Community Salmon Investigations for Highline

CSI: Highline

Orientation & Training Workshop

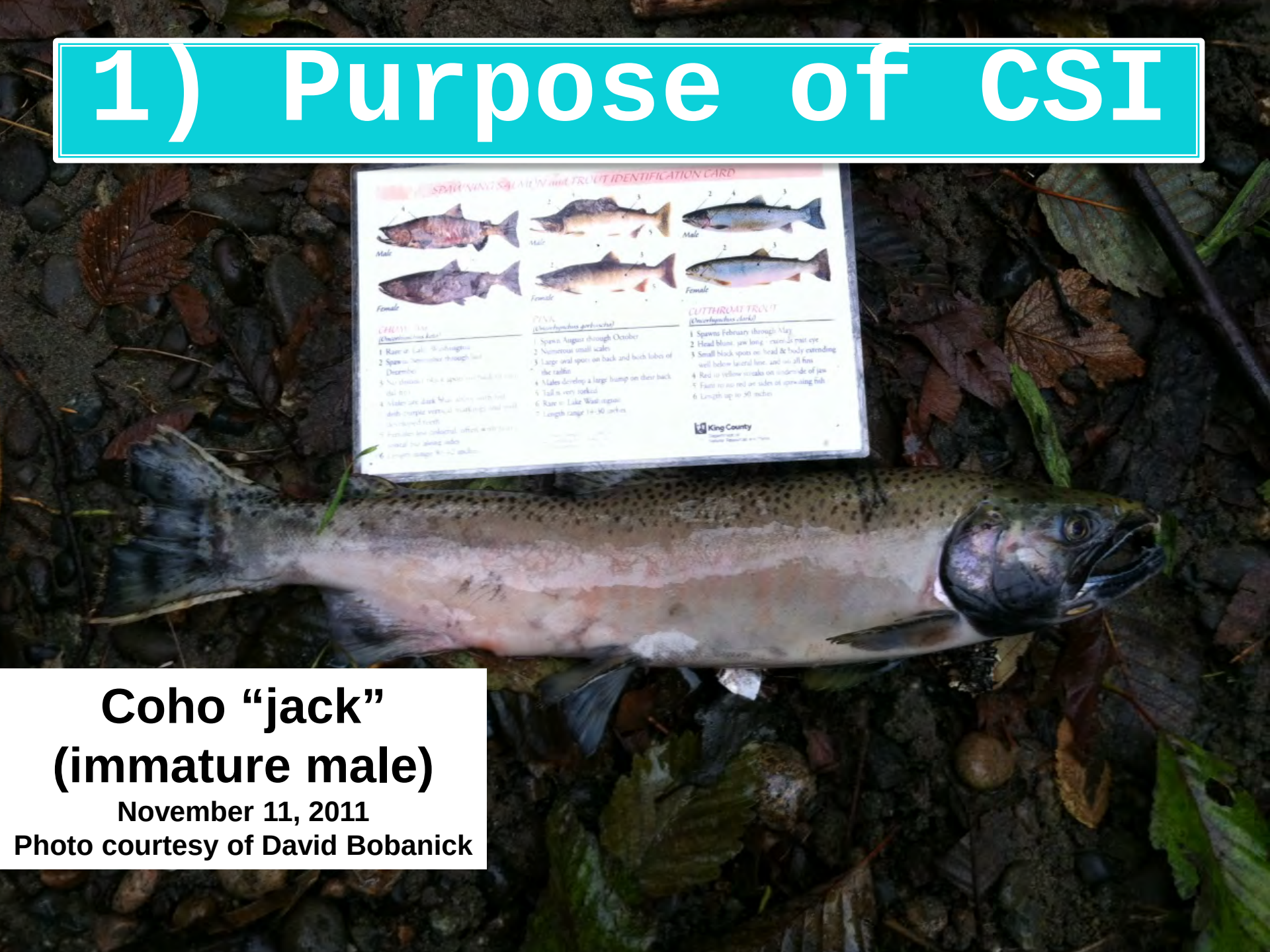
October 2, 2014

Elissa Ostergaard
Miller-Walker Creek Steward, King County

Agenda

- Why count & cut open salmon?
- How to survey
- Safety Requirements & Emergency Procedures
- Salmon & Redd identification – tips & practice
- Carcass necropsy for “pre-spawn mortality”
- Teams & scheduling
- Submitting data – new web form
- Turn in waivers and pick up survey kits

1) Purpose of CSI

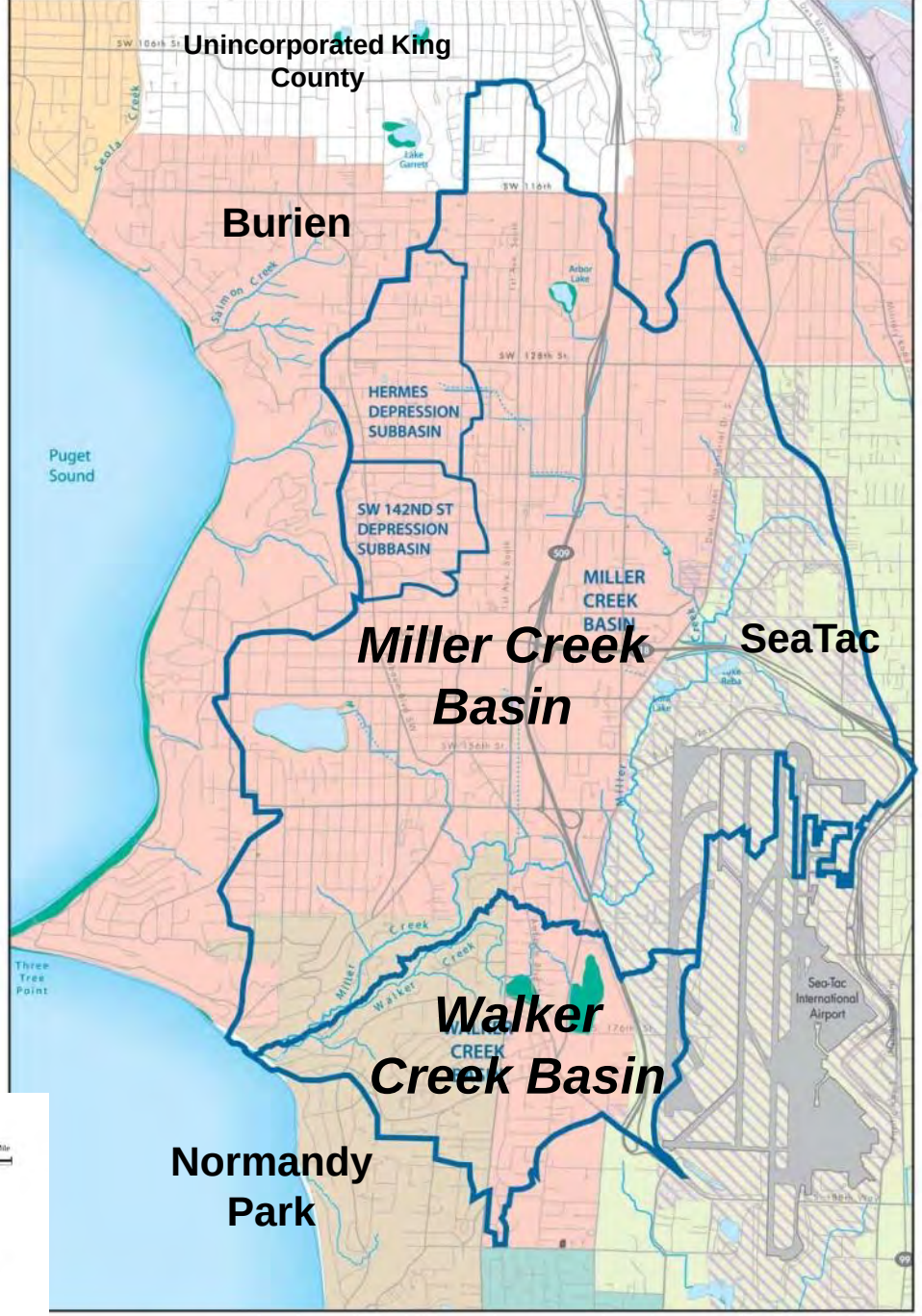


Coho “jack” (immature male)

November 11, 2011

Photo courtesy of David Bobanick

Basin Boundaries for Miller and Walker Creeks



Legend

Basin Monitoring Coordination Workshops with Dennis Clark, Fall 2008

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

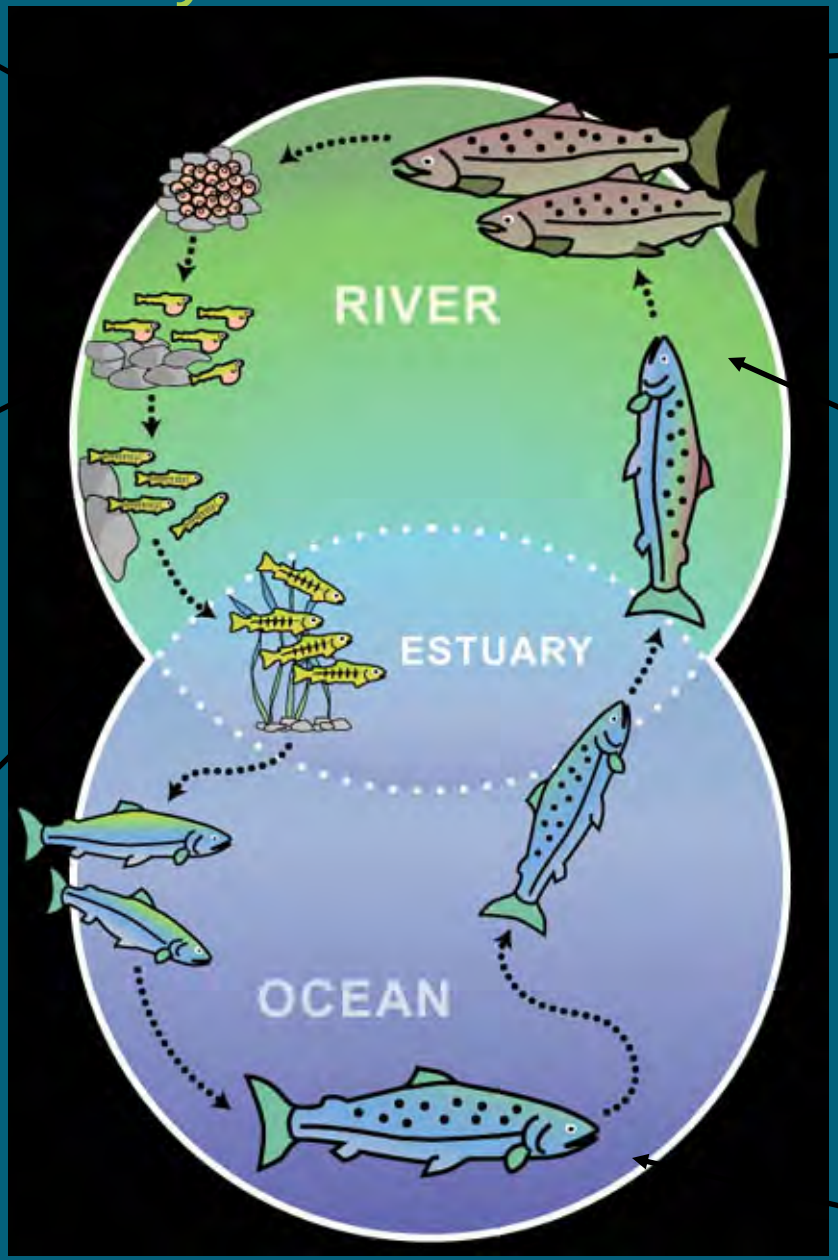
Monitoring Workshop #3 in Burien
December 4, 2008

Activities and Purpose of *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

Life Cycle of Pacific Salmon

Photo by Hans Berge



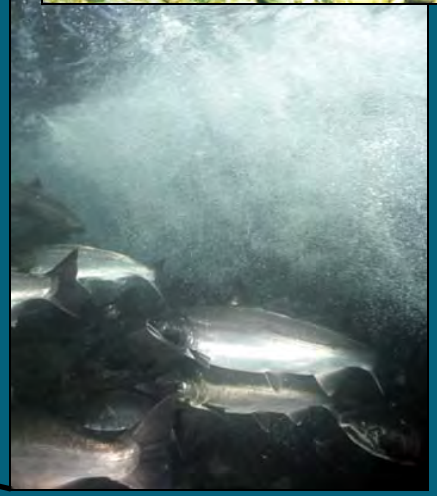
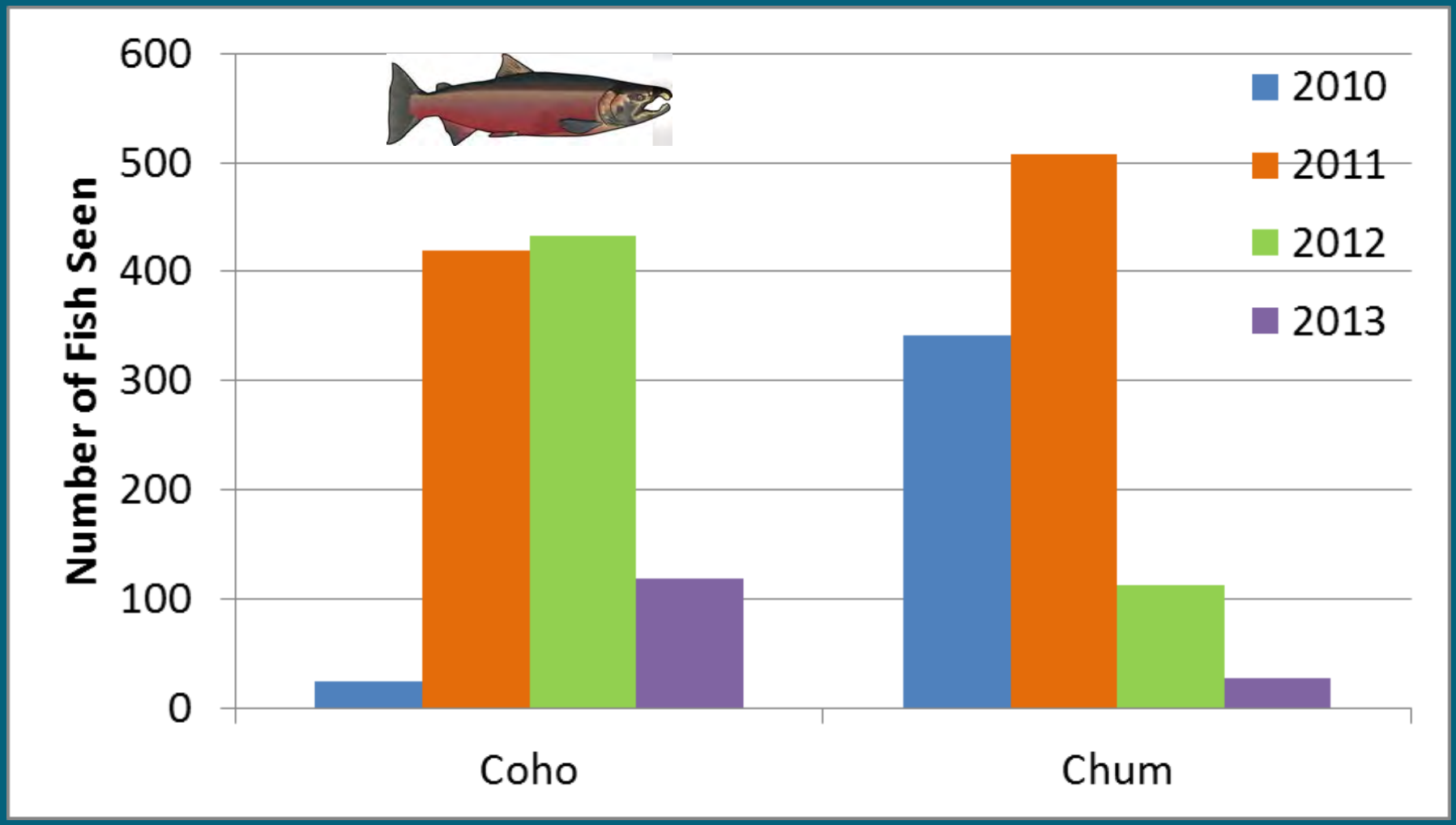
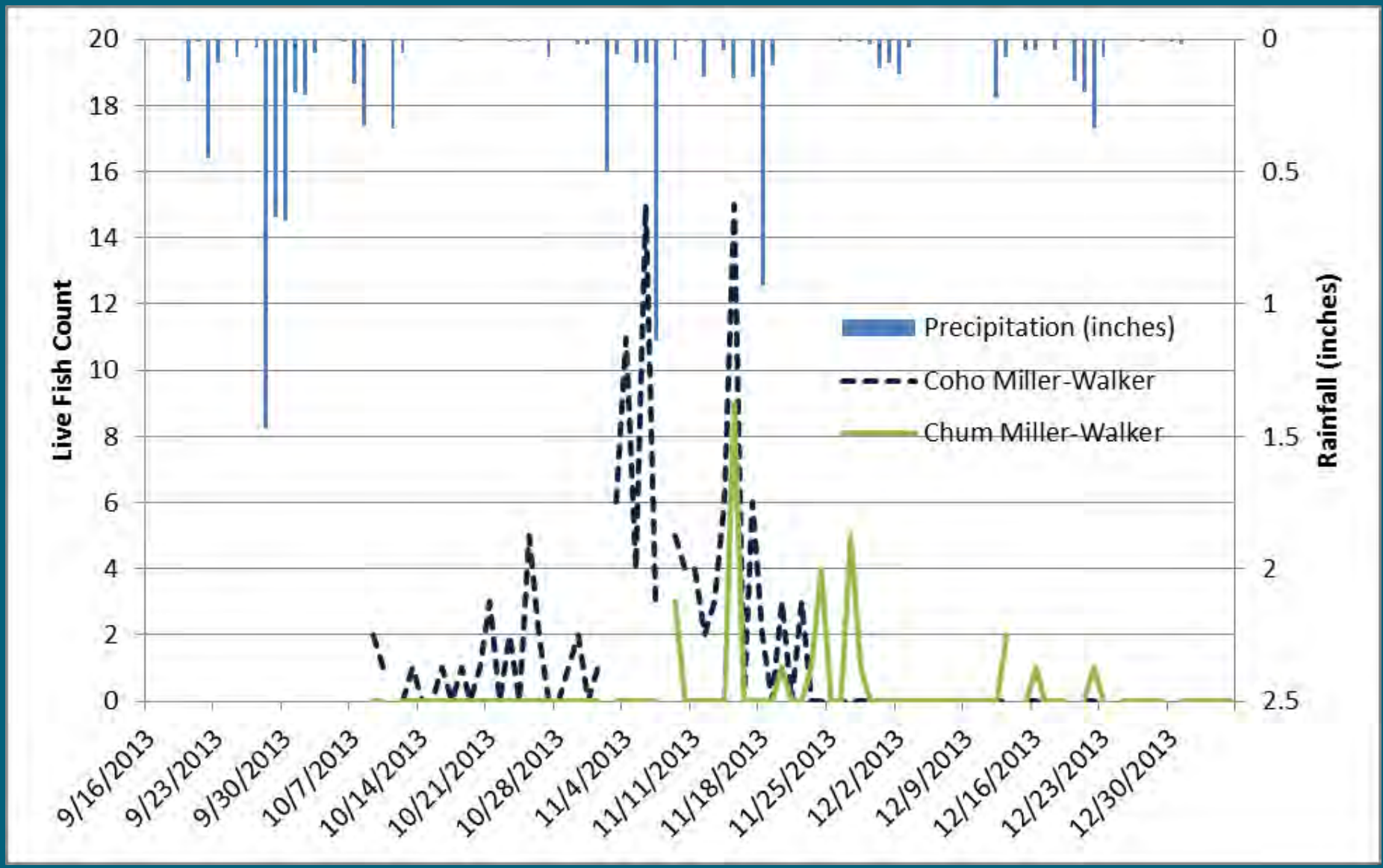


Photo by Al Solonsky

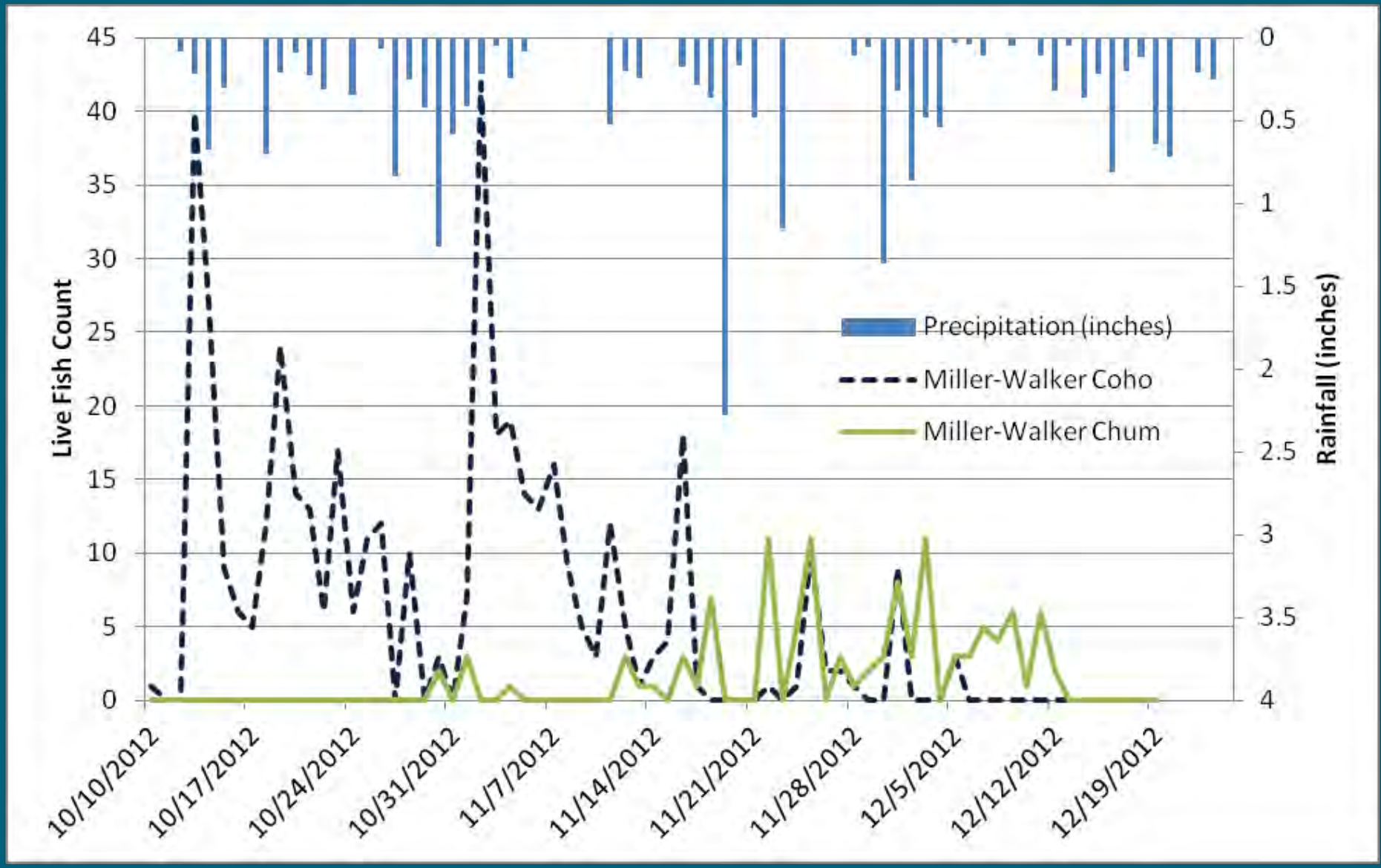
Results: 2010-2013



Rainfall and live fish - 2013



Rainfall and live fish - 2012



Stormwater is not treated

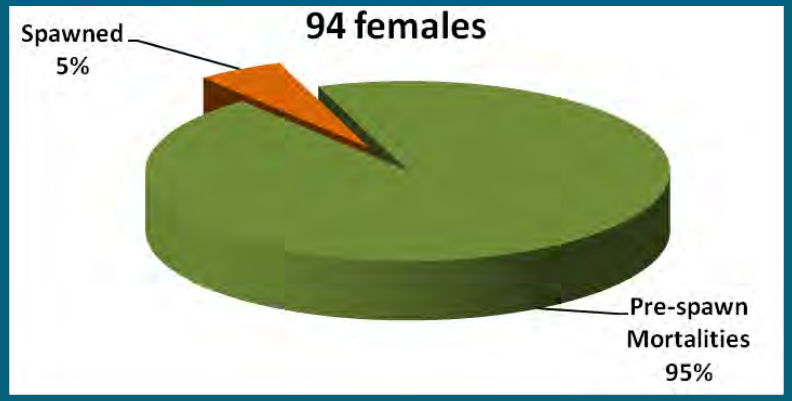
Prespawn Mortality

Coho experiencing "prespawn" mortality at Upper Miller survey location

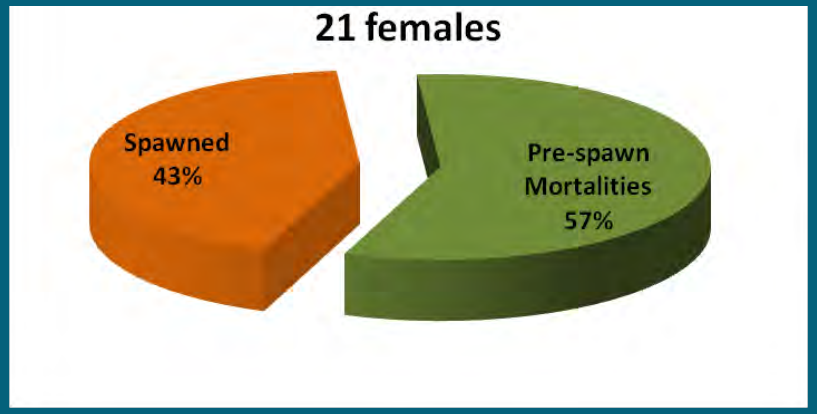
October 23, 2009

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

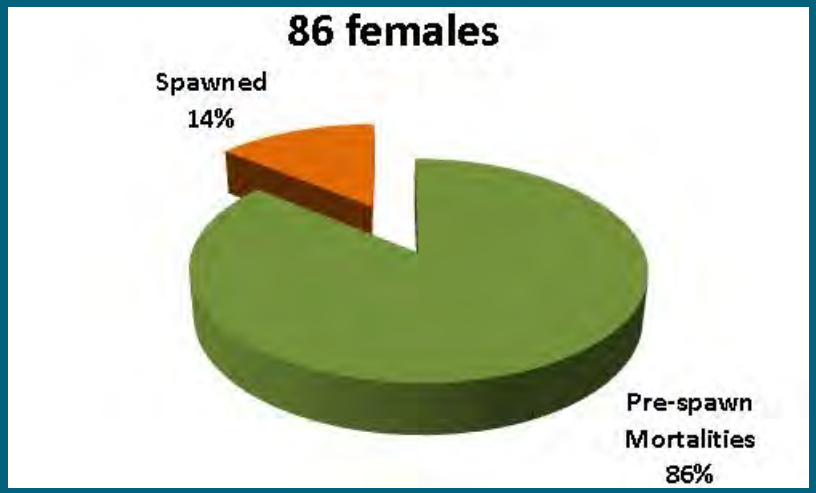
Miller Creek- 95% PSM



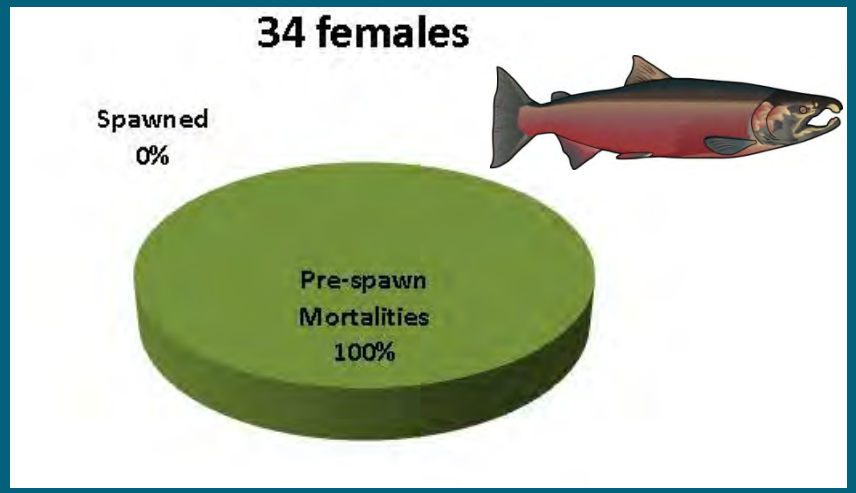
Walker Creek – 57% PSM



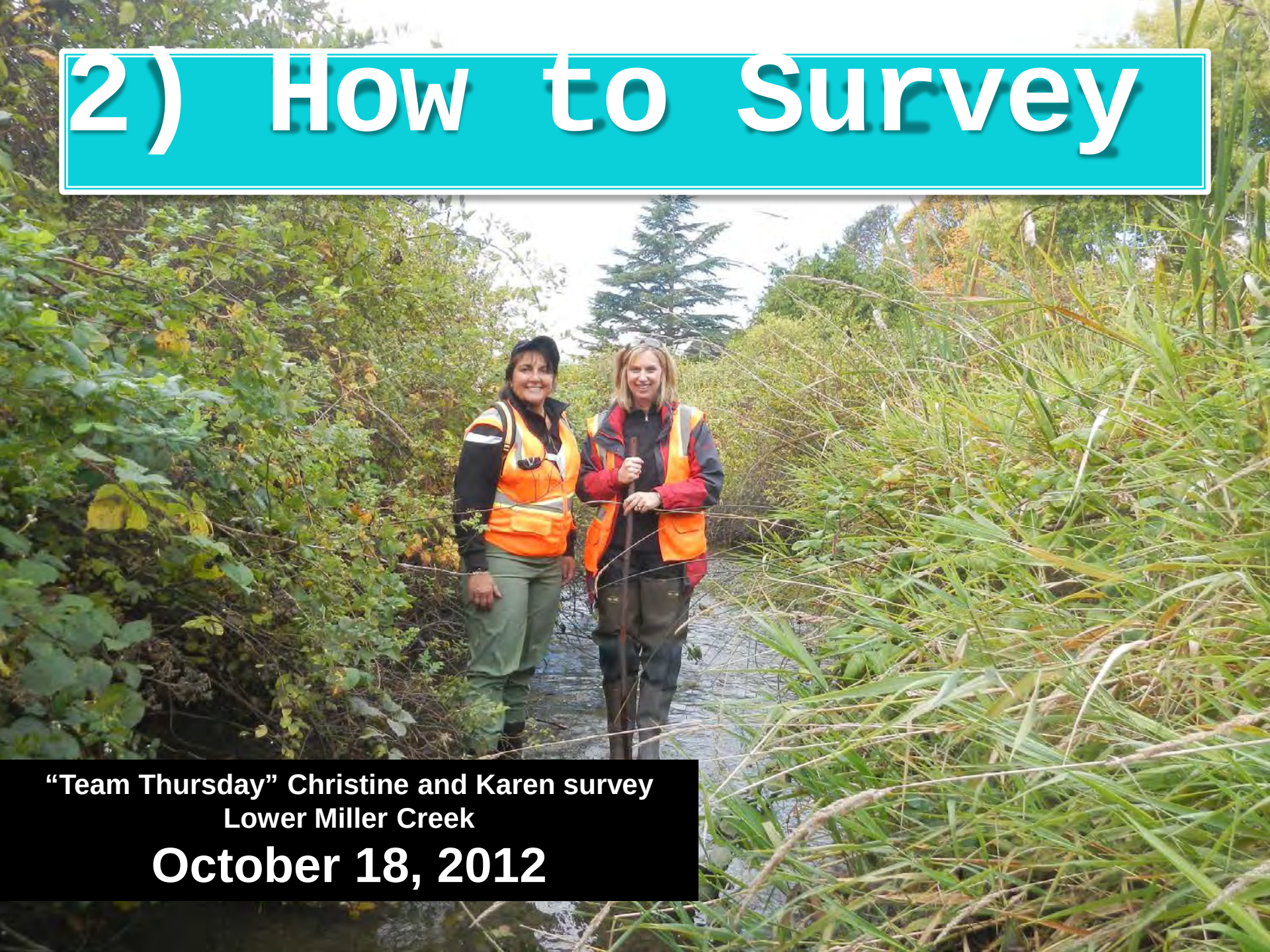
Longfellow Creek – 86% PSM



Des Moines – 100% PSM



2) How to Survey



"Team Thursday" Christine and Karen survey
Lower Miller Creek

October 18, 2012

CSI: Highline – When

When do we start surveys?

Wednesday, October 8

How often do we survey?

- A team will survey EVERY DAY (unless it is bad weather)
- Each team will survey once a week or every other week on the day they are scheduled

When do we stop surveys?

Sometime between Christmas and the end of January, when we haven't seen any live adult salmon for 10 days.

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

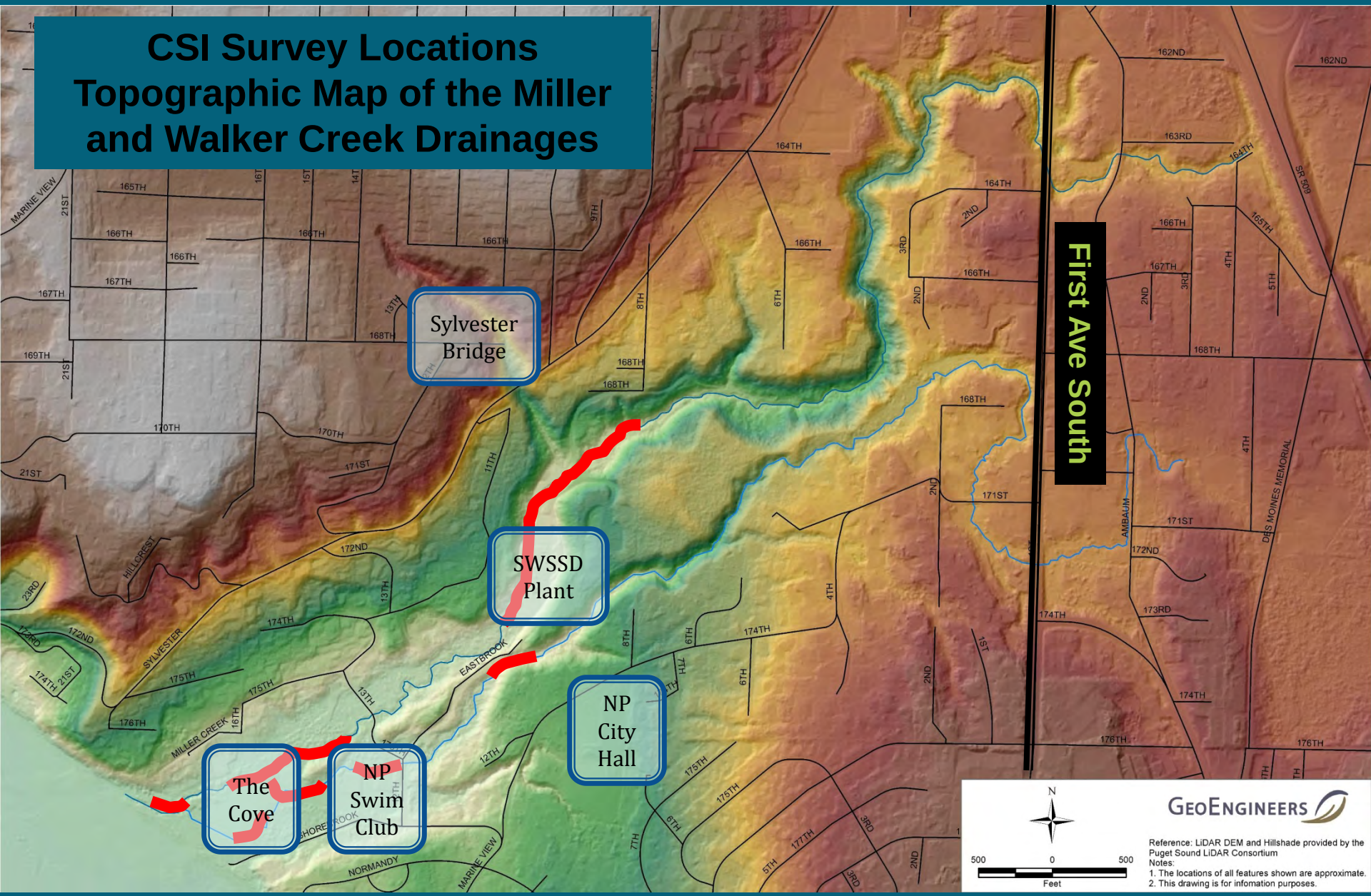


Image courtesy of GeoEngineers and Washington State Department of Transportation

Survey Locations

- Four locations
  - Two on Miller Creek
    - Lower Miller – Private, The Cove, and Adams property (Call Adams' in advance)
    - 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

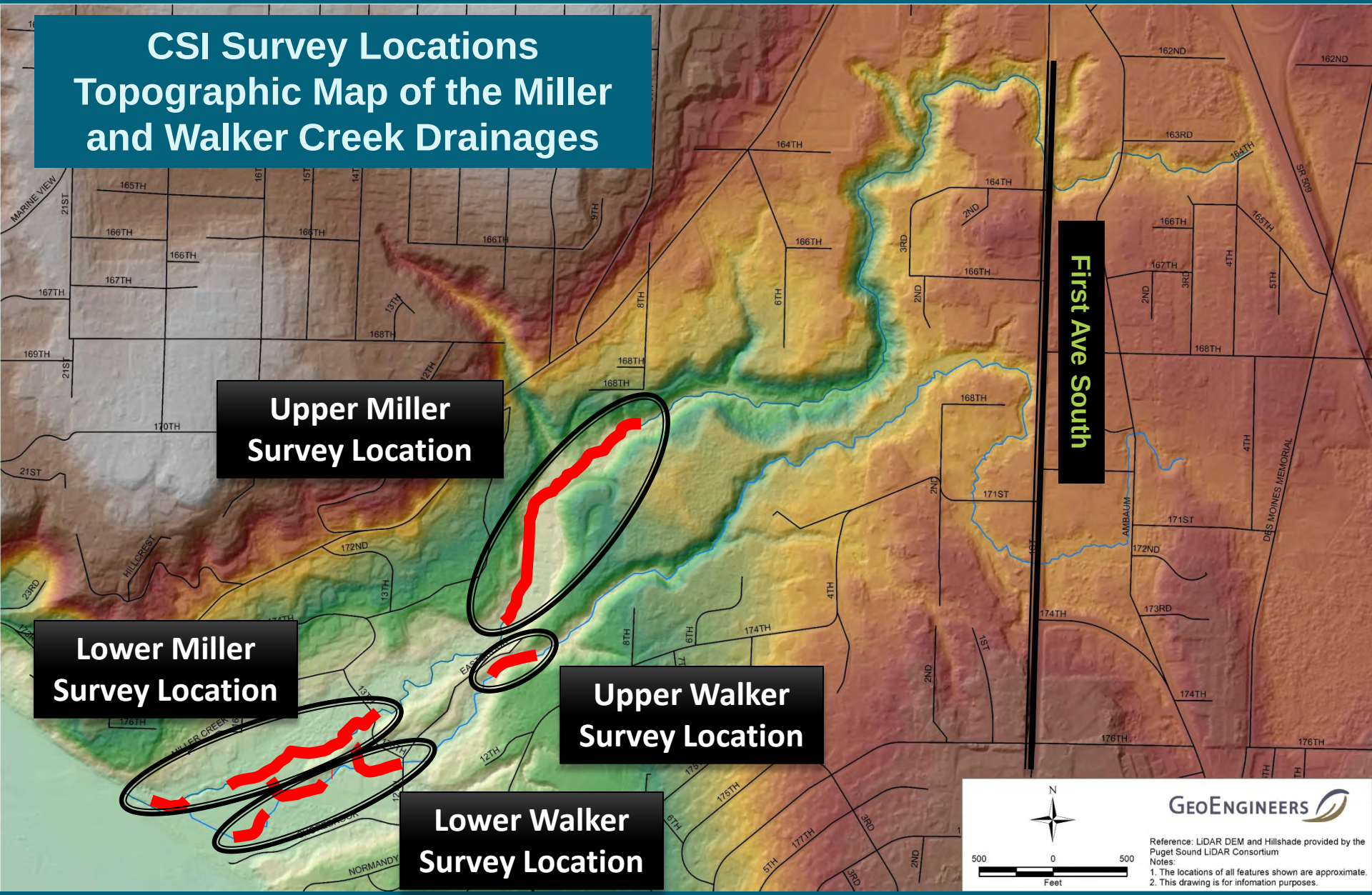


Image courtesy of GeoEngineers and Washington State Department of Transportation

Looking for live and dead fish

“Team Tuesday” Kristine and Rony looking for salmon along Miller Creek

Recording Data

Daily Survey Sheet - Community Salmon Investigation for Highline

Date: 11 / 19 ~~2012~~ 2013

Team Members: Liesl Sallquist & Kristine Feldman

Site: Miller and Walker Creeks (northend)

Start Time 08:15 am End Time 12:00 pm Weather: ___ Sunny ✓ Cloudy ___ Rainy Water Level at Cove Beach: ~5 cm

Dead Adult Fish Fish ID#	Species	Fork Length (cm)	Fish Girth (cm)	POH (cm)	Ad Fin? (Y/N)	Sex (M/F)	% Egg Retention (dead females) 0-50	% Egg Retention (dead females) 50-100	Spawning Condition PSM	Spawning Condition POST	Spawning Condition UNK	Predated? (Y/N)	Notes (general location, extent of any signs of predation, etc.)
Example: 10-15-12_01	coho	52	40	36	Y	F		X	X			Y	Bites out of back. Full of eggs.
Lower Walker 11.19.13_01	chum	82.5	44	63	Y	M					X	N	Gills still bright red. Beautiful fish!
Lower Miller 11-19-13-02	coho	54.5	23.5	43	N	M					X	N	Tail fin worn. Testes pink & deflated. Forgot to clip off snout
Upper Miller 11-19-13-03	coho	60.0	31.5	47	Y	F		X	X			N	Gills pinkish, fins & skin in good shape. Found above waters'edge.

Fork Length = distance from tip of snout to fork in tail. POH = distance from back of eye to bend in tail. Ad = adipose fin
PSM = Pre Spawn Mortality (not spawned), POST = Post spawning, UNK = unknown spawning condition (females) or male fish. Predated = evidence that another animal bit or ate the fish.

Live Adult Fish

Location	Coho	Chum	Other Adult Fish (record here if not 100% sure of species ID)	Notes Regarding Adult and Juvenile Fish, Wildlife, Stream Condition (flow volume, clarity, presence/absence of foam)
Lower Miller	0	0	3	High flow volume, water clarity not very good. Brown tea-stained (tannins?) + some sediment.
Lower Walker	0	0	0	
Upper Walker	0	0	0	
Upper Miller	0	0	0	

Possible new redds (write general location and note marking/flagging that *your* team placed – hang flag above redd with date, species if known, and REDD): _____

Version 10.3.12

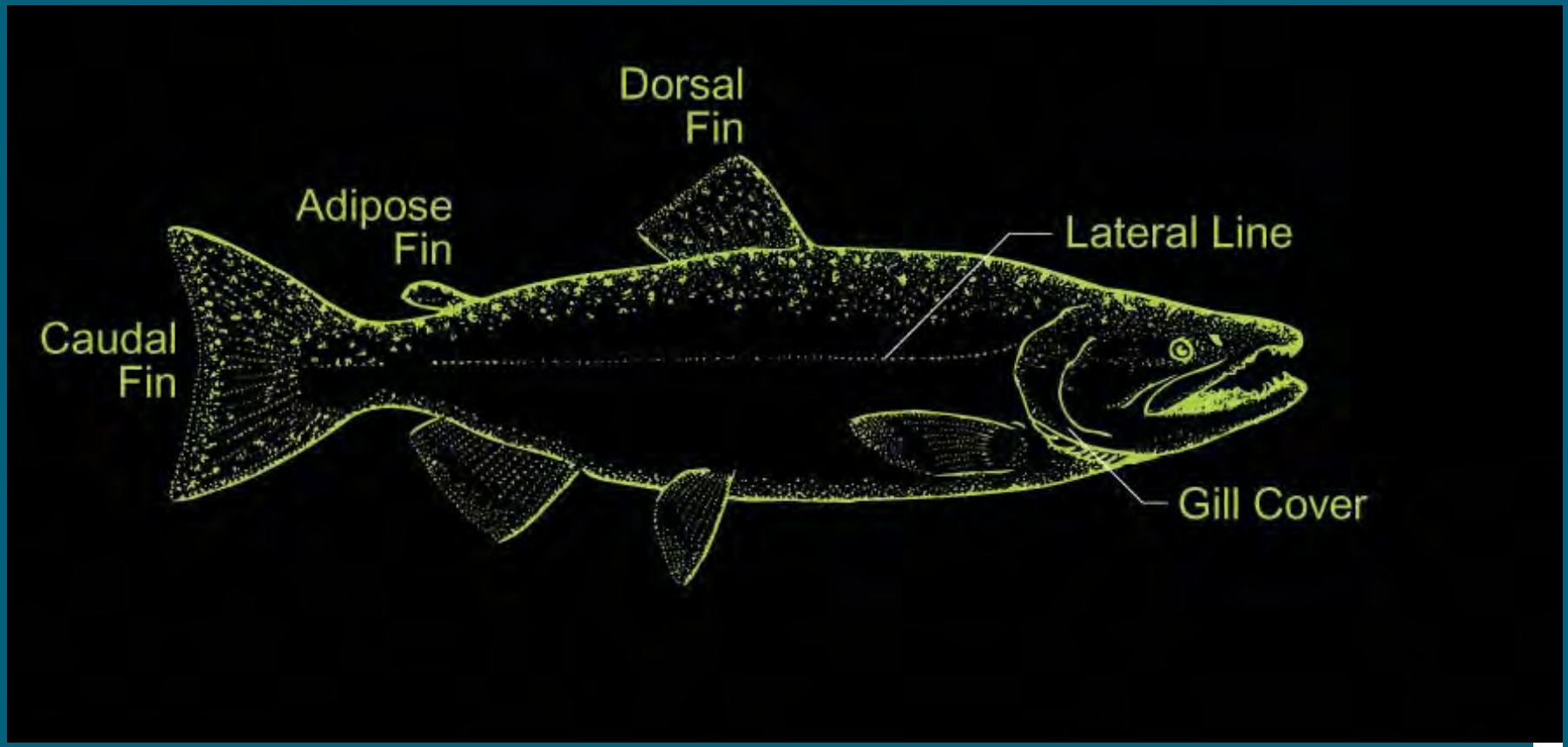
Dead fish = carcasses

“Team Wednesday” Lee measuring a salmon carcass

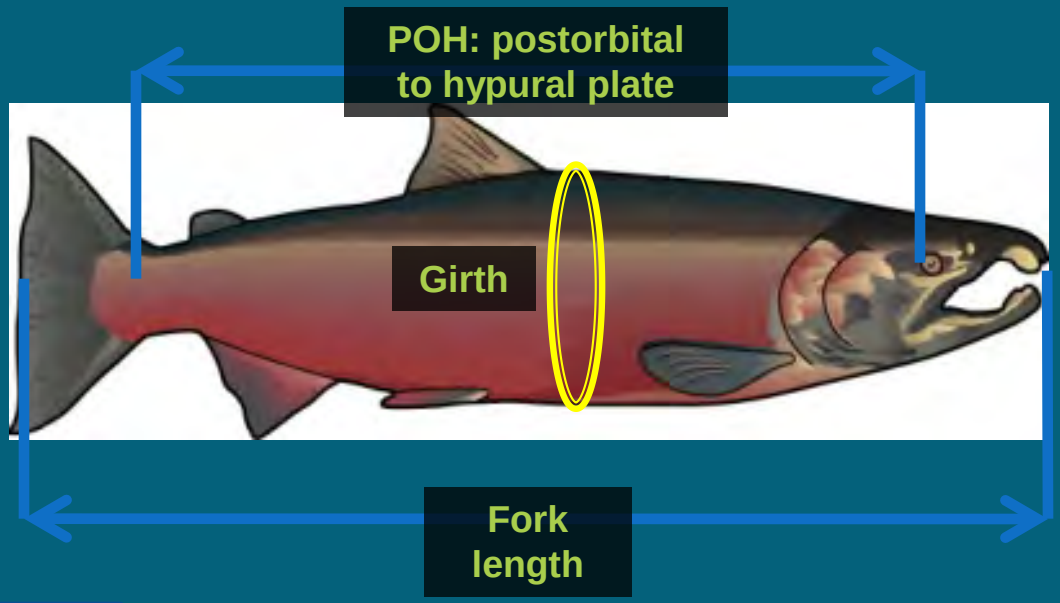
Measure and Check for Adipose Fin

“Team Monday”
Joy, Roger & Michael – it takes teamwork
October 15, 2012

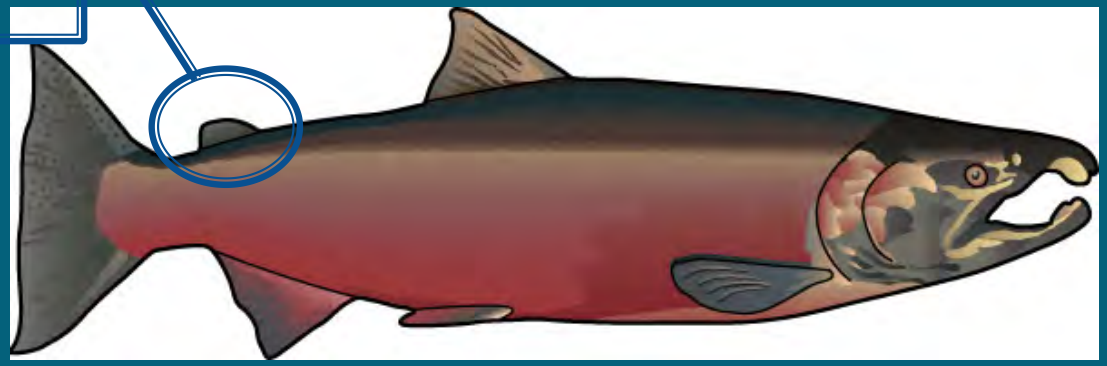
Key Identification Features



Measuring Carcasses & Hatchery Origin



Adipose fin



Recording Data

Daily Survey Sheet - Community Salmon Investigation for Highline

Date:_____ Team Members: _____

Site: Miller and Walker Creeks (circle one or both)

Start Time_____ End Time_____ Weather: ____Sunny ____Cloudy ____Rainy Water Level at Cove Beach:_____

Live Adult Fish

Location	Coho	Chum	Other Adult Fish (record here if not 100% sure of species ID)	Notes: Which reach surveyed, adult and juvenile fish, wildlife, flow volume, water clarity, presence/absence of foam
Lower Miller				
Lower Walker				
Upper Walker				
Upper Miller				

Possible new redds - HANG FLAG ABOVE REDD, with date, species and REDD written in perm. marker (general location, species, and flagging that YOUR team placed):_____

Notes (for overall survey):_____

Dead Adult Fish Fish ID# and Location	Species	Fork Length (cm)	Fish Girth (cm)	POH (cm)	Ad Fin? (Y/N)	Sex (M/F)	% Egg Retention (dead females) 0-50	% Egg Retention (dead females) 50-100	Spawning Condition PSM	Spawning Condition POST	Spawning Condition UNK	Predated? (Y/N)	Notes (general location, extent of any signs of predation, etc.) For more dead fish, see Page 2
Example: 101513_01 Lower Miller	coho	42	40	44	Y	F		X	X			Y	Example: Bites on back. Full of eggs

Ad = adipose fin POH = distance from back of eye to bend in tail Location codes: LwrMr = Lower Miller, LwrWkr = Lower Walker, UprWkr = Upper Walker, UprMr = Upper Miller
PSM = Pre Spawn Mortality (not spawned) POST = Post spawning, UNK = unknown spawning condition Predated = evidence that another animal bit or ate the fish

Version 1/15/2014

Cut Open – Check for Eggs/Milt

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

Photo courtesy of Pam Silimperi/Kay Larsen

Check for Pre-Spawn Mortality (PSM)

Investigating egg retention – this female spawned!

Photo by L. Moyer

Females – Egg Retention

Full of Eggs – Pre-spawn mortality

October 24, 2011
Photo by D. Bobanick

Evidence of Predators

Predated coho carcass and raccoon tracks

October 16, 2012

Collecting Coho Heads for **Coded Wire Tags – Bag and Assign ID**

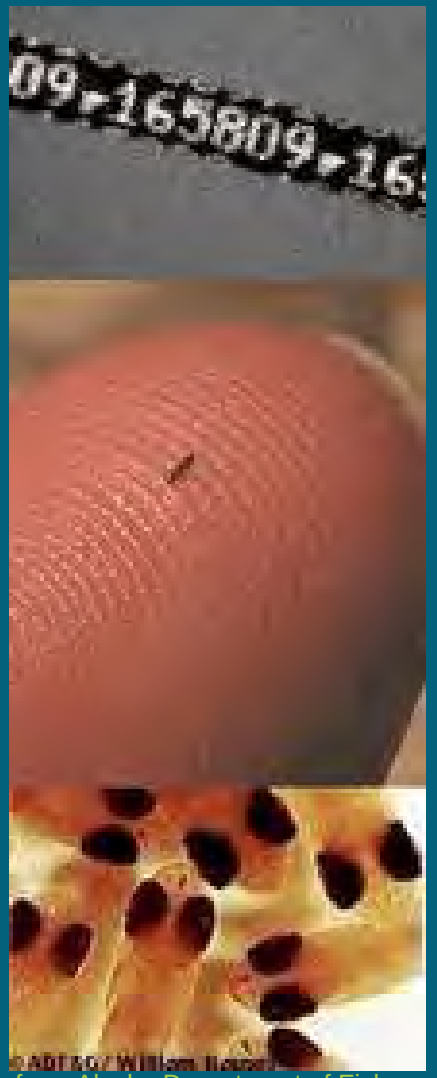
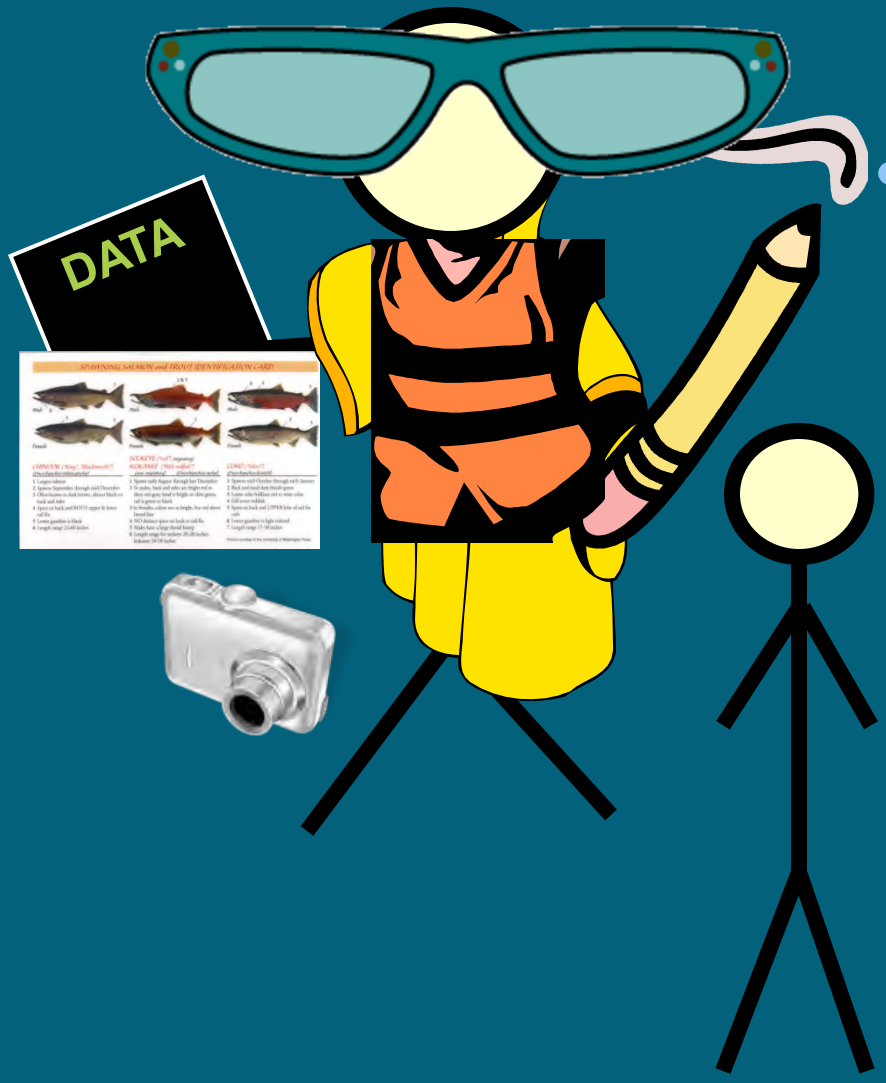


Image from Alaska Department of Fish and Game

Count and Mark All Dead Fish

Each carcass is“marked” by cutting off the tail so it is only counted once

What You Should Bring



- Data sheets
- Car ID sheet for dash
- Lock combo & phone numbers
- Salmon ID materials
- Digital Camera /mobile
- Pencils NO pens, please!
- Polarized glasses
- Raingear & waders
- A Buddy! (for fun & safety)
- Orange vest (for safety)
- Walking stick

Safety

- Surveying is not worth risking life or limb over.
- ALWAYS THINK! Using your brain is the best way to stay safe. If an activity seems "wrong," your brain is telling you: "Don't do it."
- **ALWAYS survey with a partner. If team members disagree about what to do, go with the more "conservative" course of action.**
- **Do NOT survey when water is flowing fast and deep – if you can't see into the water, it is probably too fast/deep for you to survey safely (and you wouldn't see fish anyway).**
- Do NOT survey during windy conditions because of falling tree branches.

Safety

- Be aware of and avoid hazards:
  - Slipping on vegetation and wet rocks
  - Falls on slopes/streambanks
  - Unstable footing as logs or rocks roll
  - Poke in the eye from branches
  - Scrapes from branches
  - Stinging nettles, blackberries
  - Cuts from knife/gutting tool
  - Hypothermia from getting wet and cold
  - Bee stings – especially if allergic
- Stop surveying if anyone is hurt, wet or too cold

Safety – Other Good Ideas

- Carry a cell phone in a Ziplock or watertight bag.
- Keep your keys & other valuables in a zipped/velcroed pocket so they don't fall out.
- Contact your sampling partner and make arrangements on the time and place you will meet.
- Each team should decide on a lead. The lead is responsible for bringing the common equipment unless other arrangements are made.
- Take a CPR and/or Wilderness First Aid course

Emergency Procedures

- **In case of emergency, call 911**
- **Know how to get to the nearest Emergency Room:**

  Highline Medical Center

  16251 Sylvester Rd SW

  Burien, WA 98166

  (206) 431-5314

Keeping invasives out

- Use dedicated boots and stick
- If boots have been in other creeks, disinfect:
  - 5 minutes in water over 140 degrees
  - Freeze overnight
  - Brush off all visible dirt
  - No felt soles

- See King County web page on New Zealand Mud Snails

CSI *Style*

"Team Thursday" Kay modeling survey attire on Miller Creek

Photo courtesy of Pam Silimperi

Recording data

Daily Survey Sheet - Community Salmon Investigation for Highline

Below gauge

Team Members: MEYER WALLACE

Site: Miller and Walker Creeks (circle one or both)

Date: 11/13/13

Start Time 9:35 End Time 12:40 Weather: Sunny Cloudy X Rainy Water Level at Cove Beach:

Dead Adult Fish Fish ID# and Location	Species	Fork Length	Fish Girth	POH	Ad Fin?	Sex	% Egg Retention (dead females)		Spawning Condition			Predated?	Notes (general location, extent of any signs of predation, etc.) For more dead fish, see Page 2
		(cm)	(cm)	(cm)	(Y/N)	(M/F)	0-50	50-100	PSM	POST	UNK	(Y/N)	
Example: 101513_01 Lower Miller	coho	52	40	36	Y	F		X	X			Y	Bites on back. Full of eggs.
LM_01	coho	56	26	46.5	N	F	Ø			X		N	
LM_02	coho	60	30	46.5	N	F		100	X			N	
LM-03	coho	61	~~30~~	49.5	N	F		100	X			N	
LM_04	coho	58.5	26	48	N	F	Ø			X		N	
LM_05	coho												Back half gone

Ad = adipose fin POH = distance from back of eye to bend in tail. Location codes: LwrMlr = Lower Miller, LwrWkr = Lower Walker, UprWkr = Upper Walker, UprMlr = Upper Miller
PSM = Pre Spawn Mortality (not spawned), POST = Post spawning, UNK = unknown spawning condition. Predated = evidence that another animal bit or ate the fish.

Live Adult Fish

Location	Coho	Chum	Other Adult Fish (record here if not 100% sure of species ID)	Notes: Which reach surveyed, adult and juvenile fish, wildlife, flow volume, water clarity, presence/absence of foam
Lower Miller				
Lower Walker	III			
Upper Walker				
Upper Miller				

Possible new redds - HANG FLAG ABOVE REDD, with date, species and REDD written in perm. marker (note here general location, species, and flagging that YOUR team placed):

Version 9.25.2013

Recording data – page 2

Daily Survey Sheet - Community Salmon Investigation for Highline

Use this page for additional **dead adult fish**, if necessary

Dead Adult Fish Fish ID# and Location	Species	Fork Length (cm)	Fish Girth (cm)	POH (cm)	Ad Fin? (Y/N)	Sex (M/F)	% Egg Retention (dead females) 0-50	% Egg Retention (dead females) 50-100	Spawning Condition PSM	Spawning Condition POST	Spawning Condition UNK	Predated? (Y/N)	Notes (general location, extent of any signs of predation, etc.)
Example: 10-15-13_24Upper Miller	coho	52	40	36	Unk	F	X		X			Y	Bites out of back, not sure if adipose clipped. A few eggs.
LM 111313_06	coho	59	26	47.5	N	F	40					N	
LM 111313_07	coho	56	30	43	N	M					X	N	
UM 11 _08	coho	57.5	24	48	N	F	Ø			X		N	
09 UM	coho						-					Very	
10_UM	coho	56.5	28	42	N	M					X	N	
11_UM	coho	54.5	25	42.5	N	M					X	N	

Entering Data

- New web form!

https://green2.kingcounty.gov/SalmonCSI

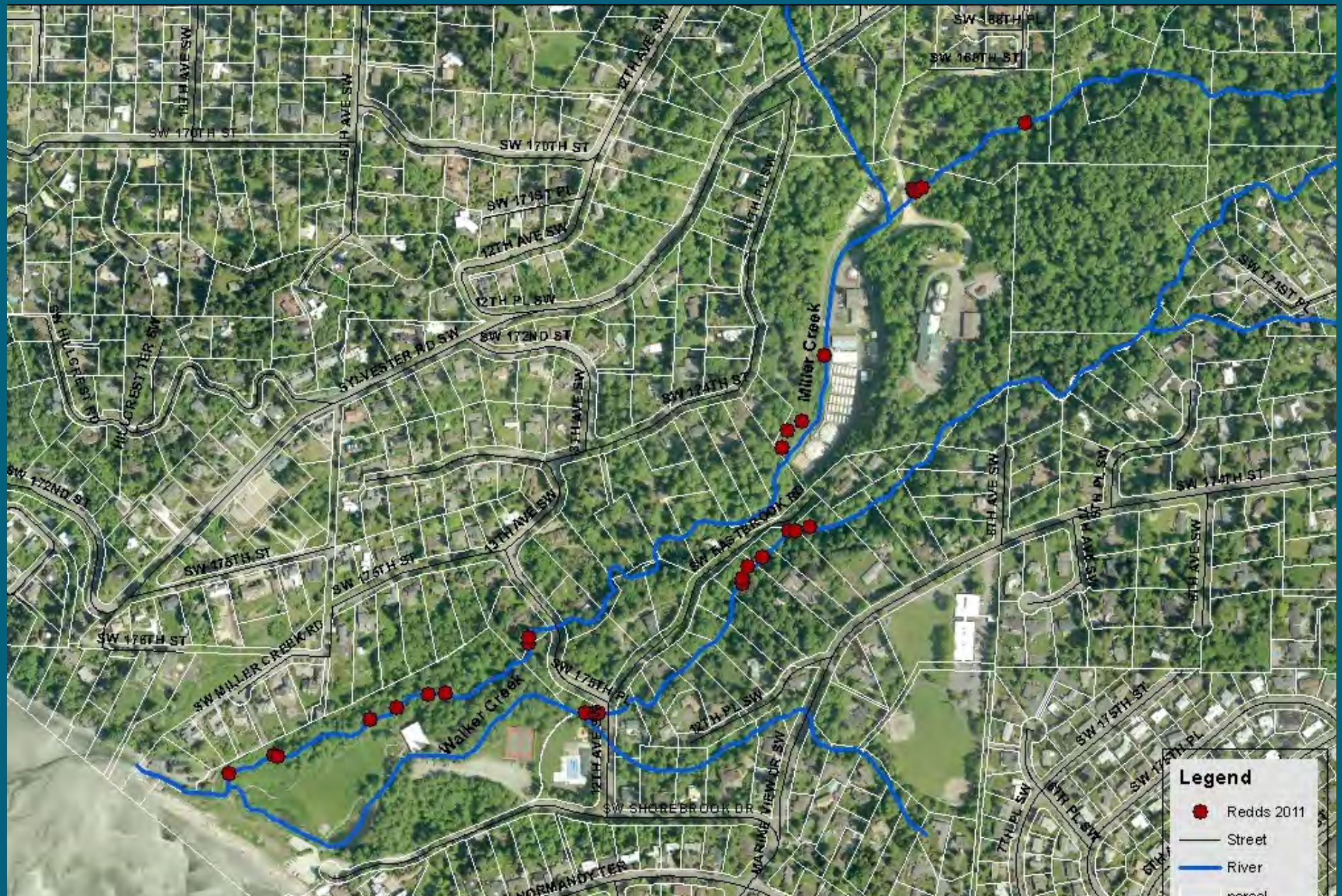
- Need username and password
- Save hard copies of data sheets and turn them in at the end of the season with frozen coho snouts

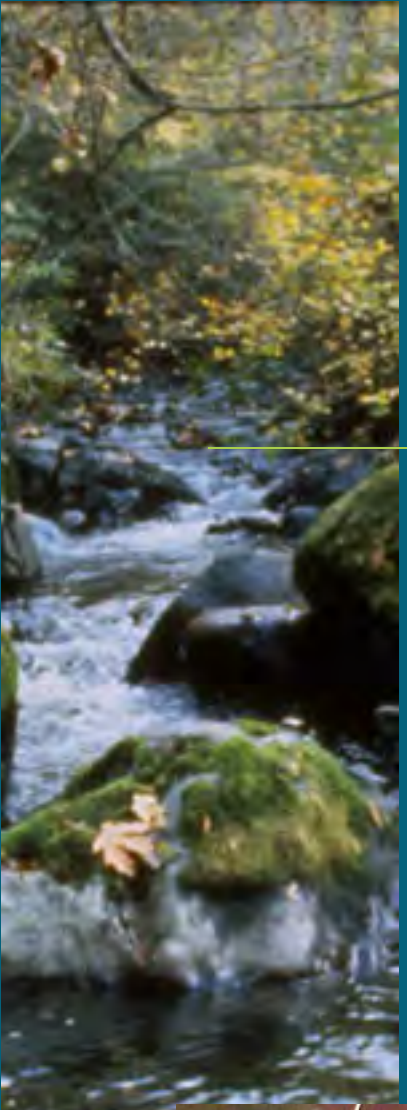
Redds – egg nests in gravel

Chum building a redd

November 7, 2010

Redd Locations





Actually, they don't all look alike

Salmon Identification Training Slideshow

CSI: Highline

Slideshow adapted from Salmon Watcher program; developed by Jennifer Vanderhoof, King County Water and Land Resources Division

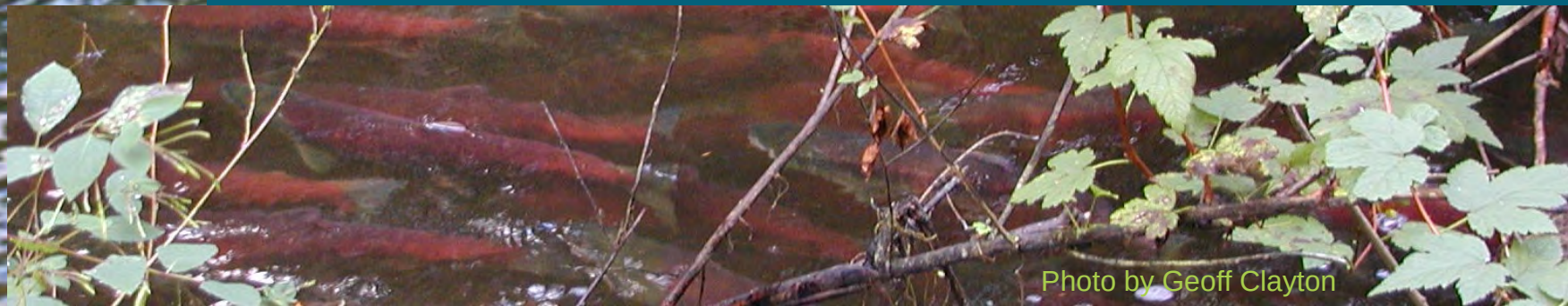
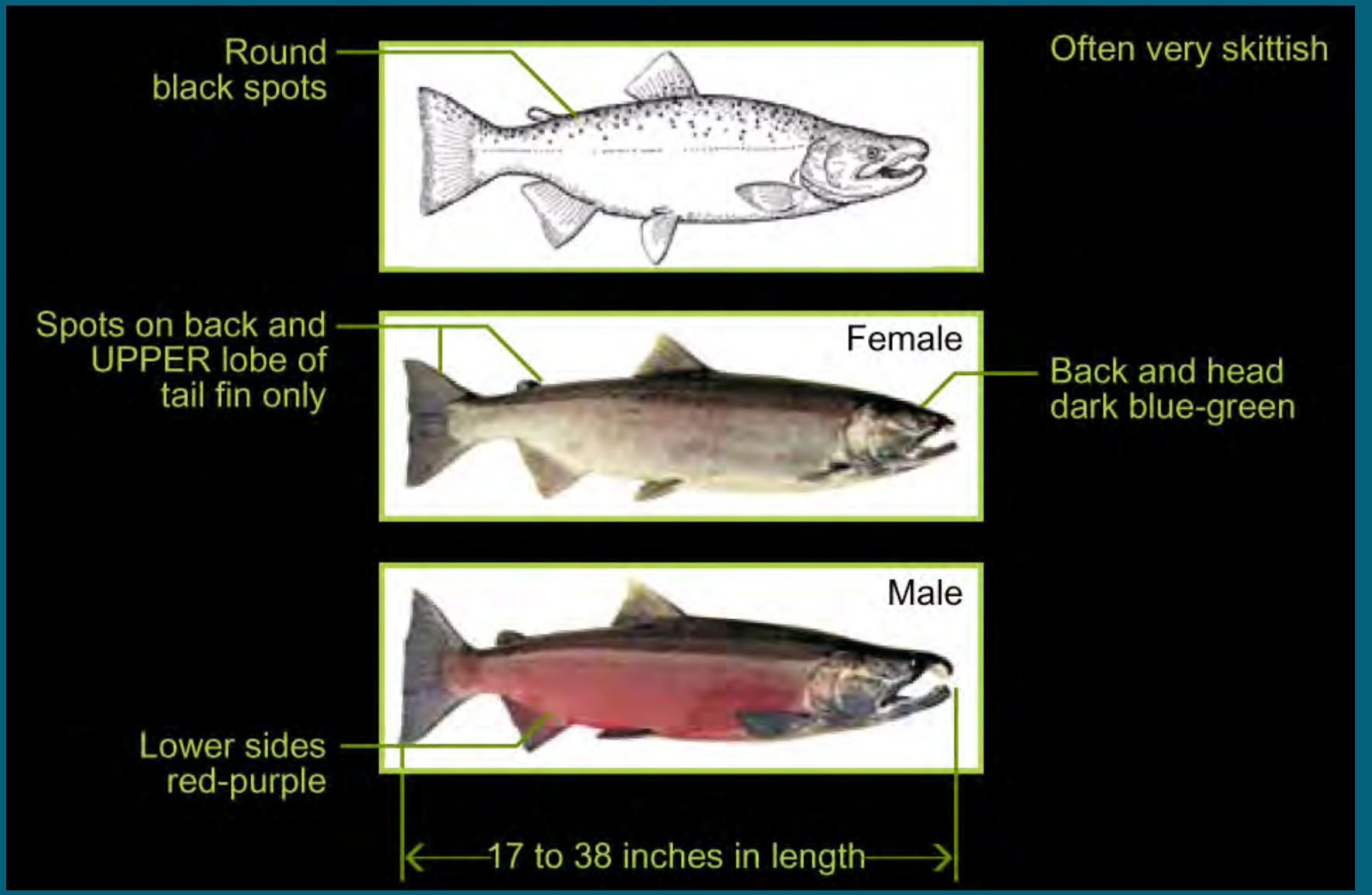


Photo by Geoff Clayton

Questions to Ask When Identifying Salmon

1. Size
2. Spots
3. Color
4. Other behavioral characteristics

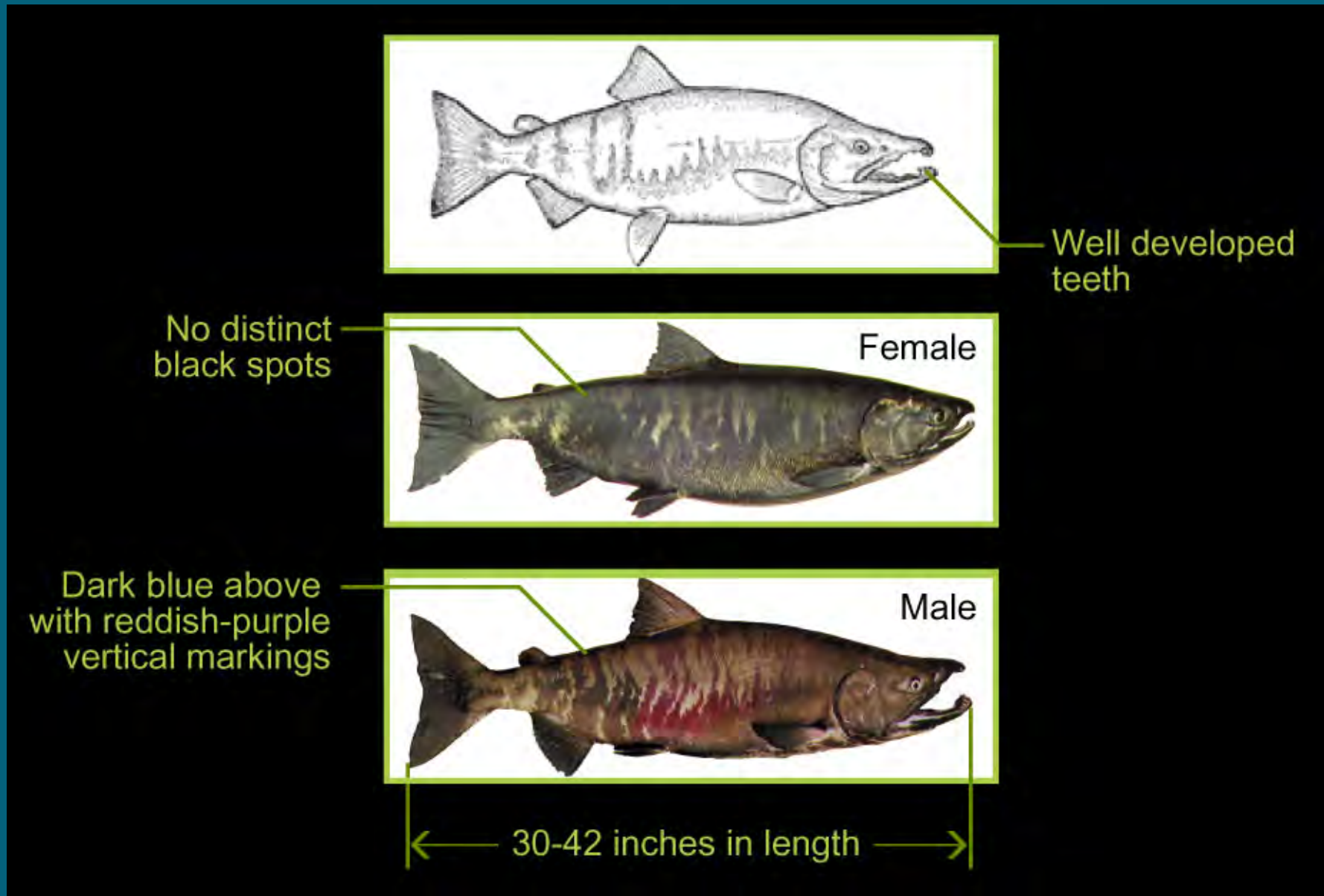
Coho
("Silvers")



Coho

Chum

("Dog", "Keta")

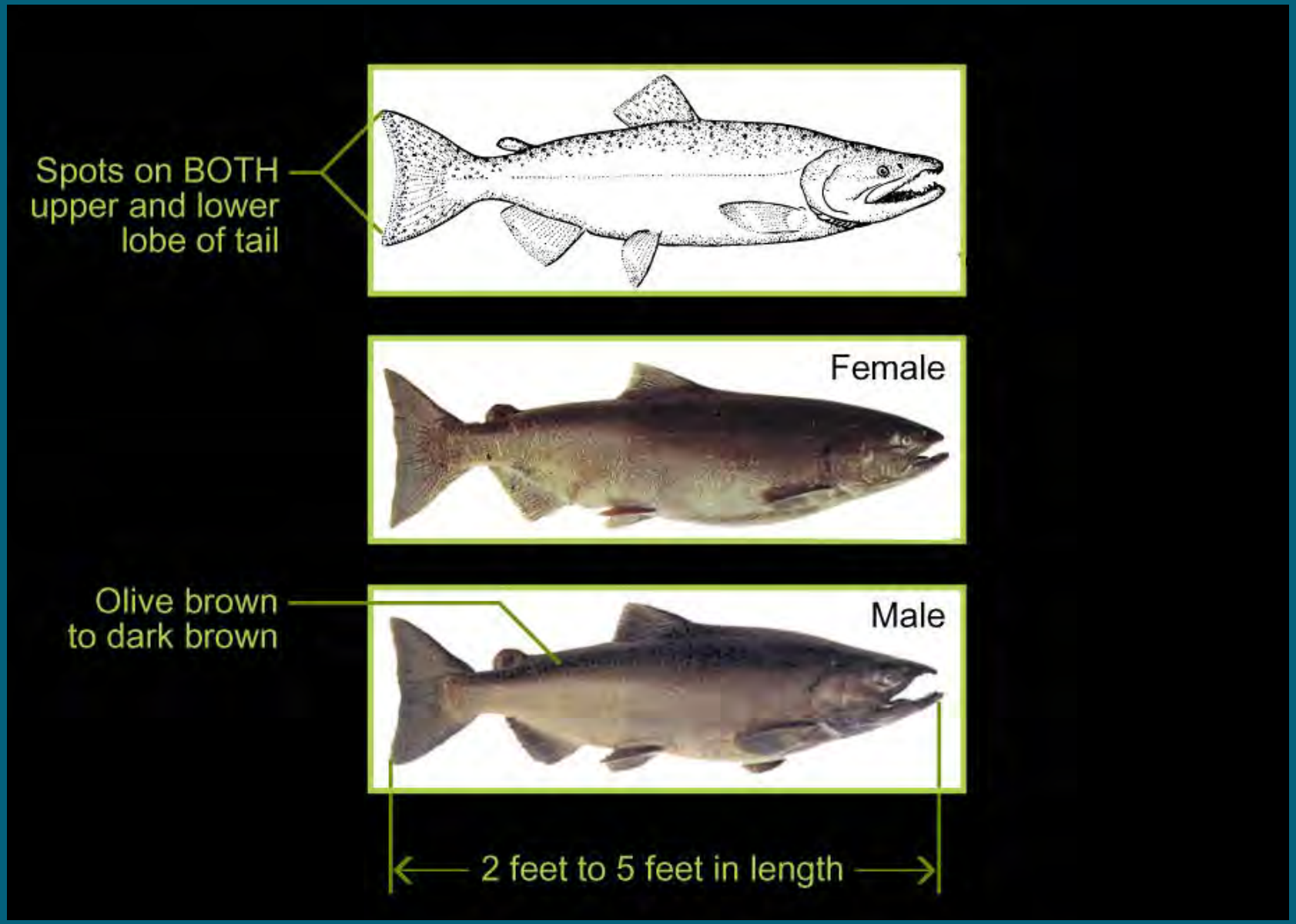


Chum

Photo courtesy of Nitinat River Hatchery, BC, Canada

Chinook

("King," "Tyee," "Blackmouth")



Chinook

Pink, or Humpback

Numerous small scales

Dark band along lateral line

Only spawn in odd years (2011, 2013, etc.)

Large oval spots on back and both lobes of the tailfin

Males develop a large hump on their back (hence the nick name "Humpback" or "Humpy")

Pink salmon spawn in central and south Puget Sound drainages ONLY in ODD numbered years

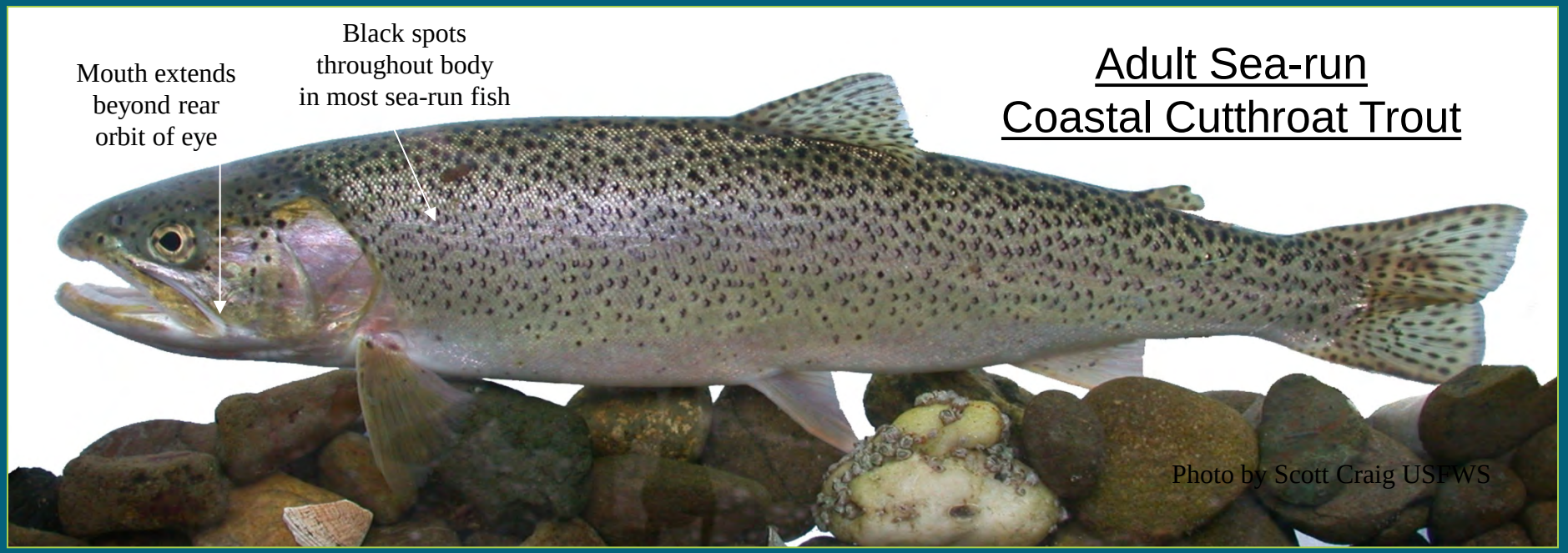
Pink Salmon

Photo E.R. Keeley

Photo by Kirk Anderson

Look at boot for scale

Cutthroat Trout

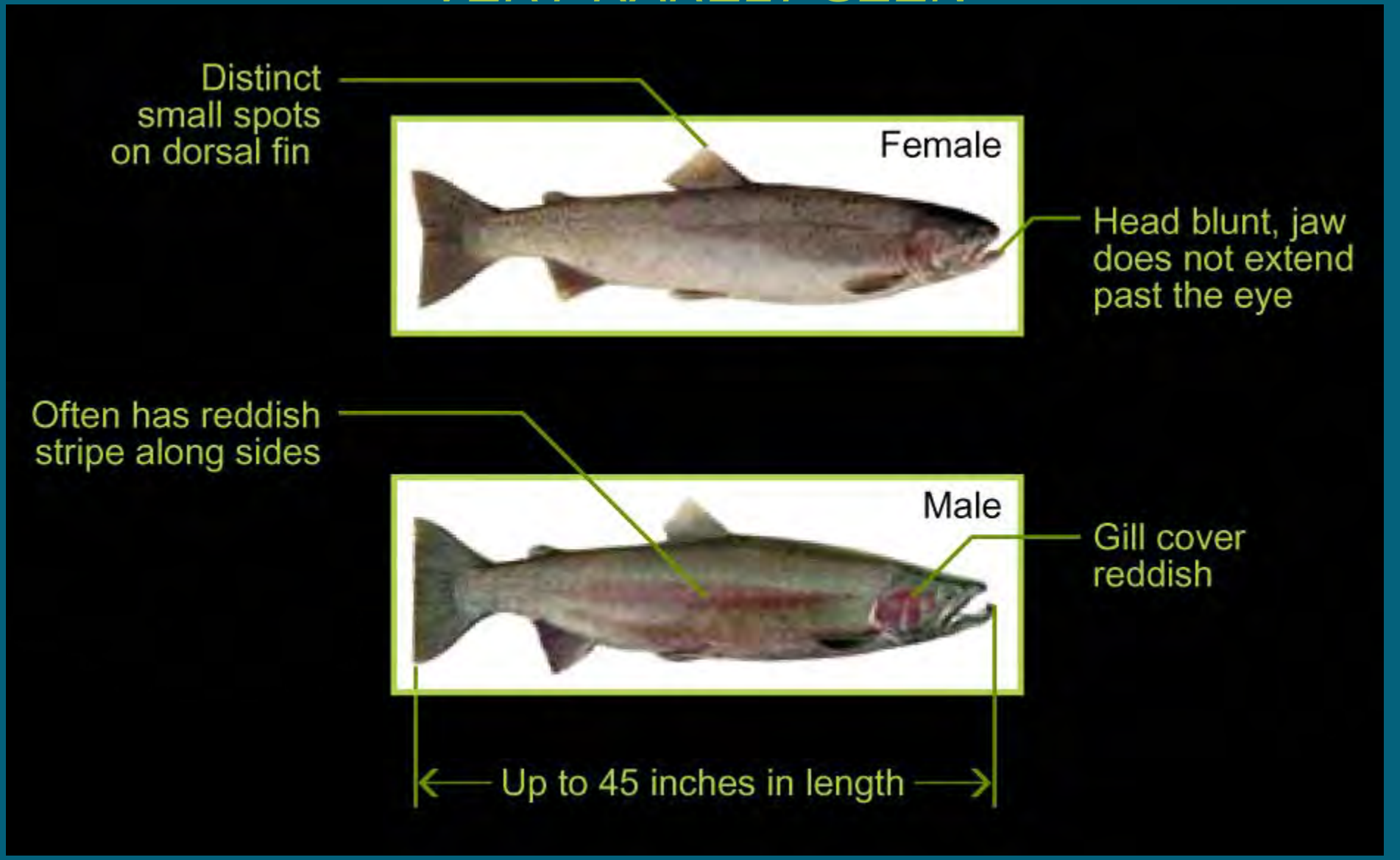


You will likely only see *juvenile* cutthroat trout. Coastal streams may see sea-run coastal cutthroat late in the season.

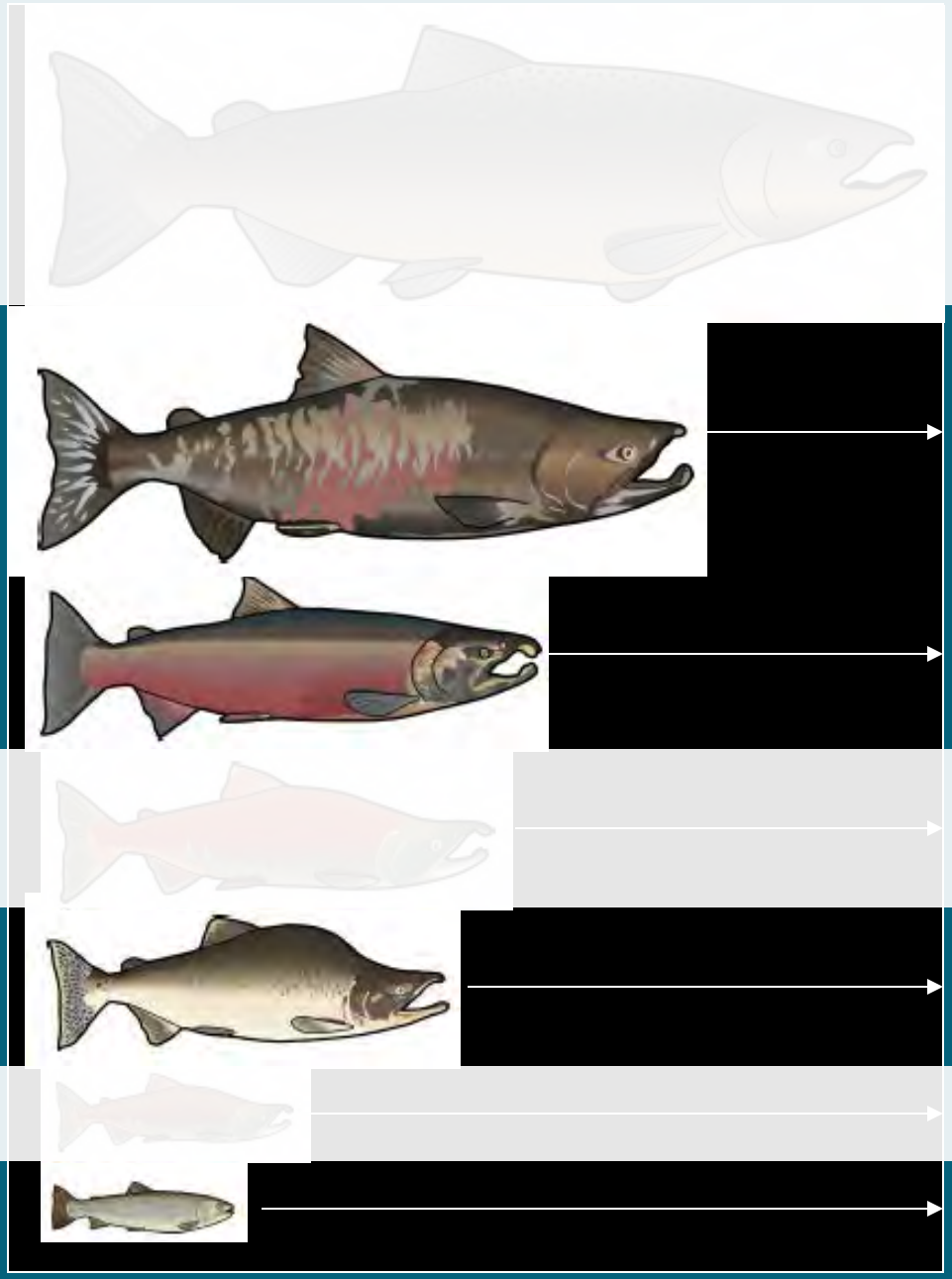
Length = 6-8”

Photo by Rodney Hsu

Steelhead Trout: *Spawn in Winter*
VERY RARELY SEEN



	Size
Chinook	24-60"
Chum	30-42”
Coho	17-38”
Sockeye	20-28”
Pink	16-30”
Kokanee	8-22”
Cutthroat	up to 30”



Spots

Chinook		Large, splotchy, on top and bottom of tail fin
Chum		No defined spots
Coho		Small and distinct, only on top half of tail
Sockeye		No defined spots
Pink		Large, oval
Kokanee		May have small spots
Cutthroat		Numerous small spots, top & bottom

Color

Chinook		Wide color range from red to green to brown
Chum		Red/purple flame like markings
Coho		Red on belly and gill covers, green back
Sockeye		Red body, green head and tail
Pink		Green back, white belly
Kokanee		Varies red to brown
Cutthroat		silvery

3) Review

Photo by Greg Brown, National Park Service

Photo by King County Staff

Photo by Chris Carrel, Friends of Hylebos Wetlands

Male and female coho on Upper Miller Creek

October 14, 2011

Photo Courtesy of Ed Nugent

CSI: Necropsy practice

Important Tips!

- View after a rain, as soon as the water clears; after high tide is best
- Use polarized glasses and a walking stick
- Be there before it gets too dark
- Wear dark clothes (except your safety vest) and move slowly – sudden movements or loud talking might frighten fish

More Important Tips

- Call Elissa if you have any questions -

  (206) 477-4792 or cell (206) 707-6549
- Stay on the properties who have allowed access at all times (unless you are the property owner).
- Call the Adams' from the Cove on Lower Miller

Good CSI Skills

- Turning in datasheets even when you didn't see fish. We want your data! No matter what!
- Turning in a datasheet with all dates and observation times, including those when you didn't see fish.
- Marking the fish ID # and reach location on data sheets and on plastic bags with snouts.
- Always put in a fish species name. If there is a live or dead fish count, there should be a species.
- Always putting surveyors names on datasheet. Take credit!

http://www.kingcounty.gov/environment/animalsAndPlants/beavers.aspx

Teams and Scheduling

- Monday – Joy & Roger, Michael & Carlyn
- Tuesday – Kristine & Liesl
- Tuesday – Christine and John
- Wednesday – Lee & Margy, Steve, ?
- Thursday – Pam & Kay
- Thursday – Scott & Brenda
- Thursday – John & Jim
- Friday – Merry Ann & Ed

Teams and Scheduling

- Saturday –Ryan - weekly
- Saturday – Echo (Oct 18), Lisa and Alex
- Sunday – Robin & Drew
- Sunday – Shelby and Meghan
- Weekends - Peter

- Who doesn't have a survey day?
- Thanksgiving and Christmas – Thursdays
- Access during weekends and holidays

Teams and Scheduling

- Backup volunteers
  - Gary Wagner
  - Jean Spohn
  - Others?
- Need backups for:
  - Thanksgiving
  - Oct 12 or 18 for John
  - Last 2 weeks December for Christine

Thank you for your contribution!
We couldn’t do it without you.