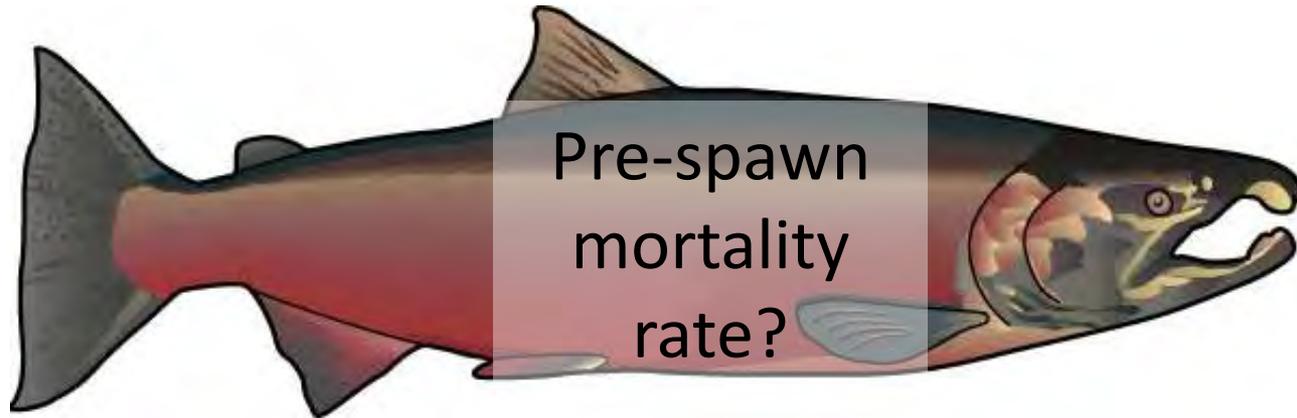
Prespawn Mortality (PSM)



Coho female, full of eggs

October 25, 2012

Photo courtesy of Pam Silimperi



What percent of coho died before spawning in Miller and Walker Creeks in 2015?

The answer is some percentage between 0 and 100%.

The “pre-spawn mortality” rate is the percent of returning adult female coho that died before spawning – as indicated by a dead fish that had a belly full of eggs and no sign of damage by a predator.

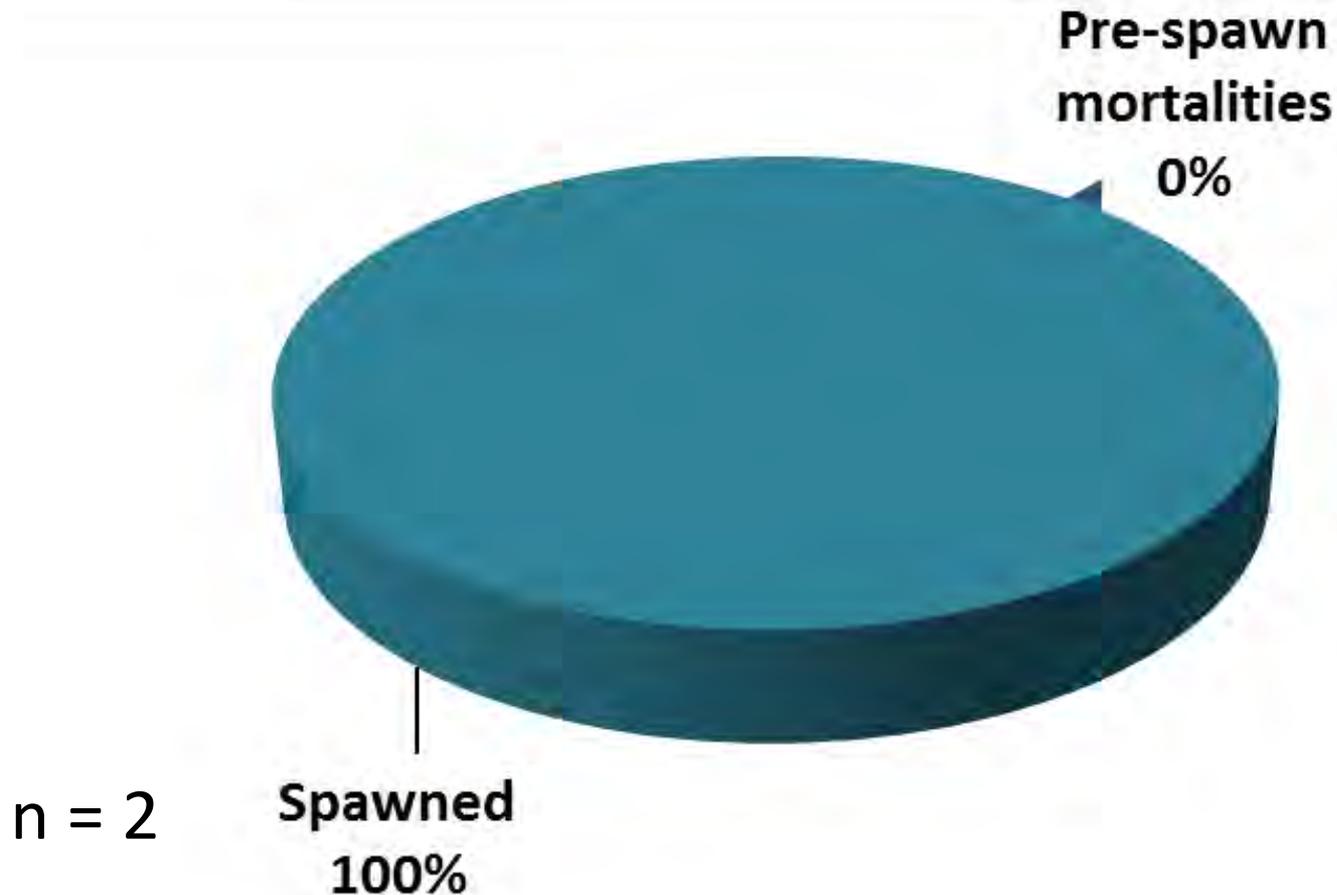
**Whoever guesses closest will win something “fishy”!
Complete the slip and place in the orange bucket.**



Chum: Success in Spawning

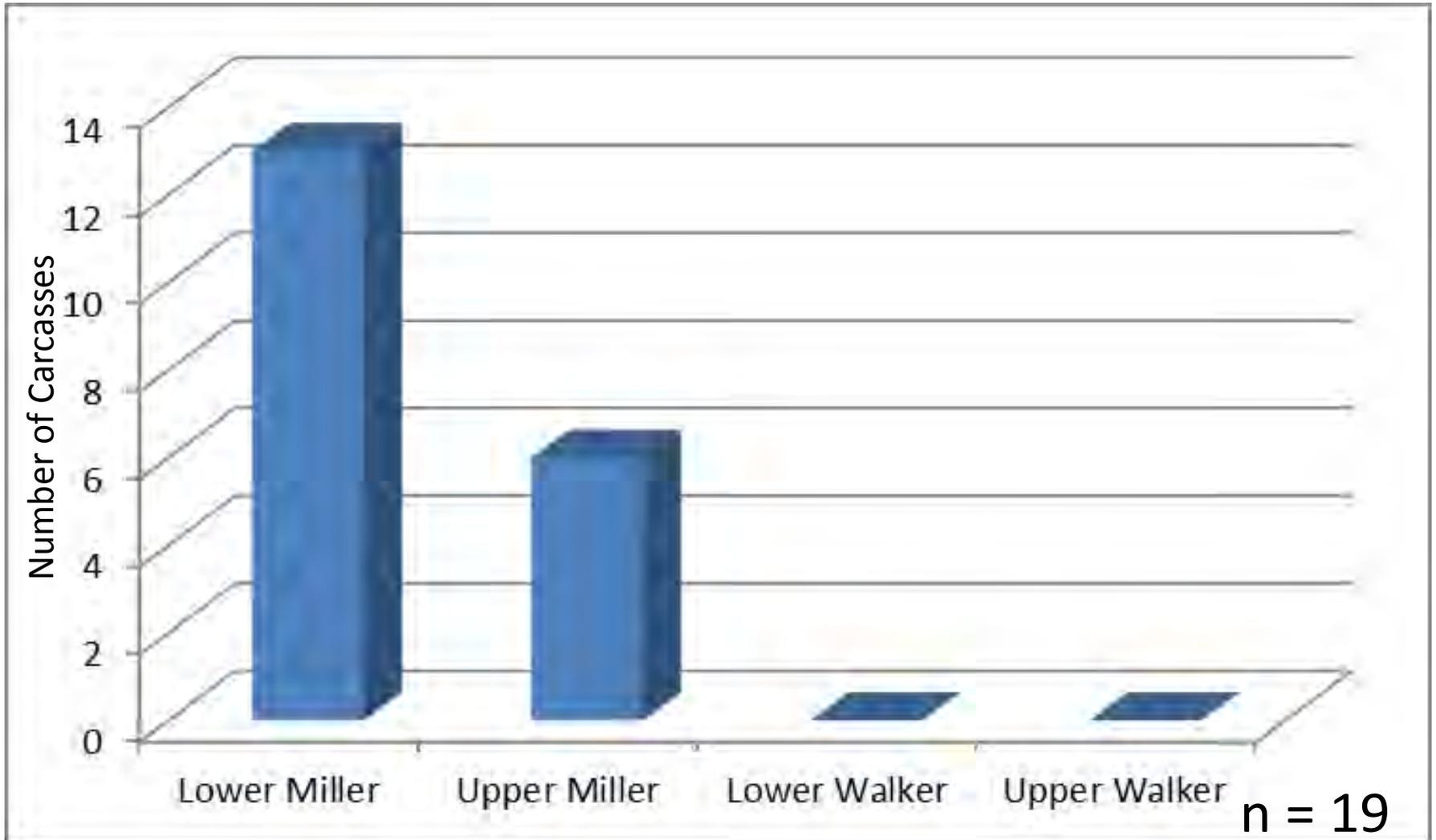
Miller and Walker Creeks – 0 of 2 females =

0% Pre-spawn Mortality



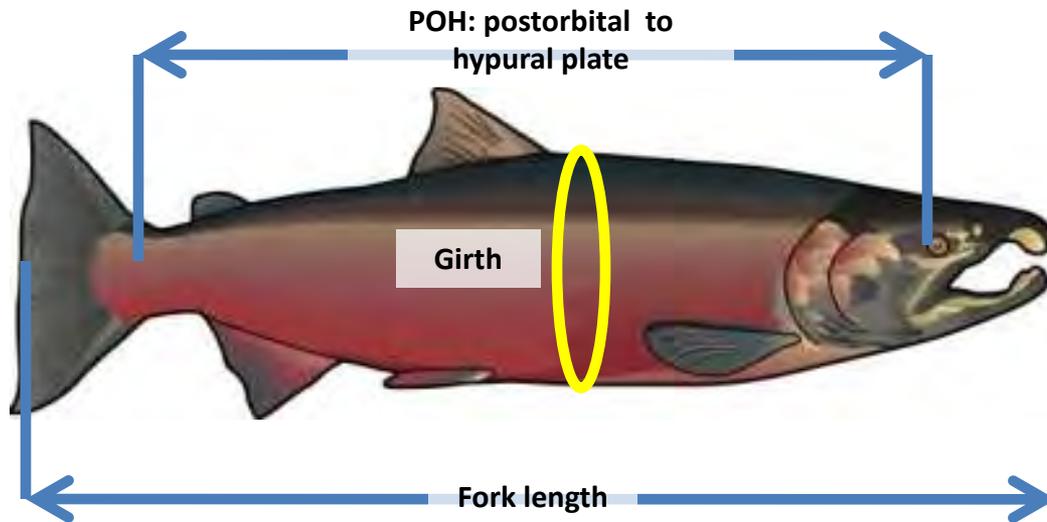


Coho Carcasses: Location

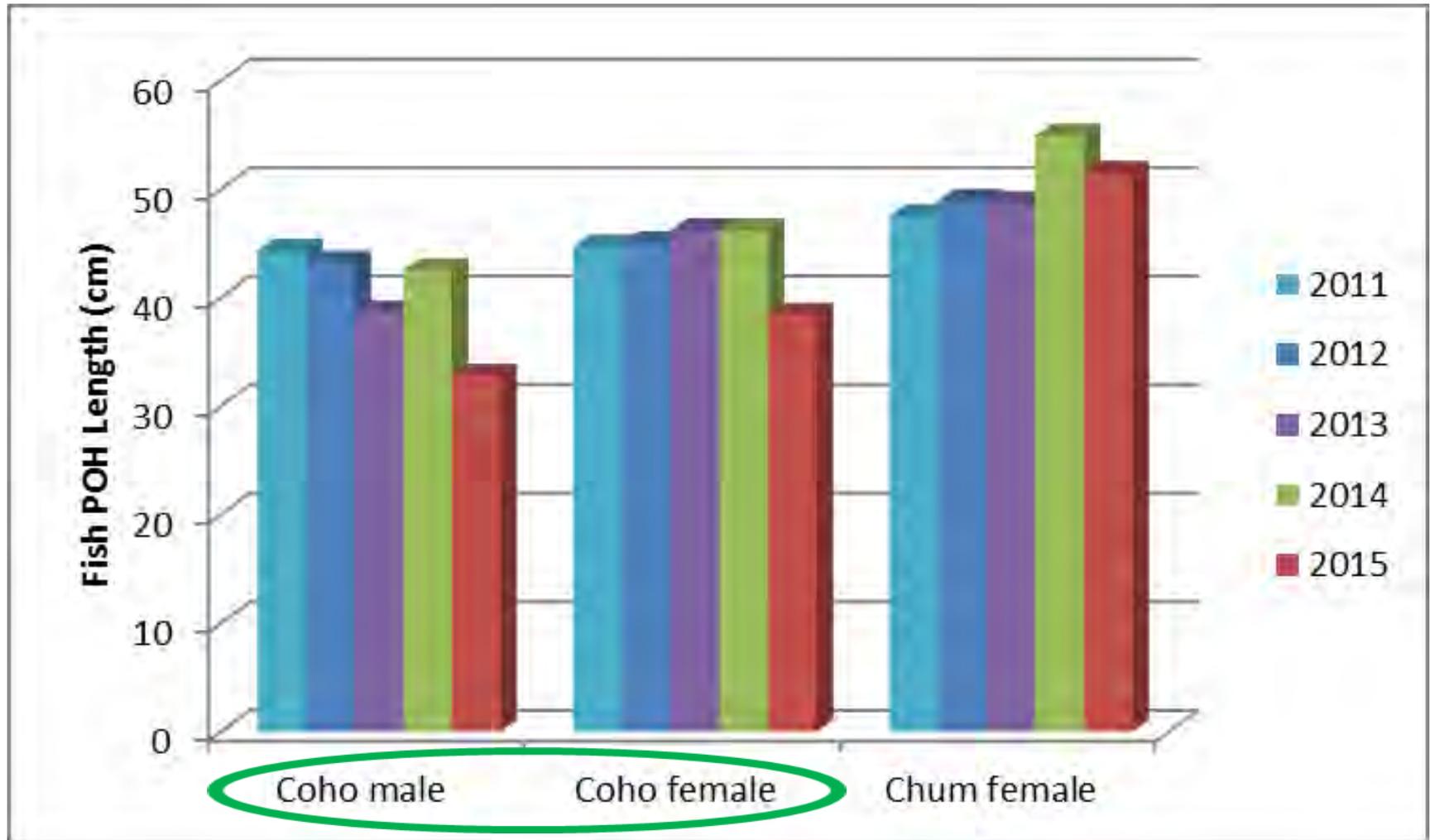


Coho Carcasses: Size

	Fork length (cm)	POH (cm)	Girth (cm)
Male average	41.8	32.8	24.5
Female average	48.5	38.4	23.3

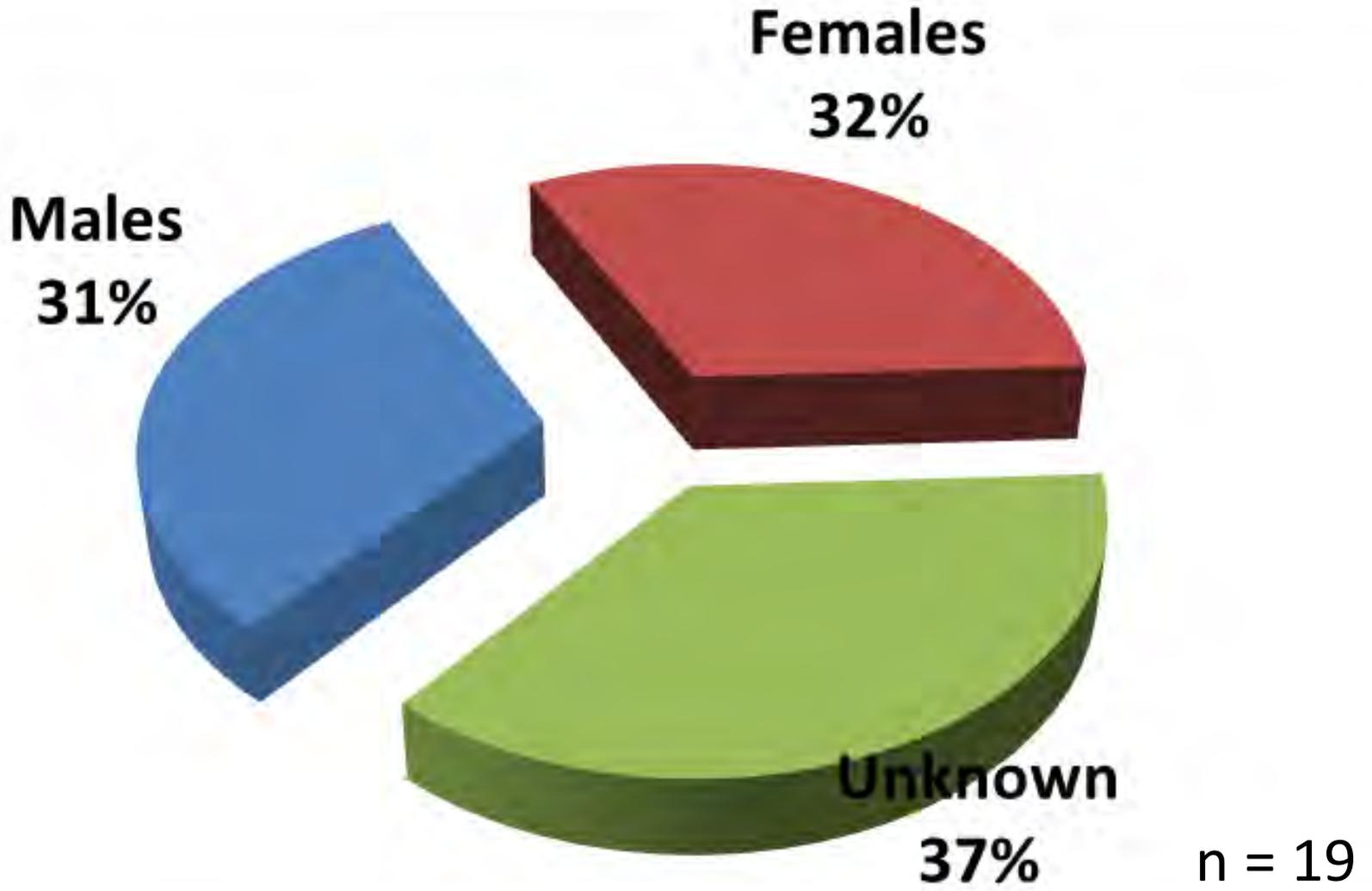


Fish Length over 5 years





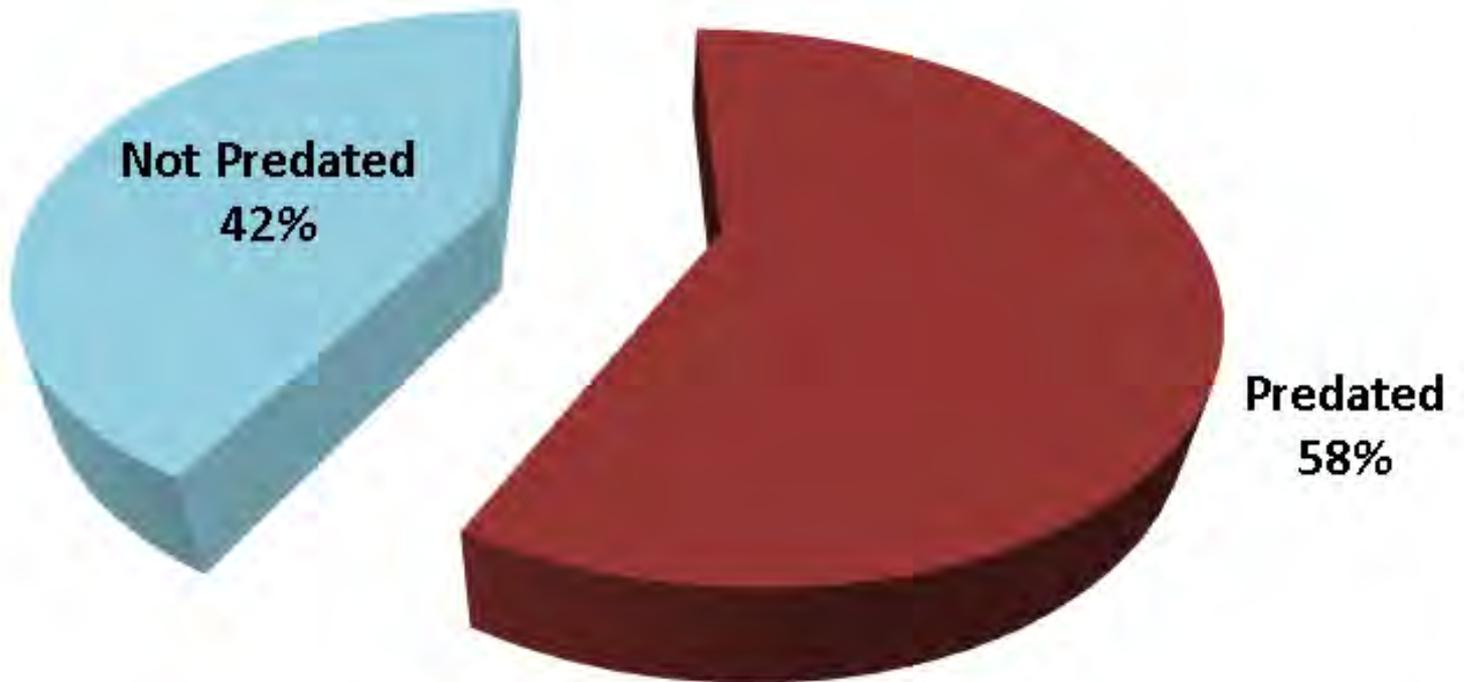
Coho Carcasses: Sex





Coho Carcasses: Predation

Coho



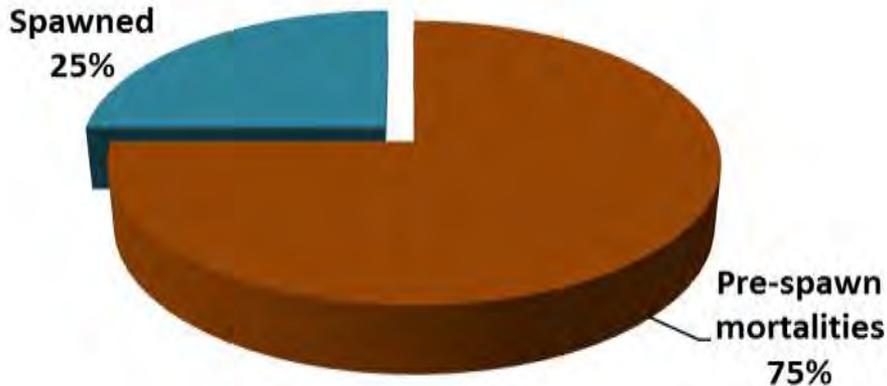
n = 19



Coho: Success in Spawning

Miller Creek
75% PSM

Walker Creek
0 carcasses



4 females

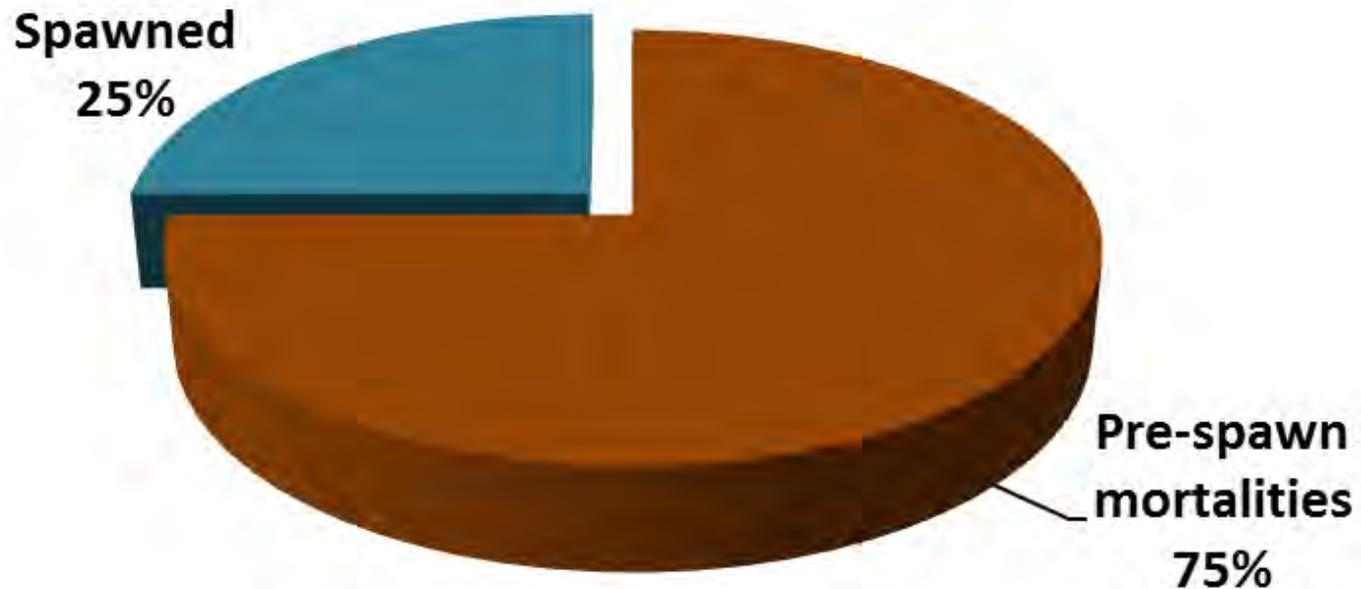
Overall coho pre-spawn mortality:



Coho: Success in Spawning

Miller and Walker Creeks – 3/4 females =

75% Pre-spawn Mortality



N = 4



Coho: Hatchery Origin

8 fish were unmarked -
either "wild-origin" or
TU outplanted fish

4 fish were too
far gone to tell

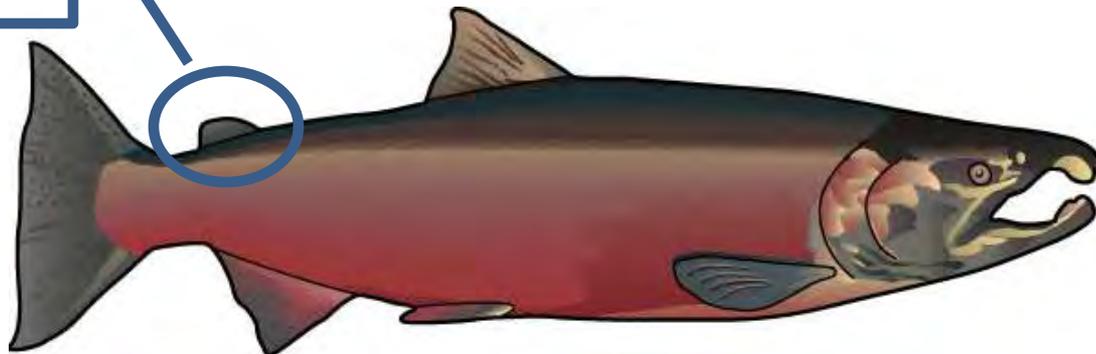
Unmarked
42%

?
21%

Hatchery
37%

7 fish originated from
hatcheries outside of the
basin and "strayed" into
the streams to spawn

Adipose fin

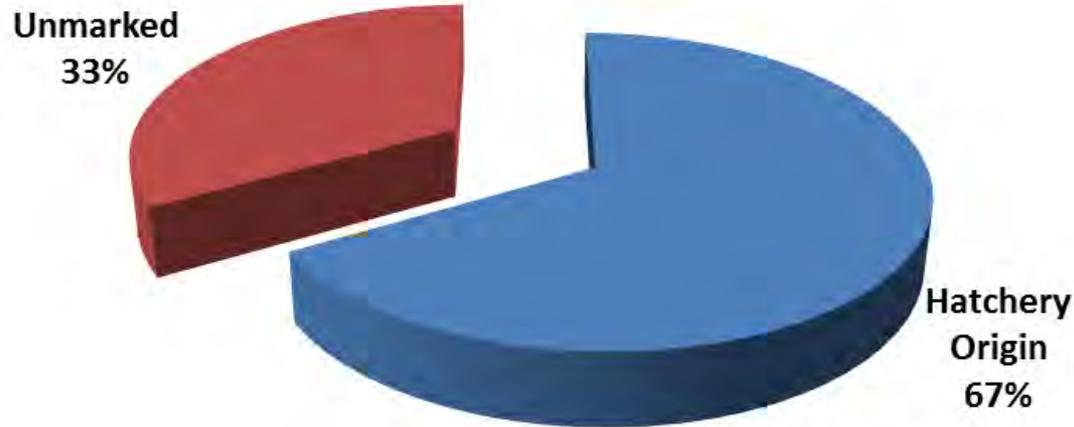


n = 19



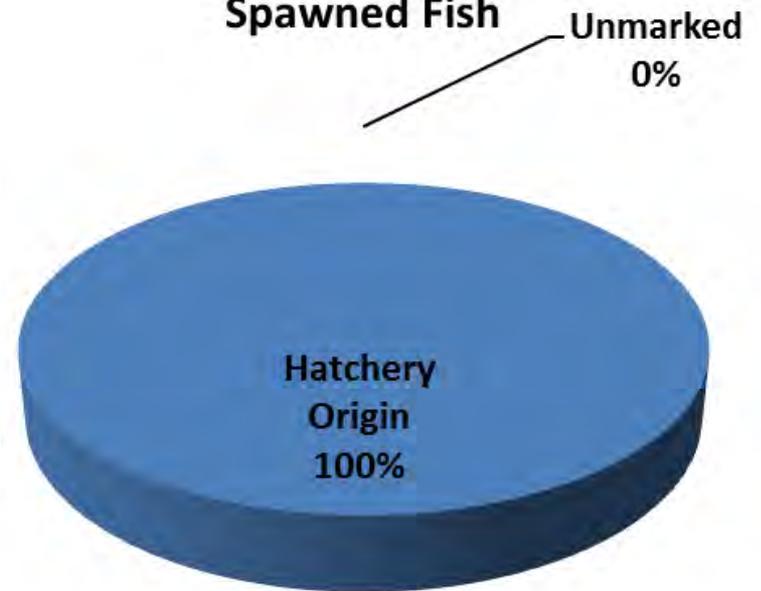
Coho: Success in Spawning and Origin

Pre-spawn Mortalities



n = 3

Spawned Fish

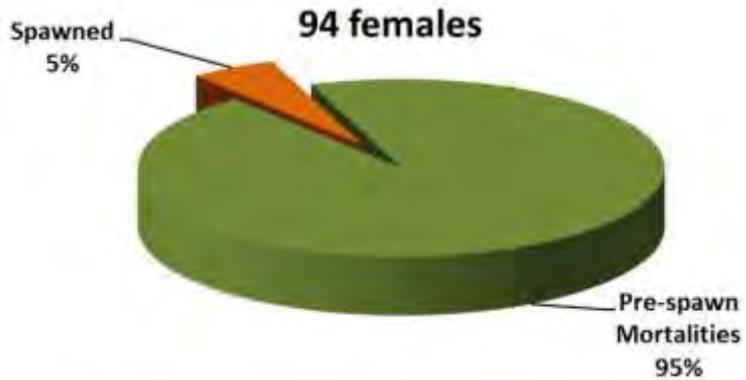


n = 1

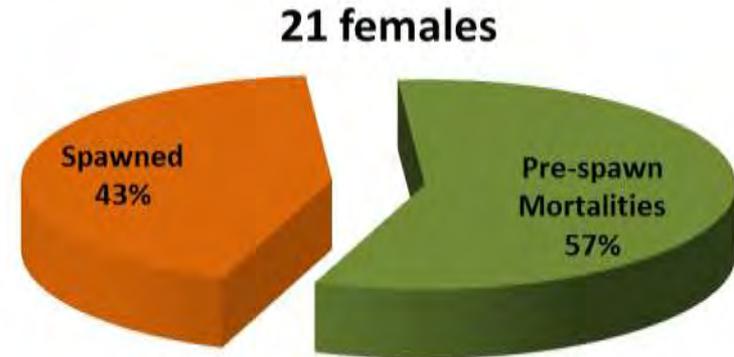


Coho: Spawning Success in 2012: Miller/Walker and Nearby

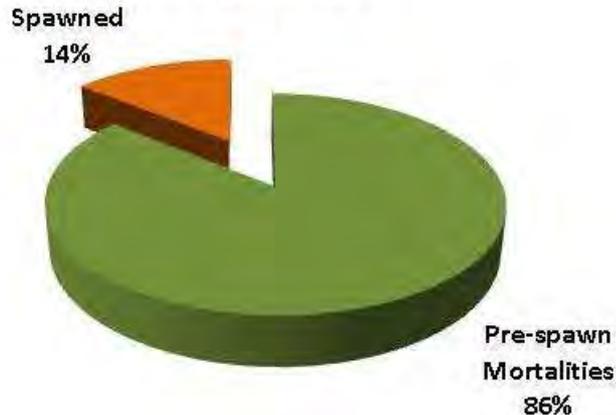
Miller Creek- 95% PSM



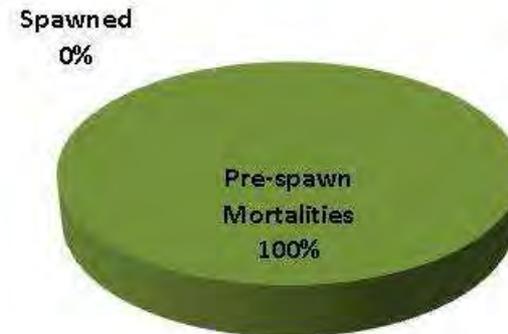
Walker Creek – 57% PSM



Longfellow Creek – 86% PSM
86 females



Des Moines – 100% PSM
34 females



Wildlife

- American dippers - pair
- Raccoon
- Mallards
- American wigeon
- Great blue heron
- Gulls
- Red-winged blackbirds
- Common merganser
- Bald eagles (3)



Ducks on Walker Creek pond

Photo courtesy of Pam Silimperi

Predation



Photo courtesy of Laura Milleville, 2015

Beautiful



Photo courtesy of Laura Milleville, 2015

Edible Mushrooms



Photos courtesy of Pamela Silimperi, 2015

Thank You Volunteers!



Amazing 2015 Volunteers

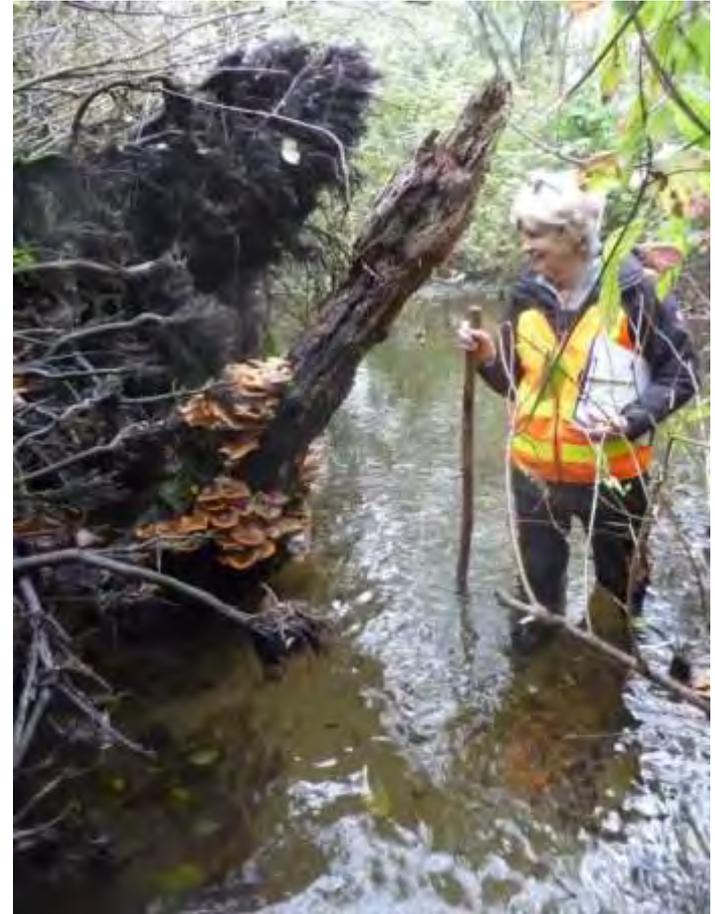
Number of Days Surveyed:

- **Lee Moyer (11)**
- **Joy Neubauer (11)**
- **Roger Neubauer (10)**
- **Ed Nugent (9)**
- **Michael Roedell (9)**
- **Margy Wallace (9)**
- **Craig Knutson (8)**
- Meghan Schuster (7)
- Pamela Silimperi (7)
- Shelby Vander Molen (7)
- Kristine Feldman (6)
- Laura Milleville (6)
- John Mozeika (6)
- Merry Ann Peterson (6)
- Ryan Rhodes (6)
- Liesl Sallquist (6)
- Dahli Strayer (6)
- Nathan Tallar (6)
- Steve Hanley (5)
- Kay Larsen (5)
- Robin Hoefer (4)
- Drew Hoefer (3)
- Donita Knutson (3)
- Ashley Townes (3)
- Barb Cropp (2)
- Tracey Drum (2)
- Bruce Knutson (2)
- Brenda Sullivan (2)
- Nick Hoefer (1)
- Demetrius Johnson (1)
- Carlyn Roedell (1)

4) Plans for 2016 CSI

**Team Thursday –
Pam and Kay**

Photos courtesy of
Pamela Silimperi, 2015



Plans for 2016 CSI Survey Season

- Continue the excellent work of the last 6 years by surveying again at four locations in Normandy Park
- Maintain between 25 & 32 volunteers
- Training in early October, 2016
- Sign in with your email address to stay informed
- **Tell your friends and family!**

5) Factors Driving Stream and Salmon Health



**St. Francis
Elementary students
mark storm drains by**

Lake Burien

October 5, 2010

**Photo courtesy of
Michael Stein-Ross**

**Coho salmon fry in Miller
Creek in Normandy Park**

June 30, 2008



How Urban Lands Affect Streams

- Hydrology – stream flow
 - Faster, higher flowing water more often
 - Less and warmer water in summer
- Water quality
 - Warmer, low dissolved oxygen, altered pH, more turbid
 - More pollution - bacteria, metals, pesticides, oil, salt, etc.
- Physical habitat conditions
 - Substrate: hardened, more silt/sand, less gravel
 - Salmon nests in gravel are smothered
 - Streamside vegetation: native, invasive, absent
 - Reaches inaccessible to resident and anadromous fish



Expanded Ambaum stormwater detention pond in Burien

December 3, 2007

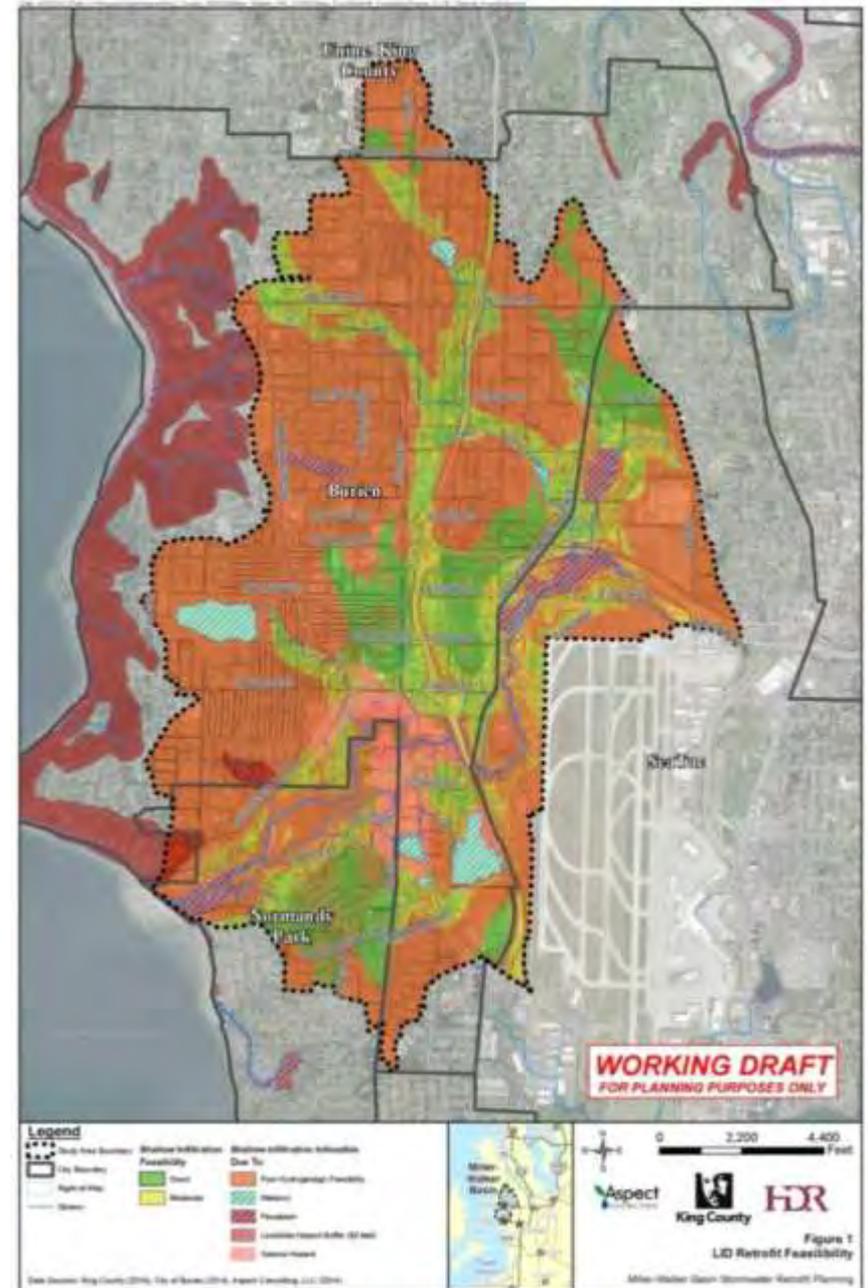
With funding
support from:



Washington State
Department of Transportation

Miller-Walker Stormwater Retrofit Analysis

- Goal: identify where stormwater management will make the biggest difference and be successful
- Grant funded by Dept. of Ecology and supported by Miller-Walker basin partners
- Hydrologic and soil, geology, steep slope analysis of Miller-Walker basin for good locations
- 80 public sites identified and evaluated



Top 4 Projects:

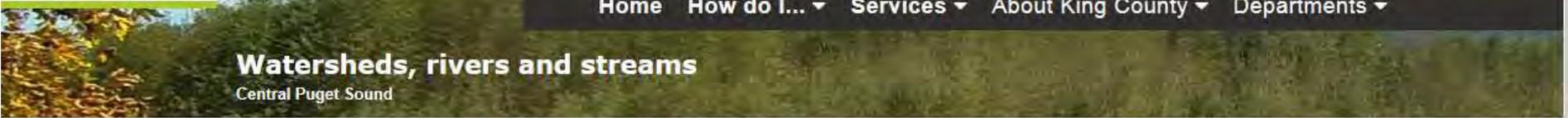
- Concept design reports
- Won over \$1million in grants
 - Moshier Park and adjacent Moshier Community Art Center - Burien
 - 6th Ave SW from SW 146th St to SW 153rd St - Burien
 - King County District Court – 6th Ave & SW 149th St. – King County/Burien partnership

Proposed Concept



Typical BMP Concepts





You're in: Central Puget Sound Watershed » Miller and Walker Creeks Stewardship » Clean Stormwater

- Central Puget Sound Watershed
- Vashon - Maury Island
- Miller and Walker Creeks Stewardship
 - Stewardship Tips
 - Volunteer Calendar
 - Stream Blog
 - Miller Creek Photo Tour
 - Walker Creek Photo Tour
 - Basin Plan
 - Clean Stormwater**
 - Monitoring Information
 - Salmon Monitoring Program - "CSt: Highline"
 - Contacts
 - Hydrologic Modeling
 - Nearshore environments
 - Puget Sound Shoreline Stewardship Guidebook
 - Related organizations
 - News archive
 - Site Map

Miller and Walker Creeks Stormwater

Miller and Walker Creeks Stormwater: Retrofit Planning for Improving Streams

When it rains in the Miller and Walker Creeks basin, streams flow high and fast, and the water is polluted. This is because much of the area was built with the idea of getting water into the creeks as quickly as possible. Now, we realize that this washes pollution (oil, gas, fertilizers, pesticides, metals used to waterproof wood, etc.) into the streams and causes high flows that damage habitat.

The Miller Walker Basin Partners (the cities of Burien, Normandy Park, and SeaTac; King County; and the Port of Seattle) conducted a stormwater retrofit analysis that identified potential strategies and projects to help reduce runoff into Miller and Walker Creeks.

Maps and Reports

Reports, maps and other Miller-Walker stormwater retrofit products will be posted to this page as they become available.

- [Level I Stormwater Retrofit Site Evaluation Map](#) (Adobe PDF)
- [Level I Stormwater Retrofit Site Evaluation Criteria](#) (Adobe PDF)
- [Level I Stormwater Retrofit Site Evaluations - Matrix](#) (Adobe PDF)
- [Level II Stormwater Retrofit Site Evaluation Map](#) (Adobe PDF - 7 MB)
- [Level II Stormwater Retrofit Site Evaluation Matrix](#) (Adobe PDF)
- [Miller-Walker Infiltration Feasibility Assessment](#) (Large PDF file - 20 MB)
- [Public Comments and Answers, May 2014](#) (Adobe PDF)
- [Draft Pre-Design Report for King County Courthouse in Burien](#) - Project KC-47 (Adobe PDF)
- [Draft Pre-Design Report for 6th Ave SW in Burien](#) - Project B-20 (Adobe PDF)
- [Hydrologic Assessment of Stormwater Retrofit Need in the Miller-Walker Basin](#) (Adobe PDF)

Miller and Walker Basin Stewardship Sponsoring Jurisdictions

- City of Burien
- City of Normandy Park
- City of SeaTac
- King County
- Port of Seattle

Miller-Walker Creek Questions

- Contact Elissa Ostergaard with questions about Miller and Walker Creeks, (206) 477-4792

Lake Burien Questions

- Direct questions about Lake Burien, including toxic algae testing, to Sally Abella, (206) 477-4605

To offer a suggestion or report an error on the Water and Land Resources' Web site, please contact **Fred Bentler**, webmaster.

Stewards of the Cove at work since 2003



**Normandy Park
Community Club**

6) Our Role



Puget Sound 
Starts Here

Things *You* Can Do

Clean up runoff:

Fix oil leaks in your car

- Check for leaks
- Contain leaks until you can get the car fixed



www.fixcarleaks.org

Things You Can Do

Clean up runoff:



- Wash your car **at a carwash** (avoids wasting up to 80 gallons!) - or -
- **On the lawn** rather than in the street (keeps soap and oil out of the storm sewer and out of the creek)

Things You Can Do

Clean up runoff: pick up after your pet





Things *You* Can Do

Volunteer to mark storm drains



**Lindsay/Andolina family
marked storm drains in
their Burien neighborhood
August 25, 2010**

The Truth about English Ivy

English ivy is a bully.

In the plant world, English ivy is:

Aggressive

English ivy grows very quickly, about 6 feet a year. Vines on this invasive climber can grow over 90 feet long. A greedy competitor for soil, sunlight, and water, English ivy will smother every understory plant in its path.



Pushy

Spreading quickly by seed, English ivy heeds no boundaries. Birds, such as the American Robin, snack on its seedy berries. The birds then distribute the seeds in their droppings wherever they fly, often miles away. In this way, ivy on one property can spread to other yards and forests and to our public parks and green spaces.

Ruthless

English ivy can kill large trees by suffocating trunks and weighing down branches. By covering trees, ivy's dense growth creates a "sail effect" that topples trees in wind storms. Ivy can take over entire forests. Blanketing the landscape, out-of-control ivy creates an "ivy desert"—a monoculture where no other plant can survive.



Unless we remove English ivy it will destroy our forests.

English ivy is unruly.

In the human world, English ivy is:

Destructive

English ivy can topple large trees, weaken fences and masonry walls, and cause structural collapse with the bulk of its woody vines. Do not underestimate ivy: vines on mature plants can weigh up to 2,100 pounds with trunk-like stems nearly one foot thick!

Unhealthy

King County's pest problem is aided and abetted by English ivy. Rats and other vermin hide in the cover of English ivy and use its vines to climb onto roofs and into our homes.



Expensive

Cities in the Puget Sound area spent over \$11 million removing English ivy from our parks from 2005-2011 and have only made a small dent in the thousands of acres that are infested. Volunteers have spent over 400,000 hours pulling English ivy and re-planting our public forests. Homeowners can face expensive repairs to their fences and houses and for hazard tree removal, as well as the cost of ivy removal itself. English ivy has already cost us a lot.



SAVE A TREE — CREATE A SURVIVAL RING



If you find a tree "drowning" in ivy, do not attempt to yank the ivy out of the tree's branches—you might damage the tree. Instead, cut the vines at shoulder height and again at the base of the tree. Pull the vines away from the lower tree trunk. (Don't worry about the vines higher up on the tree: once cut they will wither and die.) Then, pull up the vines and remove all ivy roots from around the tree trunk in a 6-foot radius, taking care not to damage the tree roots. Keep this circle ivy-free to create a survival ring for the tree.

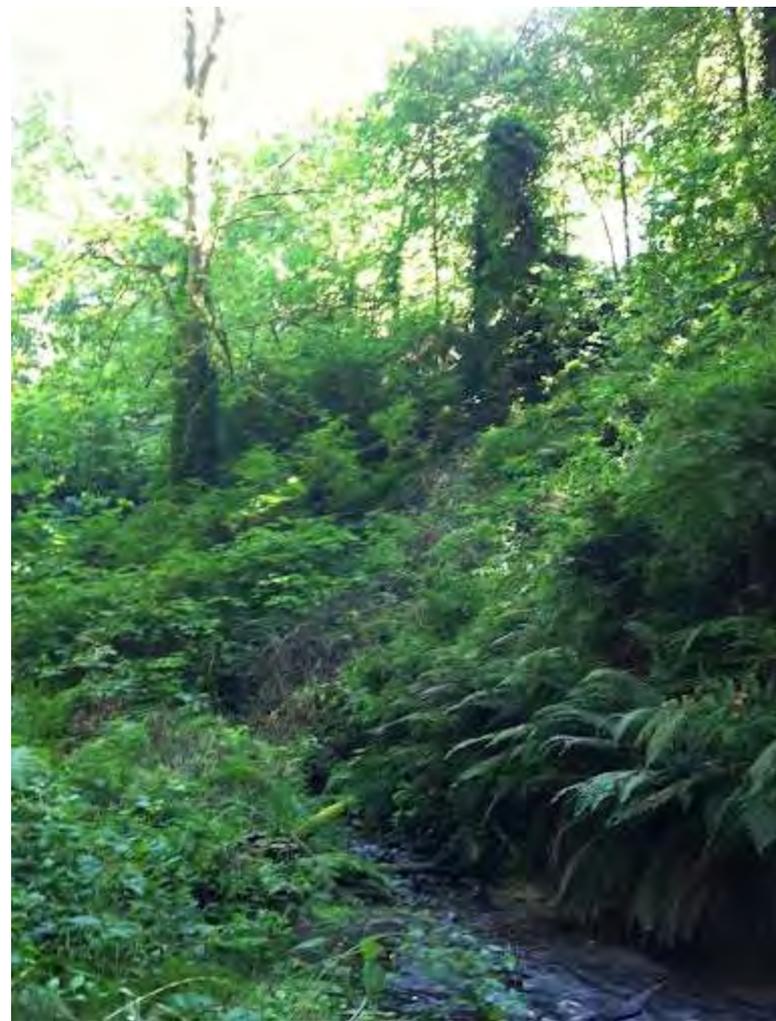
Take action against English ivy



1. **Rip it out.** Everyone should take a stand against ivy and use other ground covers. There are many attractive alternatives to ivy. For plant suggestions, visit www.hryout.org/ivyalt.htm.

If you can't eliminate all ivy, remove all berry-producing branches, and keep it heavily pruned and away from trees. Please, don't let those ivy clippings escape. Always dispose of ivy properly in your green waste receptacle.

2. **Join a community event.** We need to rescue thousands of acres of forested lands from ivy. Join an ivy-removal event at a park near you. Parks departments and local organizations are working in many places throughout the county and can use your help. Contact your local parks department or visit the volunteer information page at www.kingcounty.gov/weeds.
3. **Support ivy-free nurseries.** Despite its noxious weed status, English ivy is not on the state quarantine list and is still sold at many garden stores. However, some businesses have chosen to go ivy-free. Ask your favorite garden store if they carry ivy and make sure to thank them if they don't.



**Ivy in trees along Walker Creek in
Normandy Park**

August 25, 2011



Things *You* Can Do



Save your trees –
remove the ivy



Trees ARE the view





Things *You* Can Do



Leave down logs in the stream

Not so great

Leave down logs and branches for wildlife



Things *You* Can Do: Volunteer



**Upcoming volunteer events:
Walker Preserve on April 2
and May 7, 2016**

Photos taken Feb. 18, 2012 & Feb. 6, 2016



Restoring Bank Vegetation

2010's "Team Tuesday" Christine & Kerry
at Sewer Plant on Upper Miller Creek

November 9, 2010



"Test plot" native plant
revegetation area

Restoring Bank Vegetation

Lee and Jim planting willows at Sewer Plant
on Upper Miller Creek

November 22, 2011



Restoring Bank Vegetation



**2013 - Test Plot at Sewer Plant
on Upper Miller Creek**

October 13, 2013

Restoring Bank Vegetation



**2014 - Test Plot at Sewer Plant
on Upper Miller Creek**

October 16, 2014

KCD's Landowner Incentive Program



Photo courtesy of Pamela Silimperi, 2015

Things *You Can Do*

Clean up runoff: build a rain garden



**Rain garden at
Burien Town Square**
January 25, 2011

Photo courtesy of Ken Srilofung, City of Burien

Things *You* Can Do: Volunteer

Volunteer for the
Community
Salmon
Investigation
for 2016!

**Backup Volunteer Tracey
with a predated chum**

Fall 2015

Photo courtesy of Pamela Silimperi



Shared Funding for Stewardship

Thank you Miller-Walker basin partners, who support King County basin stewardship:



King County



Photo courtesy of Barb and Darrell Williams

The End

Miller-Walker Basin
Local partners
working together
for clean water
and healthy
streams



Coho with Coded Wire Tags: 0

Coho released here in May 2012

- Coho from Elliot Bay – Muckleshoot Indian Tribes Net Pen
- From Keta Creek Hatchery (Green River) in 2010
- Released in 2012 into Puget Sound
- 3 females: 2 spawned, 1 PSM
- Miller Creek

