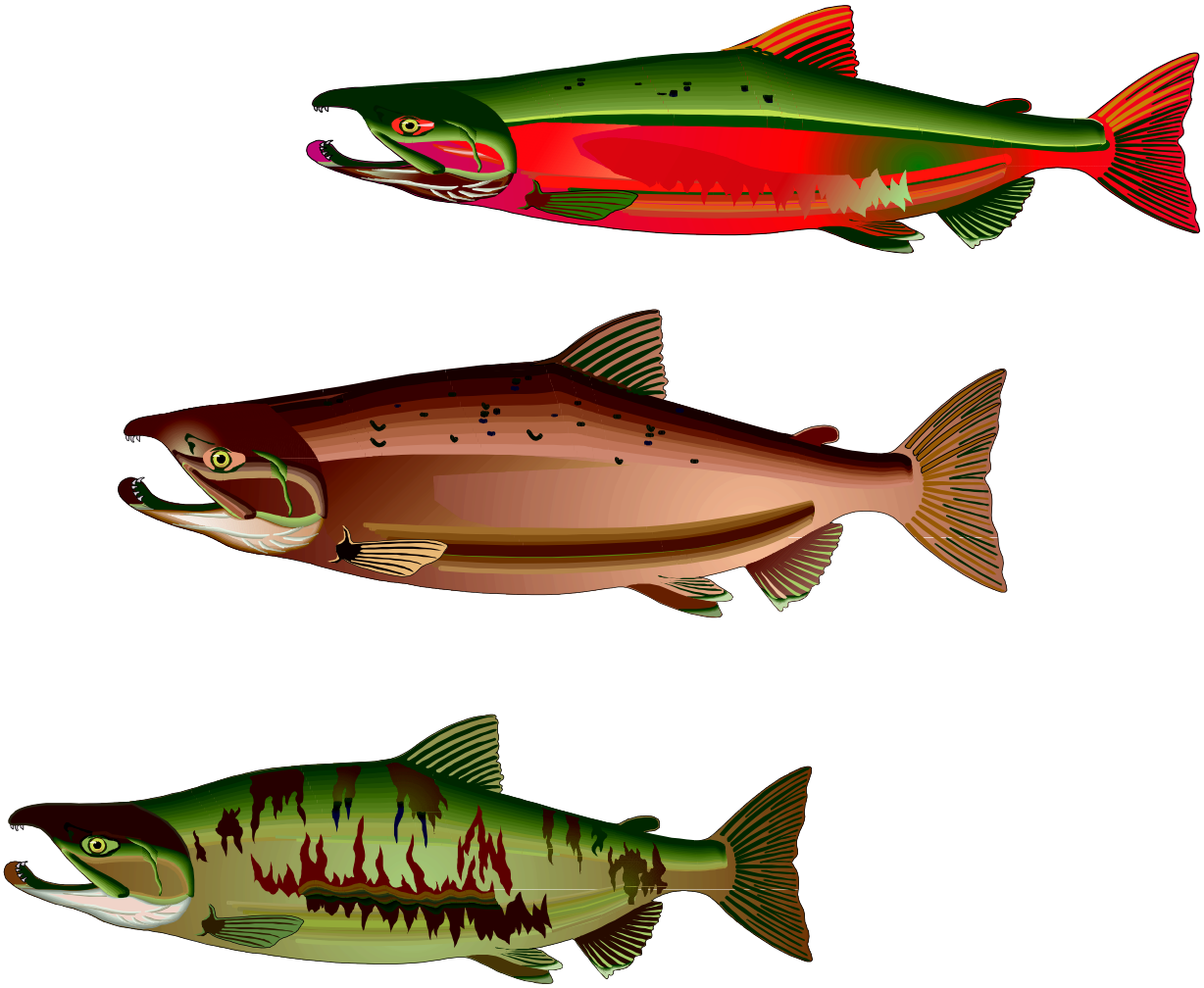
SALMON SPAWNING SURVEY

PROCEDURES MANUAL

2022



OREGON ADULT SALMONID INVENTORY AND SAMPLING (OASIS) PROJECT

OREGON DEPARTMENT OF FISH AND WILDLIFE

TABLE OF CONTENTS

Contents Page

LIST OF FIGURES

This page left intentionally blank.

THE OREGON PLAN FOR SALMON AND WATERSHEDS

A Unique Foundation

The Oregon Plan represents a unique foundation. It is Oregon's coordinated approach to recover salmonid populations and restore watersheds to healthy conditions and to address the issues and requirements of the federal Clean Water and Endangered Species Acts. The Oregon Plan is designed to function within the State's regulatory requirements, social realities, and funding constraints. Four legs support the foundation of the Oregon Plan: action by government agencies (including a regulatory baseline), voluntary action, monitoring and scientific oversight.

Government Agencies

Action by government agencies, including enforcement of a regulatory baseline, is the first leg of the Oregon Plan. State and Federal agencies have committed to accomplish work that will complement work on private lands, helping sustain and restore healthy watersheds, improve water quality, and recover native salmonids across the landscape.

Voluntary Action

Voluntary action is the second leg of the Oregon Plan. Although more than half of Oregon is publicly owned, the distribution of public and private lands in Oregon and the life cycle requirements of federally-listed salmonid species combine to make water quality and watershed health on private lands crucial to meeting requirements of federal Clean Water and Endangered Species Acts. This is where voluntary action by Oregonians is crucial. Private landowners, individuals and industries, rural and urban landowners, businesses, and citizens are filling critical gaps by conducting restoration work essential to watershed health, clean water, and recovery of listed fish species. Much of this work is coordinated through local watershed councils.

Monitoring

Monitoring is the third leg of the Oregon Plan. The goal of the monitoring effort is to document the current condition of Oregon's key watershed health parameters, track changes over time, and determine if restoration efforts are effective. ***The spawning surveys that you will be conducting are a key component of this monitoring activity.***

Scientific Oversight

Scientific oversight is the final leg of the Oregon Plan. The Independent Multidisciplinary Science Team (IMST) has an integral role in this process. This aspect provides a foundation that includes independent evaluation of the Oregon Plan's actions, monitoring and management programs, as well as a commitment to conduct needed research.

OREGON ADULT SALMONID INVENTORY AND SAMPLING PROJECT

The Oregon Adult Salmonid Inventory and Sampling (OASIS) project is one of four Oregon Department of Fish and Wildlife (ODFW) monitoring projects that contribute toward the overall Oregon Plan for Salmon and Watersheds (OPSW or Oregon Plan) monitoring program. The four monitoring projects are: Western Oregon Rearing Project (Juveniles), Aquatic Inventories Project (Habitat), Salmonid Life-Cycle Monitoring Project (Survival) and the Oregon Adult Salmonid Inventory and Sampling Project (Adults). The habitat, juvenile, and adult monitoring projects are linked through the use of a Generalized Random Tessellation Stratified (GRTS) site selection and rotating panel sample design to promote sampling efficiencies and allow for integration of data and analysis.

The overall objective of the OASIS project is to monitor status and trends of naturally produced Oregon coastal and Lower Columbia salmonid stocks. The project has four main target species: Chinook, chum, coho and steelhead. Although not a part of the initial design, the project has developed a monitoring plan for spawning Pacific Lamprey. In addition, observations of Brook Lamprey and Cutthroat Trout are recorded. Key metrics include abundance, spatial distribution, temporal distribution, and proportion of hatchery fish in the naturally spawning population. The geographic scale of abundance estimates varies by species, but the goal, in all cases, is a point estimate with a confidence interval (C.I.) of +/- 30%.

Spawning ground surveys are conducted from September through January (Chinook, chum and coho) and from February through mid-June (steelhead and lamprey). Surveys are conducted at least once every 10 days (Chinook, chum and coho) or once every 14 days (steelhead and lamprey). Survey sites are either “Standard” or random GRTS surveys. Standard surveys were specifically selected, many in the 1950’s, for ease of access and historic high numbers of spawning salmon. The GRTS survey sites are based on a spatially balanced random selection process and incorporate a rotating panel design to create a 27-year survey plan. Surveyors either walk upstream or boat downstream, depending on the size of the stream being surveyed. The surveyors count redds, live and dead fish (by species), and sample carcasses for gender, length, scales, fin clips, and tags.

Project Objectives

Four salmonid species and Pacific Lamprey are monitored through spawning surveys. Primary objectives for each of these species are as follows:

Coho Salmon

Continue long-term annual estimate of abundance index (peak count on standard surveys, in fish/mile) for selected areas.
Estimate annual abundance of natural spawners for each population/complex:
Lower Columbia - 8 populations
Oregon Coast - 24 populations

Survey 30 sites or 30% of the coho spawning habitat in each Lower Columbia population.
Survey 20 sites or 20% of the coho spawning habitat in each Oregon Coast population.
Evaluate straying and natural spawning by hatchery fish.
Map the spatial and temporal distribution of spawners.
Monitor Threatened and Endangered stocks.
Monitor and assess abundance trends.
Research and develop methodologies as need and opportunity allows.

Chinook Salmon

Oregon Coast

Continue long-term annual estimate of abundance index, (peak count on standard surveys, in fish/mile).
Monitor and assess trends in abundance index.
Determine spawner age composition and life history (fish scales).
Identify hatchery origin fish in naturally spawning population (fin clips and/or marks).
Research and develop methodologies as need and opportunity allows.

Lower Columbia

Estimate annual abundance of natural spawners for each population/complex: 9 populations.
Survey 30 sites or 30% of the fall chinook spawning habitat in each population.
Evaluate straying and natural spawning by hatchery fish.
Map the spatial and temporal distribution of spawners.
Monitor Threatened and Endangered stocks.
Monitor and assess abundance trends.

Chum Salmon

Continue long-term annual estimate of abundance index, (peak count on standard surveys, in fish/mile).
Monitor and assess trends in abundance index.
Determine spawner age composition (fish scales).
Identify hatchery origin fish in naturally spawning population (fin clips and/or marks).
Research and develop methodologies as need and opportunity allows.

Steelhead

Estimate annual abundance of natural spawners in each ESU.
Evaluate straying and natural spawning by hatchery fish.
Map the spatial and temporal distribution of spawners.
Monitor and assess abundance trends.
Research and develop methodologies as need and opportunity allows.

Pacific Lamprey

Report annual abundance index of natural spawners.
Monitor and assess abundance trends.
Map the spatial and temporal distribution of spawners.
Research and develop methodologies as need and opportunity allows.

Additional information is available on the project web site at:

https://odfw.forestry.oregonstate.edu/

COASTAL CHINOOK RESEARCH AND MONITORING PROJECT

The Coastal Chinook Research and Monitoring Project (CCRMP) is an ODFW project that is continuing a multi-year study designed to develop methods that provide reliable estimates of fall Chinook spawner escapements for Oregon coastal streams. Chinook assessment studies and spawning ground surveys will be conducted by CCRMP in the Nehalem, Nestucca, Salmon, Siletz, South Umpqua, Coquille and Elk River basins during the 2022-23 spawning season.

WILLAMETTE SPRING CHINOOK RESEARCH AND MONITORING PROJECT

Spring Chinook salmon in the Willamette and Sandy basins are listed as threatened under the Endangered Species Act. This work contributes to the Upper Willamette River Conservation and Recovery Plan for Chinook and Steelhead and the Willamette River Biological Opinion, which aims to reduce the effects of federal dams in the basin.

Surveys in the Willamette and Sandy Basins are a complete census of all spawning habitat in these basins. The goal is to survey all spawning habitat consistently, on a seven to 10-day rotation. Peak redd counts are used to estimate spawner abundance by river and basin. Carcasses are recovered and sampled to estimate prespawn mortality, the proportion of hatchery origin spawners (pHOS), and age composition for each population. This information is used by fishery managers to monitor recovery of these runs and to set fishing seasons.

SUPPLY LIST FOR SPAWNING SURVEYORS

Forms:

Landowner Contact Form.
Spawning Survey Evaluation Form.
List of Survey Location Descriptions.
Report of Operations Form.

Equipment:

Chest waders with built in belt and gravel guards.
Wading boots.
Polarized sunglasses.
Raincoat.
ODFW Hat (new employees).
Orange field vest.
Pencils, red pen, post its, and Sharpies.
Measuring tape (in millimeters).
Forceps for scale collection.
Scale envelopes.
Knife with sheath.
Snout / Fin-mark ID Labels.
Snout bags.
Wading staff with gaff.
Signs (and aluminum nails) for marking boundaries of surveys.
C. B. Radio (as needed).
Life Jacket (for river surveys, as needed).
Spawning Survey Procedures Manual.
OASIS Project Admin Handbook
PDA –Cell Phone w/ waterproof aquapac.
PDA/GPS wall charger, car charger (one per crew)
Site maps (coverage, topographic, road, GIS, State Forestry, etc.)..
Machete and file to sharpen (one per crew).
First Aid Kit (new employees).
Cut resistant gloves.
Flagging (optional).
Handheld radios (optional).
Aqua Seal (one per crew).

SURVEY SITES

Description Lists

You will receive a list of survey descriptions for sites in your area which provide detailed directions to the survey site, including the start and end coordinates (Figure 1). Survey descriptions are divided into three sections: a description of the survey boundaries (including the position of start and end signs); driving directions; and a section for special instructions unique to the survey, such as specific landowner requests. This information will allow you to correctly access and survey each site on your list.

Verify that you are in the right place, and that survey boundary signs are correct. Sometimes the reach ID and/or segment numbers change, and signs need to be updated. If signs are missing, first check that you have correctly identified the start and/or end point. Next, check the special instructions to see if a landowner has asked us not to post signs. Correct the sign if you are confident of your changes. Some of the surveys you will be walking have not been visited in over 10 years. Update the description where necessary.

Description Changes

Survey directions, descriptions and special instructions sometimes contain outdated or incorrect information which must be updated. Common description changes include (but are not limited to) correcting UTM coordinates, revising driving directions, updating information about access gates or keys, or moving sign locations. Record these changes on the **Description Change Form** (Figure 2). Fill out the form completely. When writing a description, be detailed and precise. Proper grammar and legibility are important. Read the descriptions to your surveys to get an idea of what makes a good description.

Maps

You will also be provided with a notebook including detailed maps of all survey sites in your area. Each site will have a 1:24K topographic map (see Figure 4 on page 12) as well as a larger scale map that includes tax-lots. Additional materials may be available if you cannot find a site using the description and the map. Summer surveyors fill out a Survey Site Verification Form (see Figure 3) when they set up a new survey. The verification form may have specific comments or landmarks that could help you locate the start and/or end of the survey. If needed, this information can be obtained by contacting your crew leader or a project assistant.

UTM Coordinate System

This is an easy-to-use coordinate system, based on a projection of the earth as a flat surface. The earth is divided into 60 zones, and all Western Oregon falls within Zone 10. Within each zone there are two coordinates that define a point: a Northing (y) and an Easting (x). The northing coordinate indicates the distance in meters from the southern boundary of Zone 10 (the values increase as you move north). The easting coordinate indicates the distance from the western boundary of Zone 10 (the values increase as you move east). These coordinates

correspond to distances, in meters, inside the zone boundaries. Most maps will have the UTM grid printed on them. Some of the older maps may only have tick marks along the margins, so you must construct the grid. In the margins of the map, next to the grid lines, are the coordinates for the boundaries of the 1,000-meter grid. The two larger digits are called the "principal digits" and are always in ten thousands and thousands of meters.

Missing UTM'S

You will need to obtain UTM coordinates for all surveys where UTM information is missing on the data sheets, and for surveys that were last conducted prior to 2000. You should also double check each UTM point that has already been previously recorded (regardless of year) at the beginning of each season. **Write new or corrected UTM readings on the Description Change Form.**

Crew: Clackamas

REACH ID: 30918.00 SEGMENT: 3 **SURVEY: Eagle Cr, N Fk** **0.89 MILES** **START COORD: 03S05E11**

UTM COORDINATES: **UP-E 565974** **UP-N 5020096** **DOWN-E 564638** **DOWN-N 5019762**

Survey Description: Survey upstream 0.89 mi to confluence with Trout Cr.

Directions: From the Clackamas ODFW District office take a right on SE Jennifer St and drive 1.9 mi and then continue on SE 135th Ave to Hwy 212. Turn right on Hwy 212 and drive 0.94 mi to Hwy 224. Turn right on Hwy 224 and drive 1.1 mi to junction. Turn left on Hwy 224 and drive 9.8 mi to SE Wildcat Mountain Dr. Turn left on SE Wildcat Mountain Dr and drive 2.0 mi to a junction. Turn left and immediate right staying on SE Wildcat Mountain Dr and drive 6.7 mi to SE Brian Ranch Rd. Turn right on SE Brian Ranch Rd and drive 0.8 mi to a junction. Veer left continuing on SE Brian Ranch Rd and drive 0.2 mi to sharp bend and river crossing. Park and enter creek. Survey from culvert upstream 0.89 mi. Exit via flagged trail on left bank to pickup. Pickup via Reach ID 30920 Seg 1 driving directions.

Special Instructions: *Longview Timber Gate 47 - need key

REACH ID: 30919.00 SEGMENT: 1 **SURVEY: Trout Cr** **1.36 MILES** **START COORD:**

UTM COORDINATES: **UP-E 567587** **UP-N 5020495** **DOWN-E 565888** **DOWN-N 5020147**

Survey Description: START sign on left bank hardwood. Survey from confluence upsream 1.36 mi to culvert. END sign on right bank hardwood.

Directions: From the Clackamas ODFW District office take a right on SE Jennifer St and drive 1.9 mi and then continue on SE 135th Ave to Hwy 212. Turn right on Hwy 212 and drive 0.94 mi to Hwy 224. Turn right on Hwy 224 and drive 1.1 mi to junction. Turn left on Hwy 224 and drive 9.8 mi to SE Wildcat Mountain Dr. Turn left on SE Wildcat Mountain Dr and drive 12.5 mi (staying on Wildcat at all junctions) to gate* on right. Follow gated road 0.1 mi and stay right. Continue on this road 0.65 mi to a pullout. Park and walk closed road on left 0.3 mi to dead end. Follow flagged trail downhill through woods to confluence. Survey upstream 1.36 mi. Arrange for pickup here.

Special Instructions: *Longview Timber Gate 47 - need key **KEEP EYES OPEN - BE AWARE of surroundings.

REACH ID: 30920.00 SEGMENT: 1 **SURVEY: Eagle Cr, N Fk** **1.52 MILES** **START COORD: 03S05E11**

UTM COORDINATES: **UP-E 567676** **UP-N 5018889** **DOWN-E 565866** **DOWN-N 5020119**

Survey Description: START sign on left bank cedar. Survey upstream 1.52 mi to bridge.

Directions: From the Clackamas ODFW District office take a right on SE Jennifer St and drive 1.9 mi and then continue on SE 135th Ave to Hwy 212. Turn right on Hwy 212 and drive 0.94 mi to Hwy 224. Turn right on Hwy 224 and drive 1.1 mi to junction. Turn left on Hwy 224 and drive 9.8 mi to SE Wildcat Mountain Dr. Turn left on SE Wildcat Mountain Dr and drive 12.5 mi (staying on Wildcat at all junctions) to gate* on right. Follow gated road 0.1 mi and stay right. Continue on this road 0.65 mi to a pullout. Park and walk closed road on left 0.3 mi to dead end. Follow flagged trail downhill through woods to confluence. Survey upstream 1.52 mi to bridge. Exit via left bank road back to gate. Pickup: To reach end Bridge - drive 0.1 mi from Gate 47 to split in road. Veer left and drive 0.25 mi to another split. Take right at split and drive 0.5 mi to bridge. Park at pullout on right at bridge.

Special Instructions: *Longview Timber Gate 47 - need key **KEEP EYES OPEN - BE AWARE of surroundings.

REACH ID: 30920.00 SEGMENT: 2 **SURVEY: Eagle Cr, N Fk** **1.29 MILES** **START COORD: 03S06E12**

UTM COORDINATES: **UP-E 569444** **UP-N 5018203** **DOWN-E 567681** **DOWN-N 5018897**

Survey Description: START sign on right bank alder just downstream of bridge. Survey upstream 1.29 mi to small left bank trib. END sign on right bank cedar.

Directions: From the Clackamas ODFW District office take a right on SE Jennifer St and drive 1.9 mi and then continue on SE 135th Ave to Hwy 212. Turn right on Hwy 212 and drive 9.3 mi to Hwy 26. Turn right on Hwy 26 and drive 7.1 mi to SE Firwood Rd. Turn right on SE Firwood Rd and drive 0.7 mi to a stop sign. Turn right and continue on SE Firwood Rd and drive 2.6 mi to another stop sign at SE Wildcat Mountain Rd. Turn left on SE Wildcat Mountain Rd and drive 5.7 mi to gate * on right. Follow Rd 47 and drive 1.05 mi (stay left at 0.2 mi, stay right at 0.5 mi) to a bridge. Park on left. Survey upstream 1.29 mi. Exit up left bank to end of road. Pickup: Go back from bridge 0.55 mi. Turn right and drive 1.9 mi (stay left at 0.05 mi, stay right at 0.35 mi) to end of road. Park

Special Instructions: *Longview Timber Gate 47 - need key

Figure 1. Example of crew Survey Description sheet.

Tule Clackamas

SPAWNING SURVEY DESCRIPTION CHANGE FORM

Description changed
☐ Yes
☐ No

DATE _____ SURVEYOR ID _____

REACH ID: 30867.00 SEGMENT: 2 SURVEY: Clackamas R

UTM COORDINATES: Please update any new coordinates

DOWN-E	532829	_____
DOWN-N	5025305	_____
UP-E	534294	_____
UP-N	5027048	_____

Current Survey Description Survey from Riverside Park boat ramp downstream 1.75 mi to I-205 Bridge.

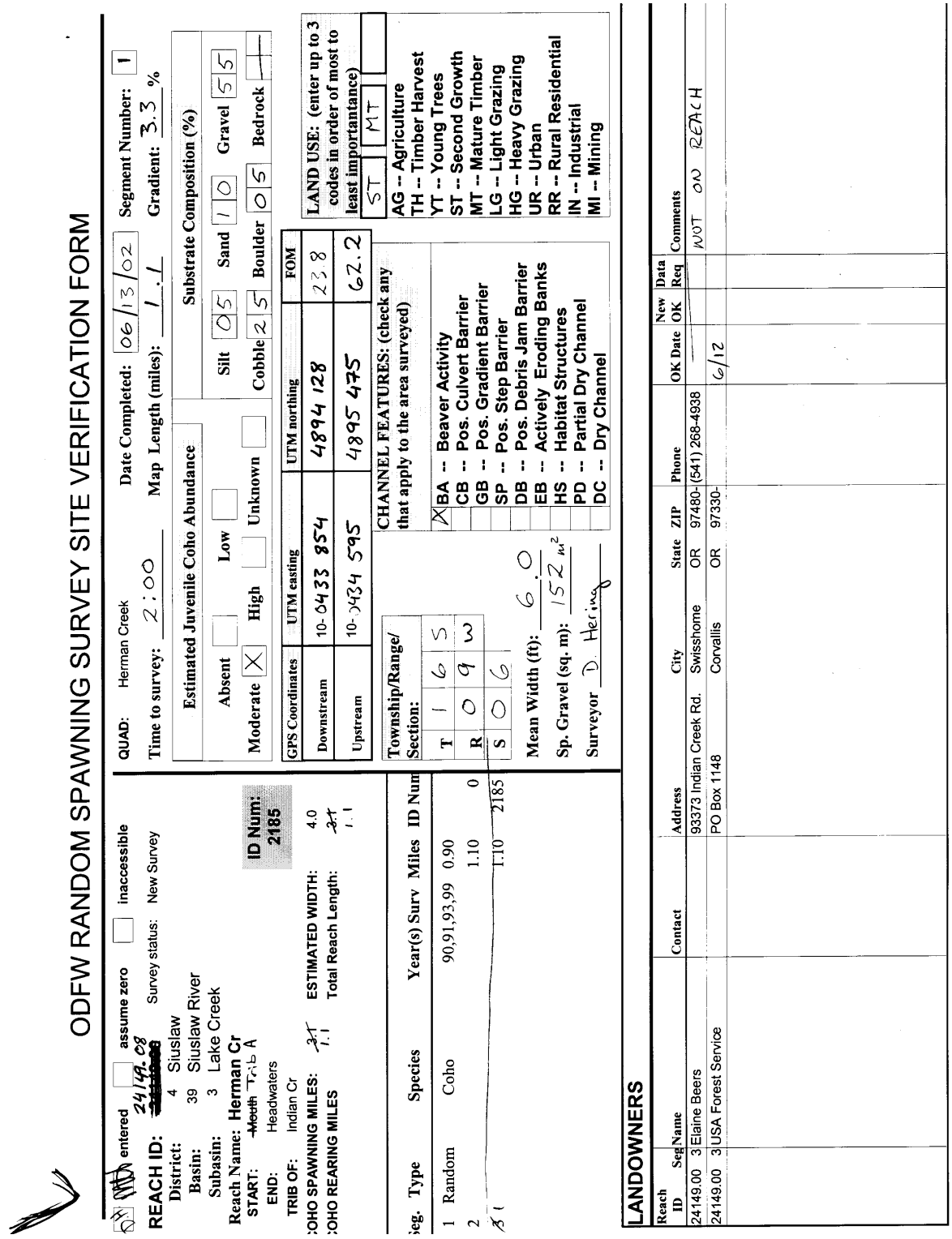
Current Directions: From the Clackamas ODFW District office take a right on Mangan Dr and drive one block to a natural right. Continue down to park enterance. Put in here. Survey downstream 1.75 mi to I-205 Bridge. Continue to float downstream to Clackamette Park.*

Current Special Instructions: * It is possible to drag inflatables out of river at "Hi Rocks" just below I-205.

INSTRUCTIONS: Print legibly, use complete sentences, and observe standard rules of grammar. Include as much detail as necessary so that your description will enable future surveyors to locate exactly the same stream segment. Try to avoid using landmarks and names that are likely to change over time.

Figure 2. Example of Description Change Form.

Random Survey Site Verification Form (Example)



ODFW RANDOM SPAWNING SURVEY SITE VERIFICATION FORM

entered ☐ assume zero ☐ inaccessible

REACH ID: 24149.00 Survey status: New Survey

District: 4 Siuslaw
Basin: 39 Siuslaw River
Subbasin: 3 Lake Creek
Reach Name: Herman Cr
START: ~~Mouth~~ Trib A
END: Headwaters
TRIB OF: Indian Cr

ID Num: 2185

COHO SPAWNING MILES: ~~3.5~~ 1.1 ESTIMATED WIDTH: 4.0
COHO REARING MILES ~~3.5~~ 1.1 Total Reach Length: ~~3.5~~ 1.1

Seg.	Type	Species	Year(s) Surv	Miles	ID Num
1	Random	Coho	90,91,93,99	0.90	
2				1.10	0
				1.10	2185

QUAD: Herman Creek Date Completed: 06/13/02 Segment Number: 1

Time to survey: 2:00 Map Length (miles): 1.1 Gradient: 3.3 %

Estimated Juvenile Coho Abundance: Absent ☐ Low ☐ Moderate ☒ High ☐ Unknown ☐

Substrate Composition (%): Silt 05 Sand 10 Gravel 55 Cobble 25 Boulder 05 Bedrock —

GPS Coordinates	UTM easting	UTM northing	FOM
Downstream	10-0433 854	4894 128	238
Upstream	10-0434 595	4895 475	62.2

Township/Range/Section: T 11 6 S; R 09 W; S 06

Mean Width (ft): 6.0

Sp. Gravel (sq. m): 152 m²

Surveyor D. Herring

CHANNEL FEATURES: (check any that apply to the area surveyed)

- ☒ BA -- Beaver Activity
- ☐ CB -- Pos. Culvert Barrier
- ☐ GB -- Pos. Gradient Barrier
- ☐ SP -- Pos. Step Barrier
- ☐ DB -- Pos. Debris Jam Barrier
- ☐ EB -- Actively Eroding Banks
- ☐ HS -- Habitat Structures
- ☐ PD -- Partial Dry Channel
- ☐ DC -- Dry Channel

LAND USE: (enter up to 3 codes in order of most to least importantance): ST | MT |

AG -- Agriculture
TH -- Timber Harvest
YT -- Young Trees
ST -- Second Growth
MT -- Mature Timber
LG -- Light Grazing
HG -- Heavy Grazing
UR -- Urban
RR -- Rural Residential
IN -- Industrial
MI -- Mining

LANDOWNERS

Reach ID	Seg	Name	Contact	Address	City	State	ZIP	Phone	OK Date	New OK	Data Req	Comments
24149.00	3	Elaine Beers		93373 Indian Creek Rd.	Swisshome	OR	97480-	(541) 268-4938				NOT ON REACH
24149.00	3	USA Forest Service		PO Box 1148	Corvallis	OR	97330-		6/12			

4/23/2002 9:48:51 AM JCF

Figure 3. Example of a random survey site selection verification form (Page 1).

(Site verification form page 2)

Description (Example of format) : 1) Directions from district office or some other major landmark to the start of survey, location of start sign; 2) "Survey from _____ upstream ____ miles to_____ (location of endpoint sign)"; 3) Describe best way to exit; 4) "***NOTE: (include special landowner instructions and/or specific warnings, etc.)"

From Mapleton, drive miles east on Hwy 36 to Indian Cr. Rd. Go left (north) on Indian Cr. Rd and drive 8.8 miles to FS 3278 (Gibson Cr. Rd) on right. Take FS 3278 2.7 miles to FS 32. Turn left and drive 4.6 miles to FS 3250 on left. Take FS 3250 0.7 miles to Herman Cr. Rd on left. Take Herman Cr. Rd 1.9 miles to end of road and park (this is the junction of two decomissioned roads). Walk east down forested hillslope to Herman Cr. Survey starts at confluence with perennial right bank trib in marshy meadow. Start sign is on solitary old growth fir in meadow @ confluence. Survey upstream 1.1 miles to end signs on big leaf maple left and mid stream alder. Exit up left bank hillslope to Herman Cr road. (Well established elk trails lead straight up slope.) Exit point is marked on Herman Cr. Rd with orange sign.

Comments:

Spawning Gravel:
Spawning habitat exists throughout segment. Gravel is somewhat embedded in meadow areas.

Fish Presence:
coho and trout present — trout throughout segment, coho densities diminish toward endpoint

UTMe	UTMn	FOM	Dist. (ft)	Landmark	UTMe	UTMn	FOM	Dist. (ft)	Landmark
0434113	4894986	29.3		marshy meadow					
0434328	4895192	43.4		seasonal right trib + meadow					

Misc. Comments

steelhead redds visible in lower 1/3 of segment

right bank trib @ start point is coho bearing → ∴ reach change

Figure 3 (cont.). Example of a random survey site selection verification form (Page 2).

Random Survey Site Map Example

OASIS Spawning Surveys

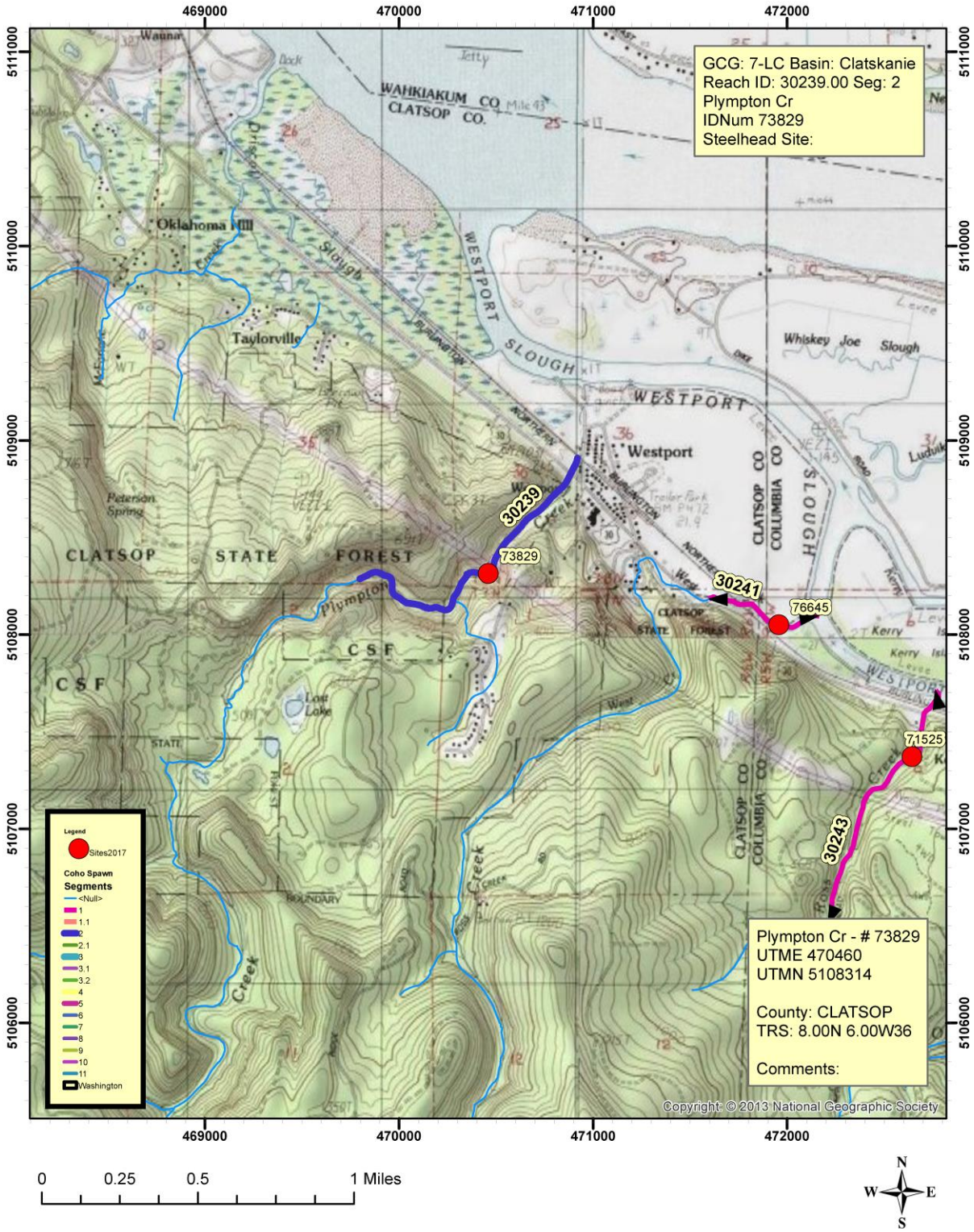


Figure 4. Example of a random survey site map.

Landowner Contacts

You must contact landowners for permission before conducting surveys that are located on private land. You will be given pre-printed Landowner Contact Forms (Figure 5) for all surveys. The data on these forms is our best knowledge about the landowners on the survey, but it is not infallible. People buy, sell and subdivide land, and there may be new landowners that are not on your sheet, or old landowners that no longer live on the survey. These landowners will need to be added or removed, respectively, from the sheet. It is your responsibility to make sure you DO NOT TRESPASS.

When you contact landowners, be aware that some landowners may have been contacted previously by other projects. When contacting a landowner, introduce yourself in a professional manner and inform them that you work for ODFW. Explain your reason for being there, and be clear on your intent, methods, and the frequency of your visits. Inform landowners that surveys will be conducted approximately weekly through January, and where noted, through May to accommodate steelhead spawning surveys. An example of how you might open a phone conversation with a landowner, and some common questions, follows:

Mock Landowner Conversation Example:

Hi, my name is _(first)_____ __(last)_____. I work for the Oregon Department of Fish and Wildlife's Salmon Spawning Project (or Oregon Adult Salmonid Inventory and Sampling Project). If you have a few minutes, I would like to ask for permission to survey _____ Creek/River where it flows adjacent to (or through) your property. Is now a good time?
The section of _____ Creek/River where it flows adjacent to (or through) your property was randomly selected to be surveyed for spawning salmon during the 2022-2023 season. We are requesting permission to access the creek from all landowners along this spawning survey. This site is among over 400 sites that have been randomly selected as potentially containing salmon spawning habitat. We count fish in these streams to estimate the abundance of spawning salmon along the (Oregon Coast or Lower Columbia). We conduct surveys approximately once a week and stay mainly in the stream bottom counting live fish and examining carcasses. Sometimes we need to come up onto the bank to skirt around obstructions or view fish. We would be happy to accommodate any special request that you have…Thank you for your time!

Common Landowner Questions/Comments:

Q: How did you get my name/number?
A: 1) County Tax Lot information/ Public Records/WhitePages *OR* 2) Going door to door asking permission along site.

Q: How will this affect my land use?
A: 1) Landowner names are not used on reports *AND* 2) Fish numbers are reported by basin, not landowner specific.

Q: I haven't seen fish in this Creek in 20 years…Why survey it now?
A: 1) Each site is approximately 1 mile long; we may find fish upstream or downstream. *OR* 2) Because each site is randomly selected, we expect some sites might not have fish, but we still survey it because it is accessible to fish and historically fish were present. OR 3) Historically this stream/site did have fish and/or adequate habitat and we survey to see if fish have returned after restoration efforts.

Q: How is the data you collect used?
A: We use it to determine presence/absence in some streams. OR Determine hatchery vs. wild ratios. OR Determine population trends and return timing. OR Final total counts can be used to set harvest levels in the future.

Other questions/comments:

We can be identified by an ODFW hat or patch on clothing.
Is there anything special we should know about your property? (i.e., Dogs?, Gates?, Electric fences?, Where to park?)
If requested, we can send a data report at the end of the season.
Would you like us to check-in before each survey or just at the beginning of the season?

An information pamphlet discussing the Oregon Plan for Salmon and Watersheds is also available for landowners (Appendix K). This pamphlet gives an overview of the goals of the Oregon Plan and explains the adult, juvenile, and habitat projects of ODFW. Be sure to check the box next to the Adult Salmon Spawning Surveys section of the pamphlet prior to handing it out.

Record your contacts on the Landowner Contact Form:
Write in any additional landowners that don't appear on the form with as much contact data as you can obtain (address, phone, date survey ok'd, etc.).
Edit and ***Highlight*** any landowner information corrections.
If there are a lot of corrections to be made, please use a blank Contact Form (Figure 6).

Verify the information:
Make sure the names, complete address, and phone number(s) are all correct. Add an email address only if the landowner provides it to you. If this information is incorrect, record the correct information on the landowner contact form and ***Highlight*** the corrections so they may be updated in our database. If the landowner lives offsite, record the actual site's address in the comments section. Obtain the tax lot information if it is not provided.

Check the most recent OK date(s):
Landowners that gave permission during summer survey verifications do **NOT** need to be contacted again unless there are specific instructions to do so in the comments or the survey description.

If the target species includes steelhead, obtain permission to conduct surveys **through the end of May (or end of June if target species is lamprey)**.

If the list does not indicate that a corporate landowner has been contacted, obtain permission from the crew leader before conducting the survey. Government agencies are handled by office staff unless otherwise specified.

If there is a contact person that is different from the owner or organization name, they will be indicated in the contact field above the phone number.

Record the date landowners were contacted:
Once a landowner has given permission**,** fill in the date under **"New OK date".** Do **NOT** just check the box, write “yes” or “no”, or leave blank!

If a landowner denies permission, note this under "Comments" and **do not trespass** on their property. You may need to drop a survey if this occurs, so consult your crew leader after receiving a denial.

Enter “Yes” or “No” in the “Data Requested” column:
Do **NOT** enter a check mark or leave this column blank!

If “Yes”, make sure you have the current address of the owner (*including the zip code),* or ask if they would like to receive data via email in which case record their email address. ***Highlight*** any landowners that you mark “yes” to get data, so we make sure to update in the database to send them data.

Check the "Result" in the “Result Details” column:
This field should show one of three possible results (Yes, Denied, Conditional), if the “Result” states “Conditional” please refer to the “Comments” section for the conditions if conditions are not stated please contact your crew leader.

Check the "Comments" section for any special instructions:
To conduct the survey, you must accommodate any special requests, also write them down (i.e., the owner requests that surveyors not park in the driveway). You can’t have too much information! If you have a question about a request, contact your crew leader. If we can’t accommodate the request (i.e. would take too much time, would compromise the data, etc.) we won’t do the survey.

Submit the Form to your Crew Leader:
When you have obtained all the necessary permissions. Make sure the form is complete even when there are no landowner contacts that need to be made (for example, if the survey falls entirely on public land). **Submit this form immediately upon completion. Do not wait to turn this form in! You can make a copy to keep for the remainder of the season for referencing any landowner information.**

Crew: Sauvie

2017 LANDOWNER INFORMATION

Reach ID: 30239.00 Segment: 2 Reach: Plympton Cr

SURVEY TYPE AND TARGET SPECIES:	
Random	Fall Chinook
Random	Coho
Random	Chum
Random	Steelhead

07N 06W 200	State of Oregon 1600 State St. Salem OR 97310 Situs:	Name: Phone: E-mail:	Date: 03/1/17 Result: Yes Data?: No	Public land
07N 06W 1 B 101	[redacted] Clatskanie OR 97016 Situs:	Name: Phone: E-mail:	Date: 04/12/17 Result: Yes Data?: Yes	
07N 06W 1 B 103	State of Oregon 1600 State St. Salem OR 97310 Situs:	Name: Phone: E-mail:	Date: 03/1/17 Result: Yes Data?: No	Public land
07N 06W 35 200	State of Oregon 1600 State St. Salem OR 97310 Situs:	Name: Phone: E-mail:	Date: Result: Data?:	Public land
08N 06W 35 400	State of Oregon 1600 State St. Salem OR 97310 Situs:	Name: Phone: E-mail:	Date: 03/1/17 Result: Yes Data?: No	Public land
08N 06W 36 800	Oregon Dept. of Forestry 2600 State St. Salem OR 97310 Situs:	Name: Phone: E-mail:	Date: 03/1/17 Result: Yes Data?: Yes	Public land
08N 06W 36 801	[redacted] Westport OR 97016 Situs:	Name: Phone: E-mail:	Date: 04/12/17 Result: Yes Data?: No	2013 AQI: Property leased to [redacted]
08N 06W 36 901	[redacted] Ontario OR 97914 Situs:	Name: Phone: E-mail:	Date: 06/1/17 Result: Yes Data?: No	2017 OASIS - Card returned with nothing marked 2014 - Only check 1x evaluation but has given us permission for past several years. May want to contact LO and check with them.

8/17/2017

Figure 5. Example of Landowner Contact Form.

Page _____ of _____

Year:_____________ Date: ____/____/____

Reach ID: ______________________________ **Segment:** _________ **County:** ________________________________

Township - Range: ___________________ **ID Num:**_____________ **Surveyor:**_______________________

Plat #	/ Tax lot #

Name: ____

Site Address: _________________________________

Address: ____

Phone: (   )   -

Email address:________________________ **Data Requested:** Yes / No **OK'd Date:** _______

Plat #	/ Tax lot #

Name: ____

Site Address: _________________________________

Address: ____

Phone: (   )   -

Email address:________________________ **Data Requested:** Yes / No **OK'd Date:** _______

Plat #	/ Tax lot #

Name: ____

Site Address: _________________________________

Address: ____

Phone: (   )   -

Email address:________________________ **Data Requested:** Yes / No **OK'd Date:** _______

Figure 6. Example of a blank landowner contact form.

FISH IDENTIFICATION

You will be expected to identify the species of live fish and the species and gender of fish carcasses encountered in the field. To accomplish this, you will use a number of characteristics including size, run timing, geographic location, coloration, body morphology, markings, and behavior. It is prudent to use as many characteristics as possible when determining species and gender. If you are uncertain of the species of a carcass, take a scale sample and pictures (multiple clear shots of the body, head, and inside the mouth) and turn them in to your crew leader. Salmon species can also be identified based on scale characteristics.

Coho appear in streams later in the season than Chinook, generally beginning in late October to early November. They tend to spawn in smaller streams and are generally a smaller fish. They are dull to bright red with greenish backs and can often be distinguished by the white spot on the operculum behind their eyes. Occasionally you may see a coho that still has its bright silver ocean coloration. They tend to be deeper in the body, making them look football-shaped. They have small round spots on their backs and the upper lobe of their tails. The gums at the base of their teeth are white, but the rest of the jaw is dark. They tend to be more reclusive than Chinook and are easily startled.

Chinook appear in early fall and are generally much larger than coho. They tend to spawn in bigger water, are typically darker than coho, and are often bronze to black in coloration. Some Chinook (especially large males) are quite red, but not forward of the dorsal fin. You can distinguish reddish Chinook from coho by their size. They have large irregular spots on their backs and both lobes of their tails and their tail rays are smooth. Chinook can often be distinguished by the white 'skunk-line' of fin rot on their backs. The gums at the base of their teeth are black.

Chum appear almost exclusively in the northern part of the coast. They don't often travel far in-river and tend to spawn in low gradient streams within a few miles of tidewater. They can be distinguished by the distinctive striated bars on their sides. They have very small speckles on their backs. Most males have large upper and lower canine teeth. Other key characteristics include their large eyes, lack of spotting on the tail and narrow caudal peduncle.

Steelhead appear in the winter and early spring. They are more elongated (torpedo-shaped) than salmon and have a broader caudal peduncle and a square tail (salmon tails are more lobed or forked). They are gray-blue on their backs and silvery-white on their lower halves. They have completely white mouths, small spots on their tails, and are very shy. In order to observe them you must move quietly and stealthily.

Female salmon and steelhead tend to have a more extensively eroded tail fin. This is the result of digging the redd, and both lobes are eroded evenly. Males have a more pronounced kype (hooked nose) and are generally larger overall. The lower lobe of a

male's tail is usually more eroded than the upper lobe. If you are unsure of the gender of a carcass, cut open its belly to examine gonads.

Fin Nomenclature of Salmon

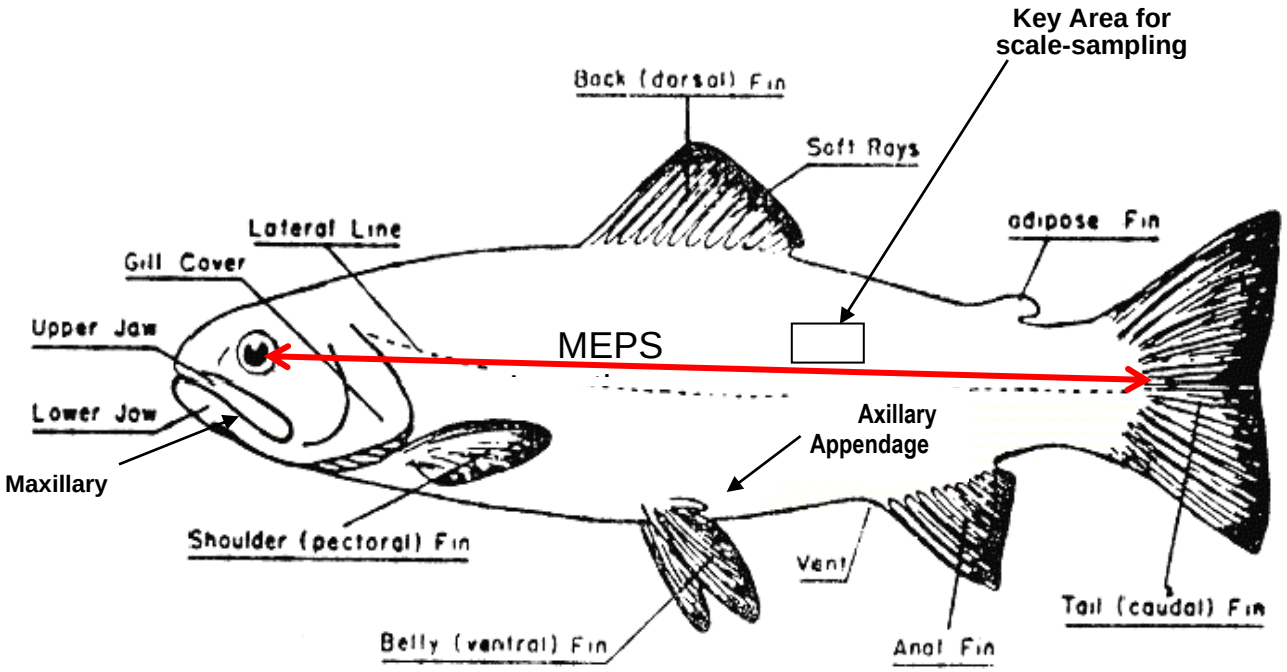
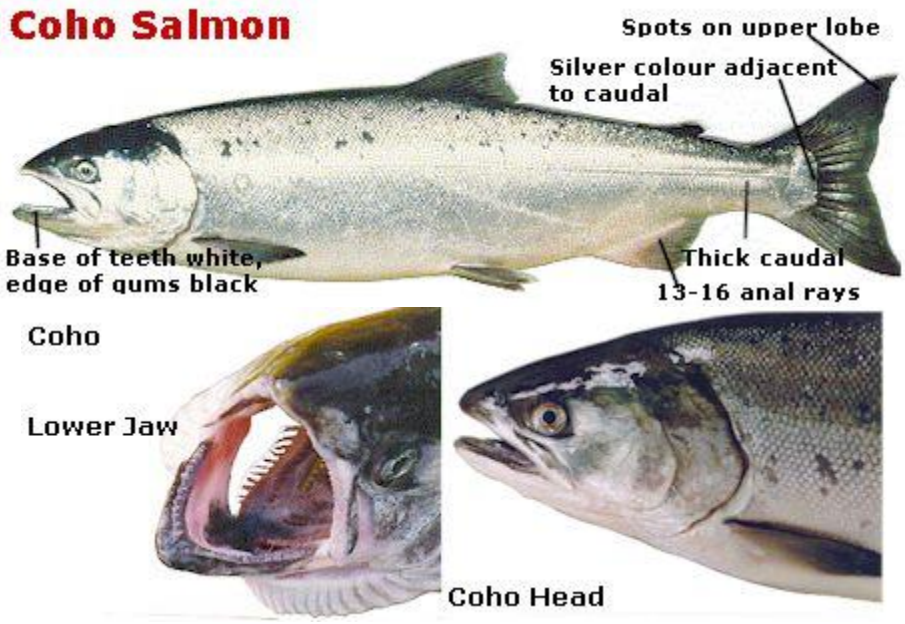


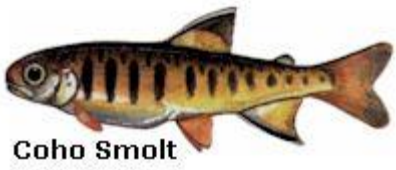
Figure 7. Schematic diagram of a generic salmon identifying fin names, the location of the Key Area for scale sampling, and the start and end points for measuring the Mid-Eye to Posterior Scale (MEPS) length.

Coho
(Oncorhynchus kisutch)



Coho salmon (*Oncorhynchus kisutch*), often called silver salmon, are found in most Oregon coastal streams and in many streams from California to Alaska. Oregon and California coho populations exist at the margins of the overall species range. Their major territory lies between Cook Inlet halfway up the Alaska coast, to the Columbia River. While most coho tend to remain close to the coast, they have been found as far as 100 miles inland. When mature in the late fall they average 750 mm (29.5 in) in total length (jacks are less than 430 mm (17 in) MEPS length) and weigh up to 25 pounds, although their average weight is between 8 and 14 pounds.

Coho life history patterns revolve around three largely independent age classes, each with a three-year generation time. Some breeding interaction between year classes is maintained by the spawning contribution of early returning jacks and the occasional four-year-old adults. Juvenile coho are highly adaptable and can have varied life histories. Most stay from one to two years in coastal streams before emigrating seaward as smolts. But other fry are equally at home in lakes or in coastal estuaries.


Coho Smolt

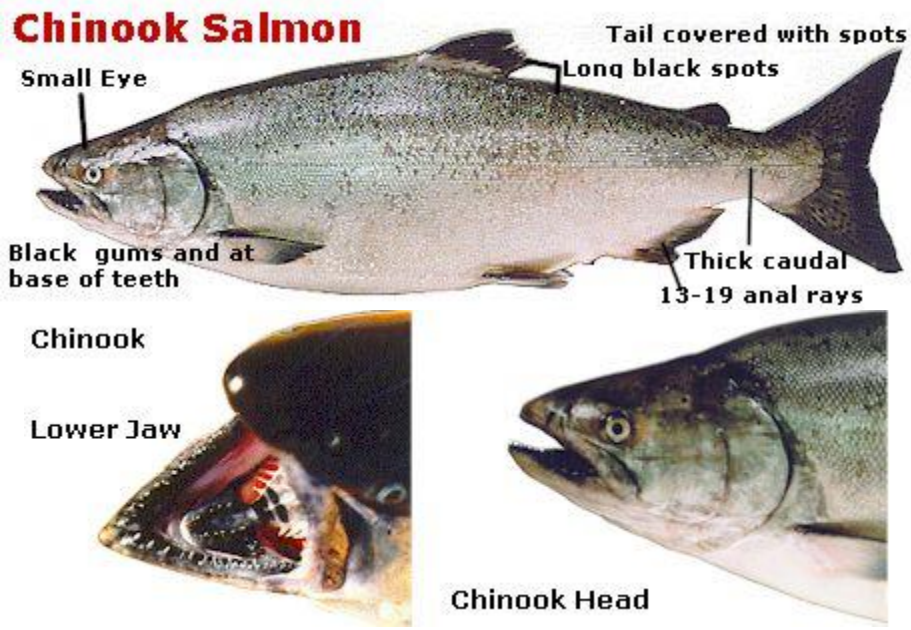
During early stages of growth, they have distinct parr markings (dark, vertical bars along each side), greenish brown backs, and a white leading edge on the anal fin and an orange tint on all but the dorsal fin. As they develop into smolts, their parr marks gradually fade and their backs become green with dark spots.

In the ocean, coho adults have silvery sides and a metallic blue back with black spots.


Spawing Male Coho

Spawning males in fresh water may exhibit bright red on their sides and bright green on their back and head, with darker coloration on their belly. They also develop a marked hooked jaw with sharp teeth. Females also change color and develop hooked snouts, but the alteration is less spectacular.

Chinook
(Oncorhynchus tshawytscha)



Chinook salmon (*Oncorhynchus tshawytscha*) are the largest of Oregon's five salmon species and are often referred to as King Salmon because of their size and strength. Fall Chinook in our coastal rivers and streams range in size from about 530 to 1,200 mm (21 to 47 in) (jacks are less than 510 mm (20 in) MEPS length) and 20 to 60 pounds at the time of spawning.

Although the majority of Chinook salmon head to sea a few months after they emerge from the gravel, some remain in their home stream for one or two years. Chinook returning to spawn vary greatly in age. In Oregon, three, four and five-year-old Chinook are most common. Further north, five, six and seven-year-olds are more abundant. Chinook jacks are two- to three-year-old male fish that may also return to spawn. While still feeding in salt water, the Chinook has a dark back, with a greenish blue sheen.

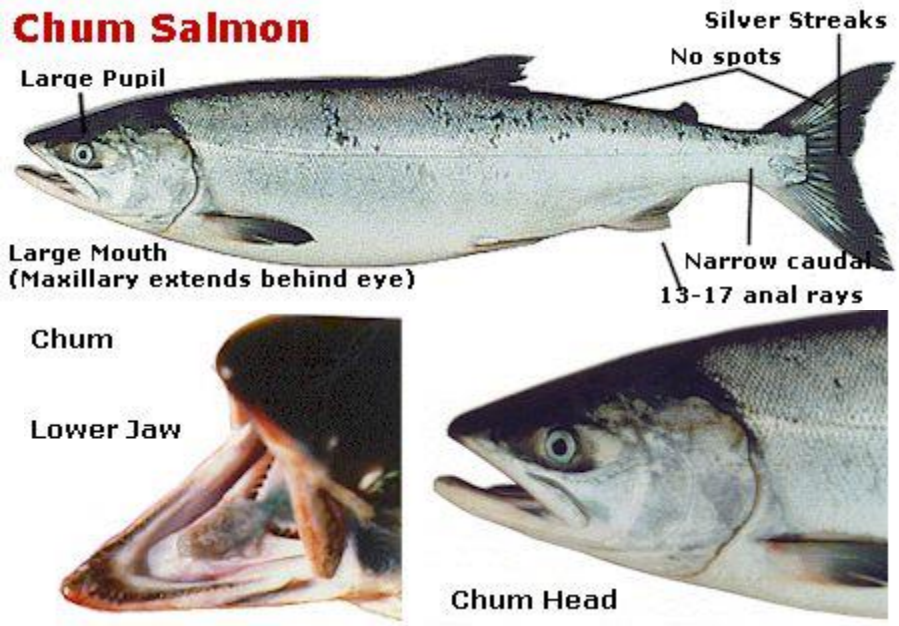

Spawning Male Chinook

As it approaches fresh water to spawn, its color darkens, and it develops a reddish hue around the fins and belly. By the time Chinook are typically observed in freshwater, the head is significantly larger than pictured above. Also, spawning males have enlarged teeth and the snout develops a hooked appearance (called a kype). Some coastal river systems have more than one stock of Chinook, sometimes with the stocks migrating in spring or fall.


Chinook Smolt

In the sea, Chinook feed on large zooplankton, herring, sand lance and many other fish, ranging widely in the ocean and growing rapidly during their last year in salt water.

Chum
(Oncorhynchus keta)



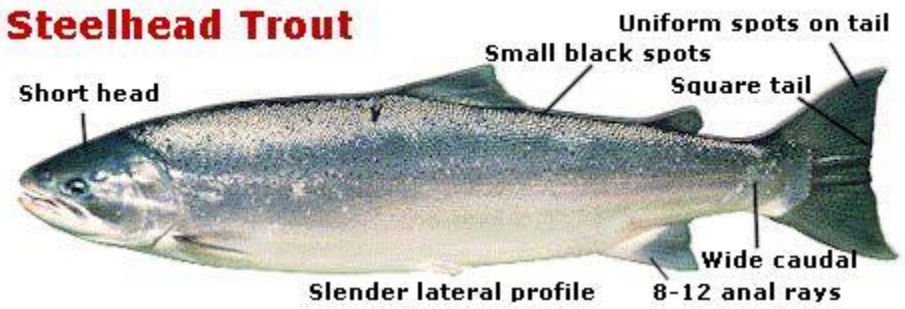
Chum salmon (*Oncorhynchus keta*) are widely dispersed along the Pacific coast from northern California to the Aleutian Islands in the Bering Sea. The distribution of chum salmon in Oregon is generally limited to the lower reaches of large streams and rivers on the north coast. In periods of high abundance, they may be found further upstream and occasionally can be observed during coho surveys. While some have been known to weigh up to 35 pounds, chum salmon average between 8 to 14 pounds and measure between 610 and 760 mm (24 and 30 in) in total length.

In shorter coastal streams, young fry move directly to the estuary and ocean upon emergence from the gravel, sometimes requiring only a day or two for their journey downstream. In the larger river systems, however, the fry may stay in fresh water for several months while making their way to the ocean. They remain in coastal waters until mid- to late-summer before going farther offshore. Their growth during this part of their migration is rapid. The young are green-backed, silvery fish with faint parr markings.


Chum Smolt

In salt water, chum salmon are metallic blue and silver, with occasional black speckling on the back. As they near fresh water on the return to their home streams, their flesh quality and visual appeal deteriorate rapidly. Mature fish show reddish or dark bars across the sides, and some have blotches of gray or black as well. Sometimes spawning chum will display a greenish tint, but not as pronounced as in the picture to the left. The males also develop a sharply hooked nose and large, dog-like teeth (hence the common name "dog salmon") which are used for displaying behaviors and to protect their territory during spawning.

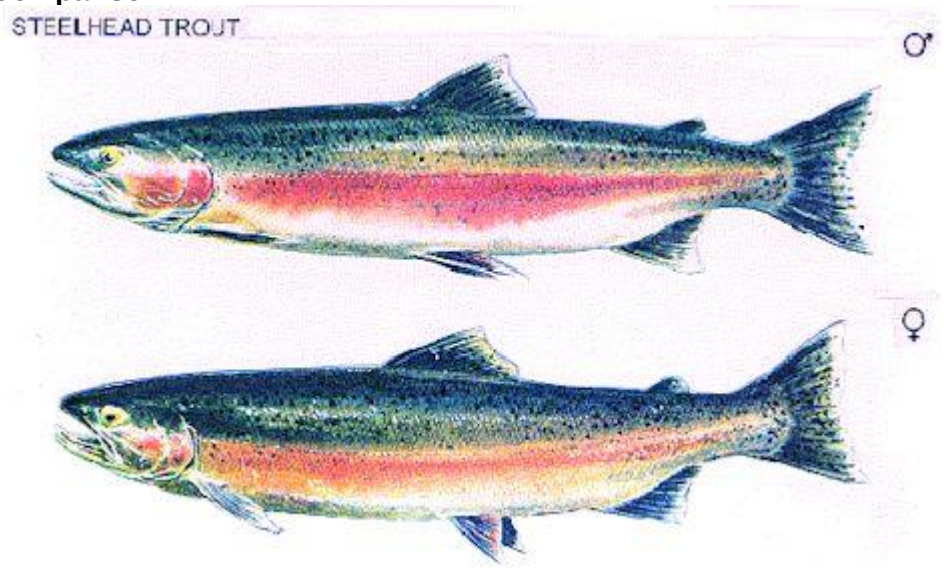
Steelhead
(Oncorhynchus mykiss)



Steelhead trout (*Oncorhynchus mykiss*) utilize habitat in freshwater, tidal waters of estuaries and the near-shore environment. Adults prey on squid, euphausiids, amphipods and fishes; the young eat insects, copepods, amphipods and other crustaceans and young fishes (*e.g.* sand lance, eulachon, and herring). Steelhead predators include of a variety of fish, birds, and marine mammals.

Steelhead spawn in larger streams and rivers. Mature adults enter rivers and larger streams year-round, but runs are generally concentrated in winter (November to May) and summer (May to October). Steelhead may spawn more than once (~30-40 % of the population do). Eggs are laid in gravel redds prepared by the female in tributary streams or inlets/outlets of nursery lakes from January to June. Eggs hatch in four to seven weeks and fry emerge from the gravel from mid-June to mid-August. Juveniles rear in freshwater for two to four years prior to migrating to the sea as smolts from April to June, and only remain in an estuary for a short period of time before moving offshore. Adults usually complete extensive feeding migrations in the Pacific Ocean before returning to spawn after two to three summers (range one to four) in the ocean. Adults live six to eight years and may reach up to 1,140 mm (45 in) and 42 pounds. More typical length and weight range of fish you may see will be, 635 to 890 mm (25 to 35 in) and 5 to 20 pounds.

Spawning Comparison:



Fall Chinook: note irregular spots on back

Female, Male and Jack Coho

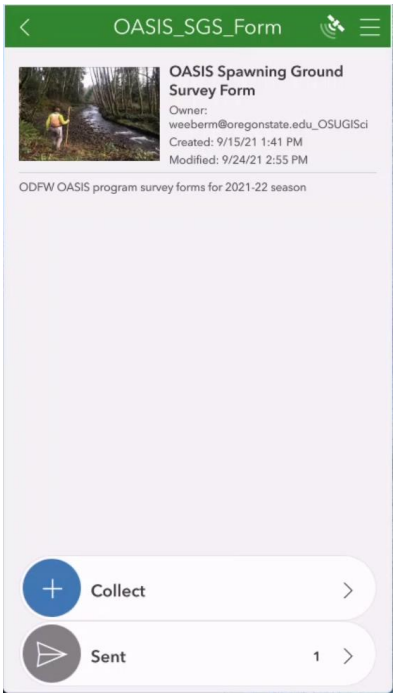
Male, Female and Jack Chinook carcasses

Female and Male Chum carcasses

SPAWNING SURVEY FIELD FORMS (PDA)

All day-to-day field data will be recorded in Survey123 on your PDA. This information includes counts of live fish and redds, carcass data, and survey conditions.

Survey123



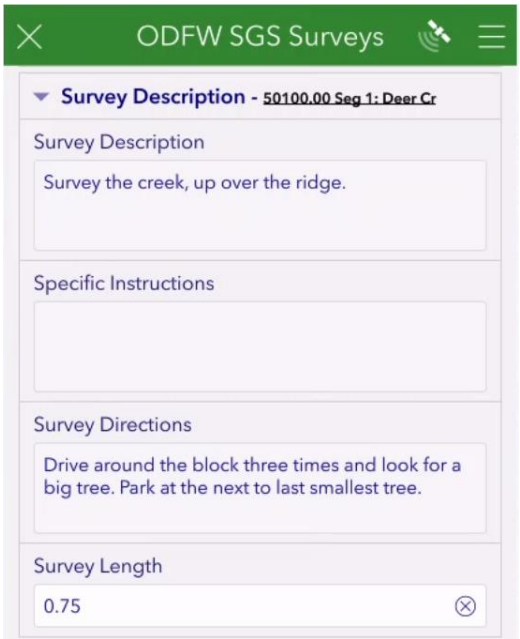
From the Survey123 log-in screen, select "Continue without signing in". Select the OASIS SGS Form. From the OASIS Spawning Ground Survey Form main menu page, select "Collect" to begin a new survey record. When you have completed a survey and are ready to exit the data entry, click on the checkmark at the bottom-right of the screen. You will be given the options to "send now" or "save in the outbox". When records are stored in the outbox, you must go into the outbox and click "send" once you have an WIFI/data connection. **Be sure you send your data every day!** You can view or edit previous survey records by clicking on "Sent".

Open Survey Select drop down menu. Select your crew location from the drop-down selection list. Select your Surveyor ID-Last name. Select the correct survey, listed by Reach ID & Seg #. Only surveys assigned to your crew will be displayed.

WARNING – Surveys may have similar names and Reach ID; pay attention to the Reach ID and Segment to be sure you are choosing the correct survey.

You and your partner may enter data for the same survey independently, and it will be combined later. You will each use your own SurveyorID for your portion of the data.

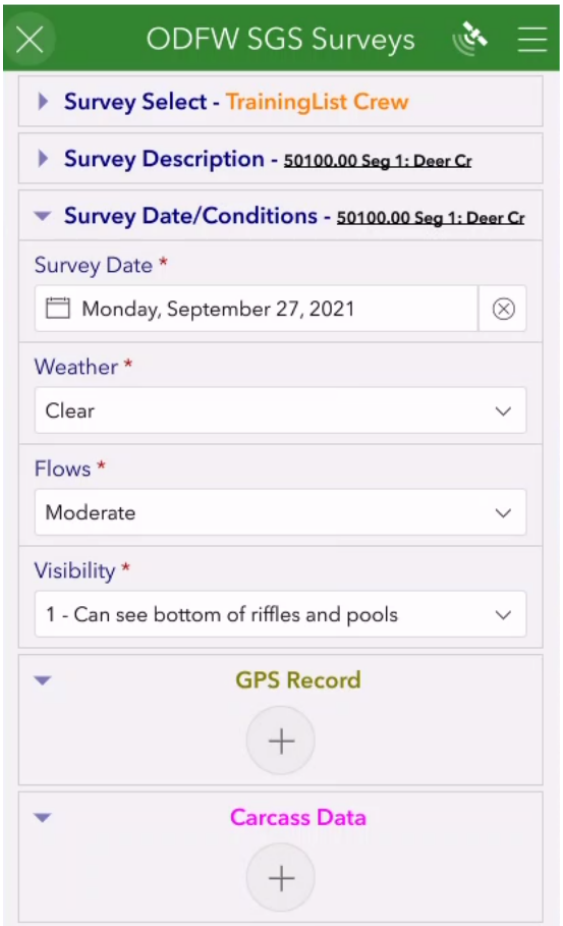
Survey Description



Tap Survey Description to view driving and survey directions. Listed are the Survey Description (describing boundaries of the survey and the survey itself), Special Instructions (any notes needed to conduct the survey), and Survey Directions (driving directions and instruction how to access and exit survey).

If you need to make any changes to or update the description, special instructions, directions or UTM coordinates use the paper Description Change Form for the specific survey found in your crew binder.

Survey Date and Conditions



Ensure that the Survey Date shows the correct date. It should pull automatically from your device, but you can manually select the date if you are entering data from a previous date.

Select the weather as:

-Clear -Partly Cloudy
-Foggy -Rain
-Overcast -Snow

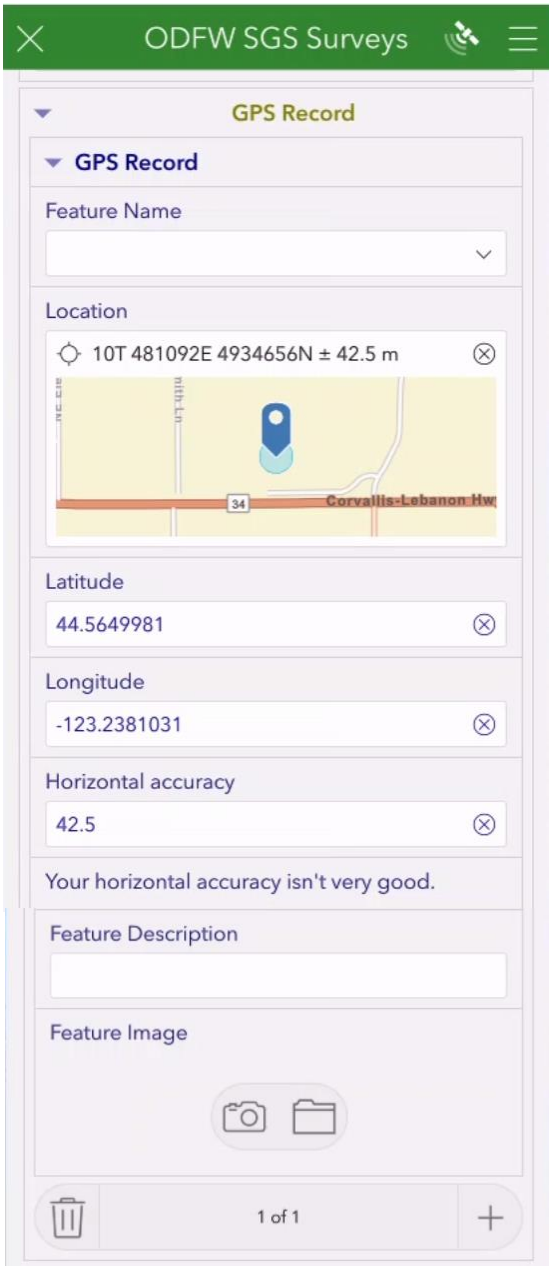
Describe the stream flow as:

Low or Dry: stream covers < 50% of the Active channel width.
Moderate: stream covers 50-75% of the ACW.
High: stream covers > 75% of the ACW and stream height approaches bank full.
F – Flooding: stream is out of its banks.

Describe stream visibility as:

1 - Can see bottom of riffles and pools.
2 - Can see bottom of riffles ONLY.
3 - Cannot see bottom of riffles or pools (check several areas before making this determination – see “Creeks are Unsurveyable” section).

GPS Record



The GPS Record section allows the opportunity to record any GPS waypoints, including unusual and/or significant features. Such features include noteworthy examples of the following:

Beaver Dam, Cascade, Chute/Slide, Culvert, Falls/Step, Fish Carcass, Log Jam, Mussels Observed, Other, Parking, Redd Cluster, Split Channel, Survey Start, Survey End and Tributaries.

To create a new record, click on the + button. Coordinates will be stored using your device's current location.

Feature Description is where you can document any additional information or comments about the location or feature you are recording.

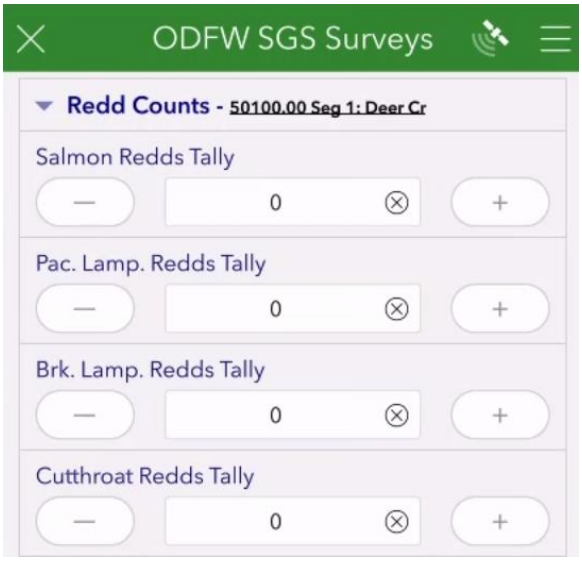
For Redd Clusters, Fish Carcasses, and "Other" features a Feature Description is required. Only some crews record redd clusters and carcasses (see crew leader). For Redd Clusters please record the species and number of redds present in each cluster. Also, ensure that all redds are tallied on the Redd Counts section (see below). For fish carcasses record the species, and for "Other" features please describe what exactly is being recorded.

You can take a photo to be included with the GPS Record by clicking on the camera icon under Feature Image.

Barrier feature types require additional information to be recorded. Feature height and length should be recorded to the nearest 0.5m. Jump Pool Depth should be recorded to the nearest 0.1m. If there is no jump pool, then the depth should be recorded as 0.0m. Describe Passage Status as: absolute barrier, partial barrier, not a barrier, or unknown status.

At the bottom of the GPS Record will be how many records you have created and which one you are viewing. To add additional records, click on the + button. To delete a record, click on the trash-can button.

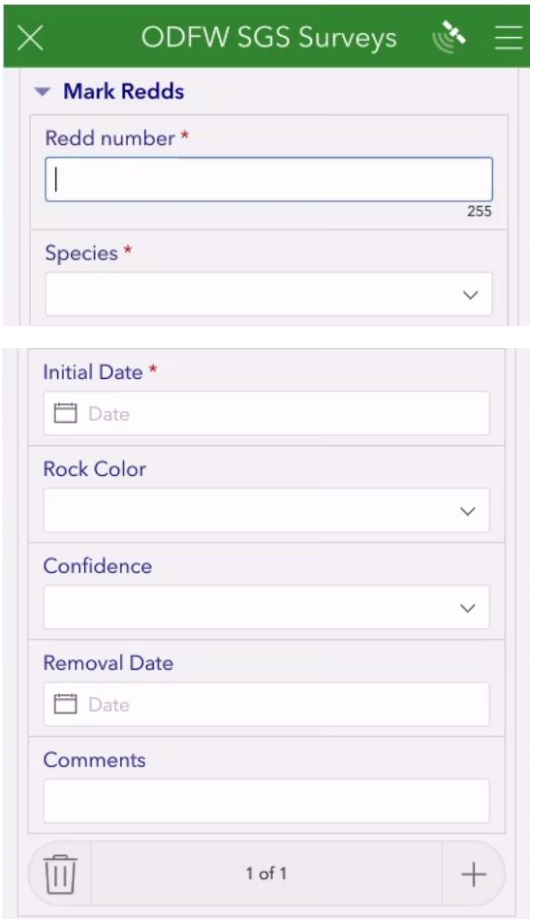
Redd Counts



Redds observed on the survey are tallied in the Redd Counts section. A redd is an excavated depression dug by spawning fish. A redd may be identified by a hollow in the gravel and the adjacent downstream plume of excavated gravel. The gravel from a recently dug redd will usually appear lighter colored and less uniformly oriented than the undisturbed gravel. Care should be taken not to confuse redds with general stream scouring or scouring associated with wood, root wads, or larger rocks. For the purpose of OASIS salmon surveys, redds are not differentiated by species - they should all be included in the same tally.

When it is not possible to distinguish individual redds because of high redd density, estimate the number of redds present and include “comment 71” in the comments section. Pacific Lamprey, Brook Lamprey and Cutthroat Trout redds should be tallied in their species sections. Lamprey redds are not typically observed until later in the spring.

Steelhead redds are recorded individually in the Mark Redds section. This is not a required section for other species. Steelhead tend to spawn later than salmon, but you may encounter some toward the end of the salmon spawning season. Your crew leader can give you more information on identifying and recording steelhead redds. Redd number will be recorded using the following format:
(two or three digit surveyor ID)-(four digit date)-(two digit redd number, starting with 01 for each survey and date, consecutive thereafter). Ex: 09-0201-01: surveyor=9, date=Feb 1st, first redd on the survey. Initial Date is the date the redd was first observed. Steelhead redds are marked with painted rocks, and you should record the color used. Confidence is your confidence that what you are marking is a steelhead redd: Confident, Probable, Uncertain, however regardless of your confidence the redd you are recording will be counted as a steelhead redd. Removal date is when you first document that the redd is no longer visible. Additional notes can be made in the comments field.



Live Fish and Carcass Counts

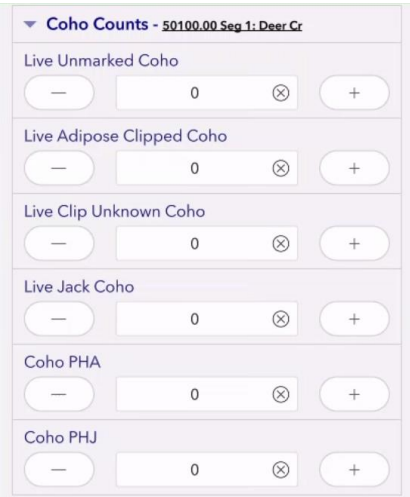
For Coho, Chinook, Chum, Steelhead, and Other Species there are a number of similar fields for recording live and dead fish observations. Within each section, a number can be manually typed or tallied using the plus and minus buttons.

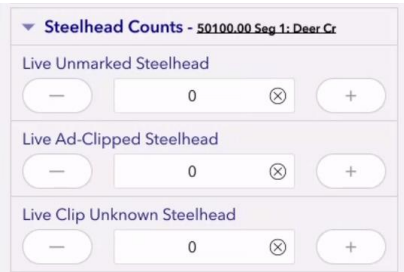
"Live Unmarked" specifies a live fish observed with an intact adipose fin. "Live Adipose Clipped" specifies live fish with a missing (or clipped) adipose fin. "Live Clip Unknown" specifies live fish for which it could not be determined whether the adipose fin was intact or clipped.

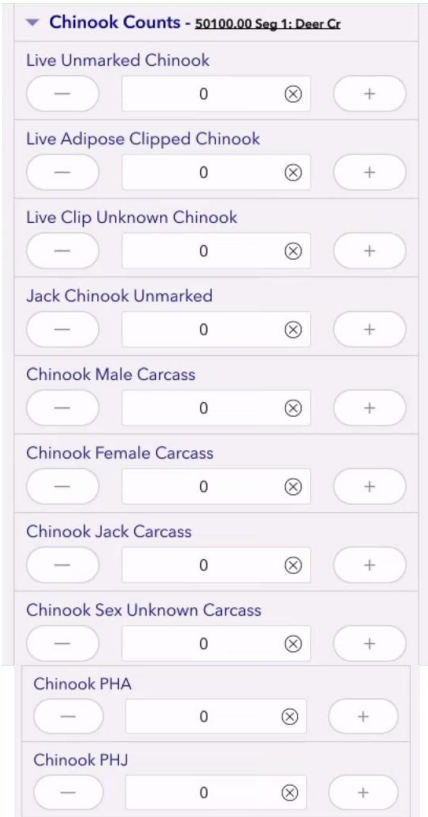
Live Jacks are tallied by species. A Coho jack is defined as a male measuring 430 mm (17 inches) or less in MEPS length, or 500 mm (20 inches) or less in fork length. A Chinook jack is defined as a male measuring 510 mm (20 inches) or less in MEPS length, or 600 mm (24 inches) or less in fork length.

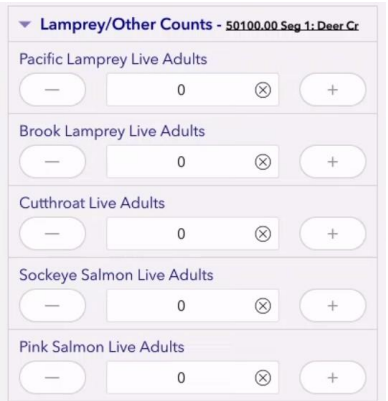
For dead Chinook and Chum, carcasses can be tallied by sex (male, female or unknown) within their respective species counts. Some basins require biosampling all carcasses of a given species, so know it is very important that **if biosampling a carcass it should not be tallied.** See the Biosampling Matrix in the Appendix. All Coho and Steelhead carcasses are entered into the Carcass Data section individually (see page 31).

Previously handled carcasses (tails removed, and previously biosampled) should be tallied by their respective species. PHA refers to previously handled adults. PHJ refers to previously handled jacks.







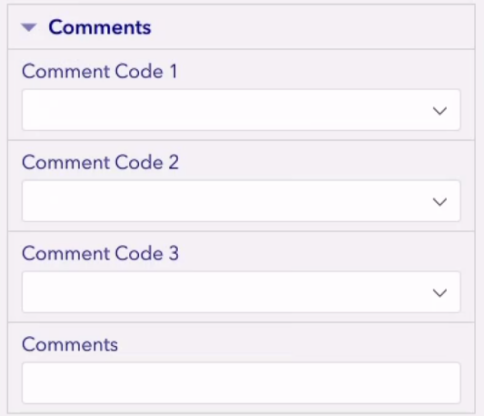


The activity fields are required if any live fish are counted.

Describe live fish activity as:

0 - None.
13 - Most fish spawned out.
14 - Most fish holding in pools (prior to spawning).
15 - Most fish migrating through survey area.
16 - Most fish actively spawning (as demonstrated by courtship behavior, excavation of redds, competition for mates, and guarding of redds).

Comments



Common comments can be selected from the comment code boxes, or you may type out any additional comments.

Use comment codes from the list below. There is room for three comments per survey. Prioritize comments according to the priority of the categories listed below. If further comments would be useful, record in the comments section in the Spawning Survey Evaluation Form.

Comment Codes

Priority I - Essential
This category must be represented in the comment section when appropriate*
24 Not surveyable (stream too high and/or turbid, counts will be disqualified).
48 Stream flow insufficient for adult entry to date.
88 Survey not conducted due to impassable road.
97 Placed coho carcasses observed.

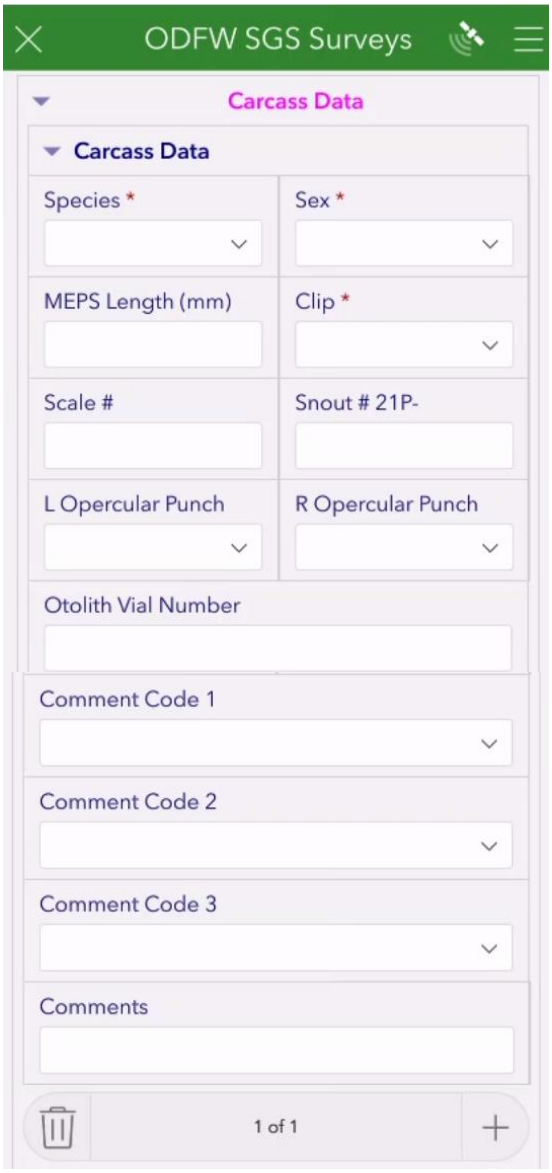
Priority II - Factors Affecting Fish Counts
02 Holes not surveyed *(Used when water is too high to survey holes).*
13 Live count estimated for >50% of survey.
14 Live count estimated for <50% of survey.
31 Impassable log jam.
32 Passable log jam.
33 Impassable beaver dam.
34 Passable beaver dam.
35 Impassable culvert.
38 Passable culvert.
66 Live Counts probably higher than observed.
71 Number of redds estimated because of high density.

Priority III - Miscellaneous
01 Count includes tributary to survey (*Used when fish are encountered in tributary of parent survey. See page 51 for details*).
11 Survey too early--before peak.
12 Survey too late--after peak.
20 Dark (pertains to the light source, not the water clarity).
21 Dark in pools (pertains to water quality, often tannins).

22 High glare.
23 Partly frozen.
49 Possible passage barriers below survey area (talk to crew leader).
52 Live tagged fish observed.
57 Live fin-clipped (other than adipose fin) fish observed.
60 Most carcasses washed out.
64 Exposed redds due to low flow.

Carcass Data (Biological Sampling Form)

Record every new coho carcass encountered during a survey in the Carcass Data section. All dead Chinook and chum which are biologically sampled (i.e., scales, snouts, etc.) will be recorded in the Carcass Data form. All dead Chinook and chum which are ***not*** sampled should be tallied under their species sections. **Each carcass will either be entered into the Carcass Data section <u>or</u> tallied under the species section, <u>but not both.</u>**



Biological data recorded in the Carcass Data section for fish sampled include species, sex, MEPS length, fin-clips, scales, snout, or Coded-Wire Tag (CWT), other marks or tags, opercular punches, otoliths, and comments. Only new carcasses that have not already been sampled (i.e., tail is still attached) are recorded on this form. There is no tally for new dead coho in the coho section. For this reason, it is critical to record **ALL** new coho carcasses in the Carcass Data section, regardless of whether that carcass was sampled for biological material.

A record from this form will be completed for each carcass sampled. Example: if scale samples are taken on every tenth coho carcass in your area, you will still complete a line in the Carcass Data form for every carcass found, regardless of whether a scale was taken. Consult crew leaders for other species sampling requirements.

Do not take samples from hatchery salmon carcasses placed in the stream for nutrient enrichment projects (crew leaders should know if carcasses have been placed, typically identified by removed heads or cut in half).

Species, Sex, and Clip are required fields. Snout # is required if the clip is not None or Unknown. MEPS length measured in millimeters.

The clip field captures data on several clips; the adipose fin and the left and right ventral fins (multiple clip codes should be entered in the comments section). Remember that adipose clipped fish must have their snouts removed and placed in a plastic bag with the individual snout ID label. See Figure 8, below, for fin locations. **Inspect all carcasses for clips, marks, punches, and tags (see figures 8 & 9).** For ventral or pectoral clips indicate which side the clip is on in the comments field. **Adipose clips are the most common mark; however carcasses must be completely inspected for all clip, mark and punch types.**

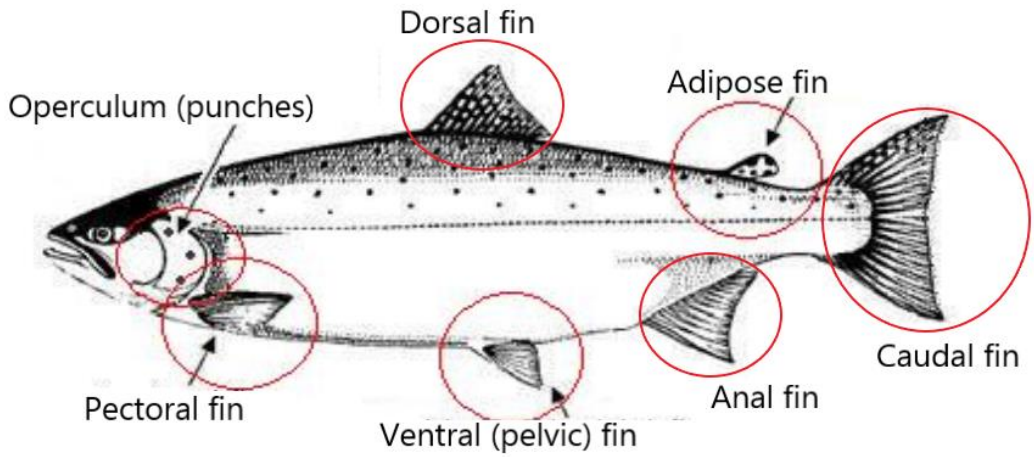


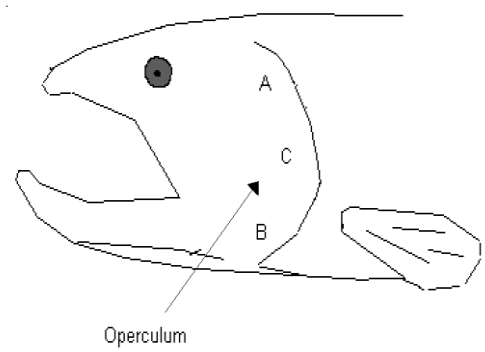
Figure 8. The locations of common fin clips and punches.

The Scale # is a unique number printed on the scale envelope (should be a five-digit number). Write the number found on the scale envelope in this field (Figure 11, page 36). If the scale # is less than or greater than five digits, then enter “99999” in this field and record the actual scale number in the Carcass Data Comments field.

Complete the Snout # field by inserting the entire number found on the snout ID label (Example 22P 9999). **Remember that for all carcasses with adipose fin-clips, you will have to remove the snout, and that all snouts receive their own uniquely numbered snout ID label.** The label itself is stored with the snout inside the plastic snout bag. Place the snout in first, tie a knot in the plastic bag, then place the label in and tie a second knot to hold it in. There should be only one snout and label per plastic bag and the snout and label should be separated by a knot. This will insure there is no confusion as to which snout and label go together, and that the label will be legible. If the carcass is not adipose fin-clipped then leave this field blank. NOTE: If a snout wand was used and no tag was detected, select comment codes 56 (wand used) and 96 (no snout taken) under the comment section.

Inspect all fish for tags and record tag number and color information as available. If a carcass has more than one tag, record the second tag's information in the Comments field.

Opercle Punches



Opercle punches are circular holes cut in the operculum, which is the bony flap covering the gills on both sides of the fish's head. Punches may occur on the left operculum, the right operculum, or both. For each side, there are three possible punch locations: Above center, below center, and center. These punches are currently used in a few specific areas with the Life Cycle Monitoring Project, so depending on your location, you may not expect to encounter many. However, do note if you identify any opercle punches on any salmon carcasses. **Fish may have punches on both opercula, and multiple (double) punches on a single side so be sure to check.**

Figure 9. Operculum punch locations.

Opercle Punch Codes: *(Fill out for both left and right operculum)*

A=Above Center	B=Below Center
C=Center	D=Double (any combination of punches/per side)
U=Unknown	N=No Mark

Otolith and DNA Samples

Otolith and DNA tissue samples may be collected on a special case basis. Your crew leader will let you know if you are to collect either otoliths or DNA samples. If so, record the vial number and for DNA, the fin sampled.

Carcass Comments

Select any relevant comment codes, listed below, and type in any additional comments in the comments field.

41=Scavenging	96=No Snout Taken
90=Pre-spawn	55=Fin clipped (other than adipose)
92=No Scales Taken	56=Snout wand used

CODED WIRE TAG AND FIN-MARK RECOVERIES

Instructions

Recoveries of Coded Wire Tags (CWT) and fin marks from salmon encountered on spawning surveys are used to assess straying of hatchery salmon to natural spawning areas. The CWT is a uniquely marked minute piece of wire that is inserted into the fleshy part of a salmon snout prior to its release from a hatchery. The tags are the primary method of identifying groups of salmon released from hatcheries. Most salmon marked with a CWT cannot be readily recognized by visual inspection. Coded-wire tags are recovered by removing the snout from adipose-clipped fish and sending the snout to the CWT processing lab for dissection and tag reading.

The following procedures are used to sample fin marked salmon and record recovery data:

Always carry Snout ID Labels with you while surveying.

When a fin-marked carcass is found, complete one line for each fin-marked carcass in the Carcass Data Form. Complete all applicable fields and note the appropriate code for the corresponding fin-clip.

Instructions for fin-clipped fish. If the fish has a clipped adipose fin, remove the snout, from behind the eyes to the tip of the jaw, and place it in a plastic snout bag with a snout ID label (separated by knots as shown in the illustration below). Complete all applicable fields for the Carcass Data record. Record the snout ID label number on the Carcass Data form in the Snout # Column. *Snout samples are needed for <u>all</u> adipose fin-clipped fish, except when using a snout wand.*

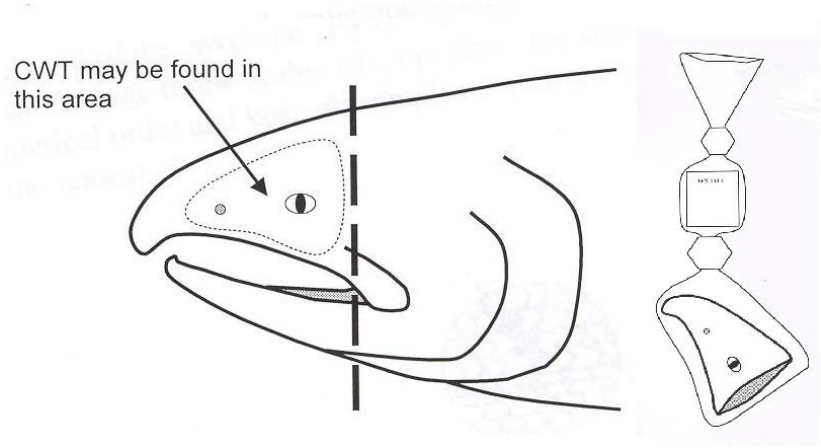


Figure 10. Snout removal and CWT location.

At the end of the season, snouts will be picked up from the field offices and transported to Clackamas for processing. Attach a label to the container of snouts that shows (1) the area of origin, (2) the year, and (3) a statement that they were recovered on spawning fish surveys.

Use of Snout Wands (Lower Columbia & Sixes Crews Only). In areas with heavy hatchery influence and large numbers of carcasses a snout wand may be used to detect CWT fish. Snout wands should be tested at least once a week throughout the season. Also note that minerals in some rocks may give false positives. Therefore, carcasses should be elevated off the streambed when snouts wands are used.

When adipose clipped fish are encountered and a snout wand is available, complete all applicable fields on the Carcass Data form and use clip code "2" (Adipose clipped) in the clip column.

If a CWT is detected, remove the snout and place in a plastic bag with a snout ID label (see illustration above). Record the snout ID number in the Snout # Column on the Carcass Data form. ***You must use comment code "56" (snout wand used) in the comments column.***

If no CWT is detected leave the snout intact. ***You must use comment code "56" (snout wand used) and "96" (no snout taken) in the comment columns.***

When unmarked fish are encountered in areas known to include non-clipped CWT fish, **a CWT wand must be used at ALL times** (for a list of these areas see your crew lead). Complete all applicable fields on the Carcass Data form and use clip code "0" (None) in the clip column.

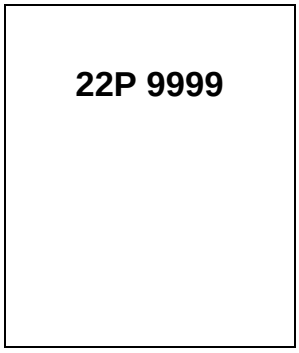
If a CWT is detected, remove the snout, and record the snout ID number the same as above. ***You must use comment code "56" (snout wand used) in the comments column.***

If no CWT is detected leave the snout intact. ***You must use comment code "56" (snout wand used) in the comments column.***

All carcasses must be examined for fin marks!

Fin-marked carcasses are recorded on the Carcass Data form and snouts are collected from all adipose-clipped carcasses.

EXAMPLE OF SNOUT ID LABEL
(actual size)



SCALE SAMPLING

Scale samples taken from salmon carcasses encountered on spawning fish surveys are used to assess age composition and hatchery-wild ratios of salmon populations and growth rates of individual fish. Growth is recorded on scales in rings or circuli, similar to those found on trees. When mounted and projected, these circuli patterns can be read (interpreted) to reveal the life history of each fish sampled, including the amount of time spent rearing in streams, time of ocean entry, and the number of years spent in the ocean. This information ultimately is used to aid in forecasting stock abundance and in assessing fishery harvest impacts.

Once a carcass has been sampled its tail should be cut off. Any carcass found without an intact skeleton (precluding a MEPS measurement) should not be sampled, but instead recorded in the field book as "Previously Handled" (PHA or PHJ fields).

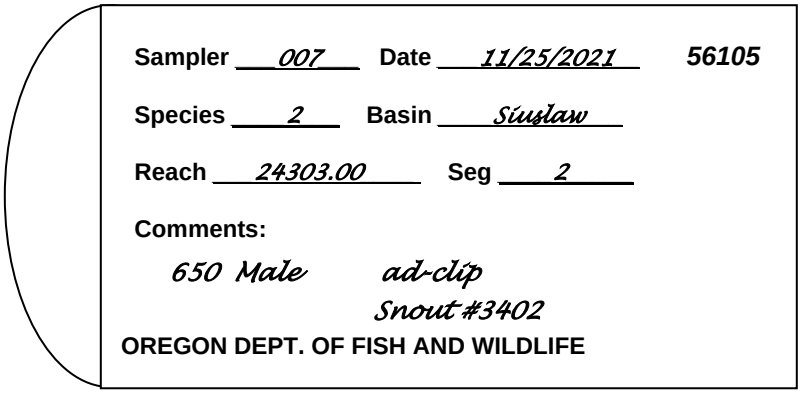


Figure 11. Example of a scale envelope with data fields completed.

Filling Out the Scale Envelope

All scale card fields must be completed as follows:

Sampler
Enter the surveyor ID number (see APPENDIX E) of the individual who is sampling the scales. This surveyor ID number must match the surveyor ID of the individual filling out the Carcass Data form.

Date
Enter month, day, and year

Scale Number
Scale number. Each scale envelope is uniquely numbered. This number must be entered on the Carcass Data form under scale #. If the scale # is less than or greater than five digits, then enter "99999" in this field and record the actual scale number in the Comments field.

Species
For each species, use the following species codes:

0=Unknown
1=Chinook
2=Coho
3=Chum
4=Steelhead

Basin
Provide the name of the Basin, not the stream name, where the carcass was recovered (found on the spawning survey list).

Reach ID & Segment
Provide the Reach ID and segment (found on the spawning survey list) of the survey the scales were sampled from. Include two decimal places for Reach ID.

Comments
Write comments using words, or codes found in the drop-down list on the PDA. Examples include the fish sex, length, clip status, and/or snout tab ID.

Scale Sampling Instructions

Coho Salmon

Sample scales from 1 in 10 carcasses found (excluding placed carcasses). Tenmile, Siltcoos and Tahkenitch basins, take scales from 1 in 25 carcasses. Lower Columbia crews only: See Sampling Matrix***.***

Sample scales from all adipose fin-marked coho in any basin.

To avoid re-sampling, cut the tail off all fish that are scale sampled.

Chinook Salmon

Sample all Chinook carcasses from the following CCRMP sample basins:
Salmon River

Sample 500 Chinook in each of the following Index Basins:
Nehalem
Wilson
Siletz
Siuslaw
Coos
Coquille
Sixes
Chetco

Sample all Chinook carcasses from Lower Columbia surveys unless directed otherwise.

Sample scales from all adipose fin-marked Chinook in any basin.

To avoid re-sampling, cut the tail off all fish that are scale sampled.

Chum Salmon

Collect scale samples from all chum salmon carcasses. We may adjust our subsample protocol depending on chum abundance and workload, and this would be communicated through your crew leader.

To avoid re-sampling, cut the tail off all fish that are scale sampled

Scale Sampling Procedure

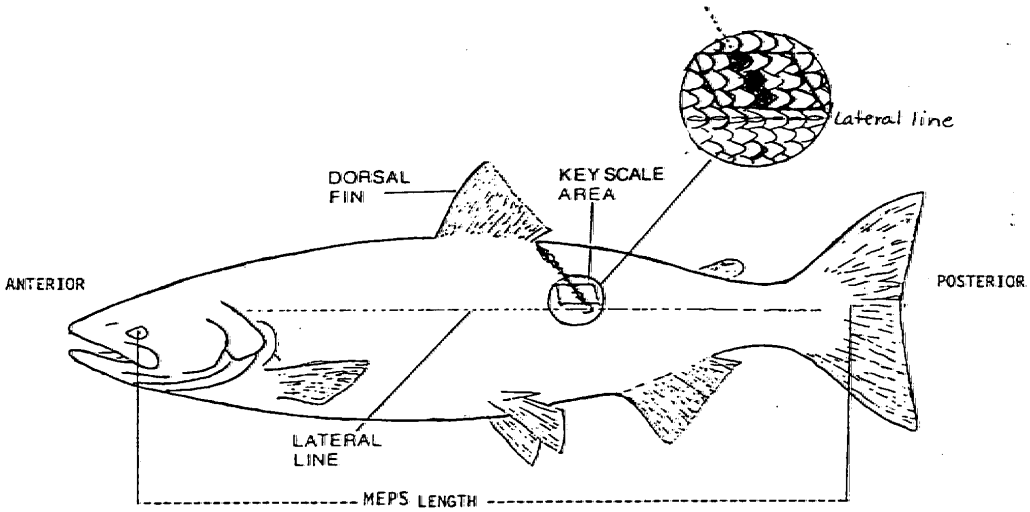


Figure 12. Scale sampling key area location.

Locate the Key Area for collecting scale samples (see Figure 12 above) by following the diagonal row of scales down and back from the posterior insertion of the dorsal fin to the first 3 scales above, but not including the lateral line. One to two scales in front of (anterior) and behind (posterior) these three scales are within the key area.

Scrape the key area with the back of your knife blade to remove any slime. With forceps, pluck 4-5 scales from this area and place them neatly between the paper insert in the envelope. Be very careful that the scales come from the key area.

Turn fish over and repeat procedure on the other side of the fish, placing scales in the same envelope.

Write any pertinent information regarding that fish on the envelope.

If scales are absent from the key area on one side of the fish, sample from the key area on the other side of the fish. If scales are absent from key areas on both sides of fish, do not take scales, but complete the Carcass Data form, marking code 92 (no scales taken) under comments.

Pull the paper sleeve 2/3 of the way out of the scale envelope, then fold the upper half backward over the top of the envelope when placing scales inside the sleeve. Do not stack the scales. Taking the sleeve completely out of the envelope not only takes more time, but also causes wrinkling of the scales and can render them useless.

Keep all the scale samples organized and in the same place – scales should be stored in a dry location with adequate ventilation. Plastic trays are provided for daily deposition of samples, and a larger box located in a safe location is excellent for longer-term storage. Placing scales in Ziploc bags or other sealed environments causes scales to decompose. This in turn makes your rig, office, or pants smell like dead salmon and you generally less popular with other, less odiferous, human beings.

OTOLITH REMOVAL

Background

Otoliths are structures made of calcium carbonate which reside in the inner ear of vertebrates. These structures allow organisms to perceive movement and acceleration, including 3D movements. In fish, the annual growth rings within otoliths can be analyzed to inform biologists on the age and other aspects of an individual's lifecycle.

Collection of otoliths is uncommon on OASIS surveys, however there are times when surveyors might be instructed to sample these organs. Please consult the Sampling Matrix for details on when and where otolith sampling is necessary. There are several ways to remove otoliths; the instructions below are one example.

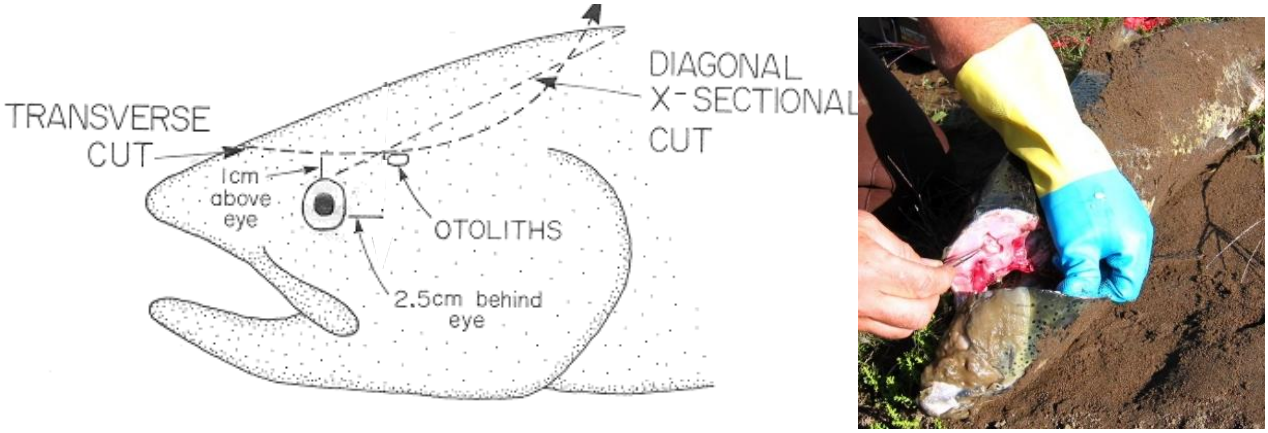


Figure 13. Otolith removal guide.

Instructions

1) Cut off top of skull (wedge) using knife while wearing cut gloves.

2) Remove brain and the membrane around otoliths using forceps.

3) Find both otoliths (one on each side) using forceps, if possible, and place otoliths in vial for storage.

DNA SAMPLING

Background

Samples of DNA taken from salmon carcasses are used to map the genetic variance represented within populations. This information will be used in turn to determine which components of the variation in life history are critical for long term viability of this species. In effect, DNA sampling is the first step to understand the various genetic components in coastal populations.

Instructions

DNA tissue samples will be taken on a special case basis. Your crew leader will inform you prior to going in the field if DNA samples are required. Before going in the field take an adequate selection of these vials and place them in a safe container (Ziploc or Tupperware). Ensure that you never run out of vials while in the field by leaving extra empty vials in your vehicle. If you run low on vials, contact your crew leader to obtain more.

To sample DNA cut a segment of the flesh from any fin (the target is fleshy tissue, not the harder ray material that has started to decompose) with a pair of scissors and place fleshy material in an individual DNA vial, record the vial ID number onto the Biological Sampling Form under the DNA # field, then place the vials in a safe container. At the end of the day, return the completed DNA vials to the office where they can be organized for review and storage. The size of the tissue sample should not exceed 25% of the total volume of the vial. Exceeding this size will only make preserving the sample more difficult. Extremely decomposed carcasses should be skipped since it is difficult to amplify DNA from these fish (i.e., if the sample is soupy, it probably won't amplify).

SALMON SPAWNING SURVEY EVALUATION FORM

Instructions

The spawning survey evaluation form (Figure 14) is used to evaluate each spawning survey site in terms of general habitat characteristics. It is also used to note any factors that may influence our ability to obtain accurate estimates of spawner abundance in the survey segment. One form is to be completed for each spawning survey segment. Notes can be written on the backside of the *Survey Evaluation Form* as the season progresses. This form provides important information frequently used for a variety of essential data quality tasks. Please take the time to fully report survey attributes.

REACH ID
Enter 7-digit survey identification code (*i.e., 25680.50*).

SEGMENT #
Enter 1-to-3-digit segment identification code (*i.e. 1 or 10.3*).

SURVEY NAME
Enter name of survey (*i.e., Salmon Creek*).

SURVEYOR ID
Enter the surveyor identification code of the surveyor who is completing the form.

DATE OF FORM COMPLETION
Enter date on which form was completed.

REACH ID		SEGMENT #		SURVEY NAME	

ID # OF SURVEYOR COMPLETING FORM		DATE OF FORM COMPLETION	

PROBLEMS WITH SURVEYING THIS STREAM SEGMENT:

_____
_____
_____
_____

BARRIERS TO UPSTREAM MIGRATION:

APPROX. LOCATION (0.1 MILE)	NATURE OF BARRIER	DID IT BECOME PASSABLE? WHEN (DATE)?	WERE SALMON OBSERVED UPSTREAM FROM IT

RANKING OF SPAWNING GRAVEL QUANTITY (check one):

Category	**Description**	
None	No coho Spawning Gravel	
Low	>0 and < 20 m^2 Spawning Gravel	
Moderate	20 to 100 m^2 Spawning Gravel	
High	> 100 m^2 Spawning Gravel	

DISTRIBUTION OF SPAWNING GRAVEL (% OF TOTAL):

DOWN-STREAM BOUNDARY	LOCATION WITHIN SURVEY SEGMENT				**UP-STREAM BOUNDARY**
	START TO 1/4	1/4 TO 1/2	1/2 TO 3/4	3/4 TO END	

DISTRIBUTION OF SPAWNING FISH (% OF TOTAL):

DOWN-STREAM BOUNDARY	LOCATION WITHIN SURVEY SEGMENT				**UP-STREAM BOUNDARY**
	START TO 1/4	1/4 TO 1/2	1/2 TO 3/4	3/4 TO END	
FISH DISTRIBUTION BASED ON: FISH REDDS (CIRCLE ONE)					

HABITAT RANKING (circle): NO-HABITAT VERY-POOR POOR OK GOOD VERY-GOOD EXCELLENT

GENERAL COMMENTS AND ADDITIONAL CODED COMMENTS (USE REVERSE SIDE)

Figure 14. Example Spawning Survey Evaluation Form

PROBLEMS WITH SURVEYING THIS STREAM SEGMENT

List any major problems that prevented the survey from being conducted or that caused the survey to be difficult (e.g., road conditions, extended high stream flows and/or turbidity, problems with access through private land, etc.). Identify any factors related to the condition of the survey segment that may have hindered your ability to make accurate counts of salmon (e.g., water clarity, structure in the stream channel, viewing conditions, etc.). Include information on date ranges if relevant.

BARRIERS TO UPSTREAM MIGRATION

List any potential barriers to upstream migration occurring within the survey segment during the course of the spawning season. Wait until fish arrive and the first freshet (high water) has occurred before identifying barriers. Barriers are best identified by the presence of salmon immediately downstream from an obstacle but not upstream of the obstacle. Record the approximate location of the barrier from the survey starting point (nearest 0.1 miles from the start), nature of the barrier (e.g., beaver dam, culvert, log jam, waterfall, etc.), and the date when the barrier became passable (i.e., date when fish were first observed upstream from the barrier or when high flows removed the barrier). If you feel the barrier prevented fish passage for the entire season, note as such. *If the endpoint of the survey is a barrier, mention that too*.

ESTIMATES OF SPAWNING GRAVEL QUANTITY

This estimate should be done at the end of the season and should reflect spawning gravel quantities from throughout the season. This is a rough quantitative estimate within large ranges of gravel abundance. See the description of coho spawning gravel below to help in your determinations of the quantity present in each of your surveys.

DISTRIBUTION OF SPAWNING GRAVEL

Estimate the proportion of spawning gravel in each quarter of the survey to the nearest 1%.

DISTRIBUTION OF SPAWNING FISH

Estimate the proportion of spawning fish in each quarter of the survey to the nearest 1%. Remember to indicate whether fish or redds were used to make the estimate.

HABITAT RANKING

Please circle the most appropriate ranking based on the description of the perfect spawning habitat (see below) in relation to gravel size, quantity, abundance, tail outs, and gradient.

GENERAL COMMENTS

Keep running notes on the reverse side of the Survey Evaluation Form as the season progresses to record observations that will help you complete this form. List any comments that may help us in interpreting your responses and list any other noteworthy features of the survey segment. Some possible questions to consider include: What are your impressions of the habitat? Did the habitat significantly change during the season, and if so, how? Are spawning habitat improvement structures present, and are

they functioning to improve spawning habitat? If no coho were seen, do you have any idea why? Were there any tributaries within the segment where coho were seen holding at the confluence? Were there problems with access/roads/weather? Were the names, addresses, and/or phone numbers of landowners mentioned in the description correct? Was this survey unusual compared to other surveys you have done? In what ways?

In many cases you will see certain sections of a stream more than any person on the planet. You may end up learning things about a stream that no one else knows. If you feel that you have information that would increase the quality of our data, correct possible errors in our stream database, or improve our understanding of a certain stream, this form is where that information should go.

Description of Salmon Spawning Gravel

Suitable spawning sites for coho salmon are characterized by gravel size, water depth, and water velocity. Preferred sites for redds are located at the tail end of pools or the head end of riffles (tail-outs), however other habitat types such as glides or side channels may also be used. Tail-outs appear to be preferred because they offer: (1) large uniform gravel deposits; (2) a gradient of water depth and velocity, allowing options for redd construction over varying stream flow; (3) good inter-gravel flow through exchange of surface and ground waters; and (4) protection from gravel scouring during high flows.

Following is a listing of the physical parameters of optimal redd sites of coho salmon in Oregon coastal streams:

Habitat Unit Type
Pool tail-out

Gravel Size
- < 15 cm (6 in) in diameter
- > 2 cm (0.5 in) in diameter
- Prefer mean diameter of 9 cm (3-4 in)
- < 50 % of gravel area intermixed with fines (mud, silt, sand) or with larger rock (cobble, boulder)

Volume of Gravel Patch
- $\geq$ 20 cm (8 in) depth of deposit (thickness)
- $\geq$ 2 m^2 (36 ft^2) surface area of deposit

Water Depth Over Gravel
- < 62 cm (24 in)
- > 4 cm (2 in) - Prefer mean of 18 cm (7 in)

Method of Estimation of Spawning Gravel During the Spawning Season

The availability of spawning sites (quantity of spawning gravel) can be estimated during spawning surveys by quantifying the occurrence of suitable gravel deposits within the stream channel under baseline winter flow conditions. If spawning is observed in habitat other than optimal habitat, record those observations in the Spawning Survey Evaluation Form.

Follow this procedure when conducting spawning gravel estimates:

Within the wetted channel width under *low* or *moderate* flows, count each two-square meter (2 m^2) patch of gravel that is between 4 cm (ankle height) and 62 cm (knee height) below the surface of the water. Gravel size can *range* from that of a marble to that of a grapefruit but should average *about the size of a baseball or smaller*. No more than 50% of a patch should consist of fines (sand, silt, mud) or large rock (cobble over 6 inches in diameter or boulders). Do not count thin layers of gravel over silt or bedrock; you should be able to bury your foot in the gravel.

Gravel deposits larger than 2 m^2 are counted by estimating their area to the nearest square meter and adding this value to your tally. Gravel patches should be relatively level, located in the tail-out of a pool, and not piled up at a steep angle against the bank. If the water velocity over the gravel is excessively fast, the gravel will not likely be used. Make the first estimate after the first freshet and make one estimate per stream per month starting in November.

GENERAL SURVEY INSTRUCTIONS

Upload/Sync Spawner Survey Data from PDAs daily. Paper forms should be submitted to the Corvallis office (ATTN: Jon Nott or Alex Neerman) by the 1st and 15th of each month.

For survey areas where Area-Under-the-Curve estimates are made (includes all random surveys), **intervals** between successive valid surveys **cannot exceed 10 days** from the date when the first visit is made.

Surveys made under water visibility rating 3, or surveys having the comment code 24 “not surveyable” or 88 “survey not conducted” are not counted when calculating the interval between successive counts.

Examine all carcasses for fin clips, marks and tags and take snouts from all adipose clipped fish. Record all fin-marked carcasses on the Carcass Data form.

Remove tails from all coho carcasses (after examining for fin clips) and all other salmon carcasses that are scale sampled or examined for tag recoveries (mark-recapture basins).

Leave dead fish where they are found or if they were moved during sampling, return them to where they were found.

Only count carcasses with an intact skeleton (skull through caudal peduncle). For coho and Chinook, fragmented skeletons must be tallied under “pre-handled” on Spawning Survey Form.

Use polarized sunglasses. Yellow or amber tinted lenses are best. Saliva or spray-on defogger may help reduce condensation on the glasses.

Walk ALL stream channels (side channels, backwater pools, etc.).

Keep the direction of the survey consistent throughout the season (i.e., if you walk upstream during the first survey do the same for each consecutive survey).

Weather, flow, and visibility for each survey area should reflect the conditions of a majority of the survey. These are initially recorded in your forms at the start of a given survey but remember to update them at the end of a survey if conditions vary or have changed from your initial assessment.

Ensure that each survey description is clear and accurate and that survey starting and ending markers are intact. If necessary, revise the survey description using the Spawning Survey Description Change Form and replace the markers. Fill out forms or take excellent notes the day the changes are made to avoid forgetting details.

Determine GPS coordinates for start and end points whenever UTM readings are missing, and for sites that were last surveyed prior to 2000. Update this information on the Description Change Form. Similarly, if the mileage of a survey area is revised or changed, or if the survey description needs to be updated.

Count all species of salmon and steelhead seen in each survey area regardless of the target species of that survey area.

If you observe an unsampled coho carcass that you cannot process (e.g., at the bottom of a deep pool) you won’t be able to enter it in the biological sampling form and there are no tally fields for new dead coho. Therefore, tally it as a previously handled coho.

If live fish of any species are observed during a survey, note whether most are: Spawned out; Holding in pools; Migrating through survey area; or Actively spawning. Use codes 13-16 (respectively) to record this on the Spawner Survey Form. These data are mandatory anytime live fish of any species are observed.

Record survey data in your PDA as you proceed through each survey. Don’t wait to enter data! Carefully read the instructions for completing the forms at the beginning of and throughout the season.

FIRST WEEK PRIORITIES

Meet with crew leader and district staff to go over and/or devise a safety check-in procedure. Field stations will need to have a check in/out board or system in place that will let others know where you are going and when and if you have returned. Isolated crews will need to devise a check-in system with their crew leader.

Office review with crew leader: Go over all forms and procedures. Review entire manual. Determine snout and scale card storage and any other office protocols.

Go over PDAs with crew leader and make sure that you know how to locate all of the forms and that you can upload your data.

Field review with crew leader: Try to go to a survey that will have fish. Go over survey technique, fish and redd identification, gravel counts, and carcass processing. Each crew can plan on conducting the first few surveys together if they wish to. The beginning of the season is a good time to clear trails for easier surveying, keeping in mind that higher flows may require trails in different areas than at the start of the season to complete the survey.

Sit down with crew leader and identify early season priority surveys. These should include all standard Chinook and chum surveys, and any coho surveys that have a history of early returns. It is vital that these surveys be started as soon as possible.

Go over each survey description and landowner sheet. Mark all sites on a map. Draw up a likely survey rotation. Plan on doing an average of eight sites a day per crew.

Contact landowners that still need to be contacted. Start with landowners on the priority survey list. Use the county assessor website to identify unknown properties. Consult with crew leader on landowner contact techniques if need be.

Survey descriptions should note if a key is needed. These keys will be obtained by crew leaders; however, surveyors should go over key lists with their crew leader to insure that all necessary keys are being requested.

It may be helpful to make up two spreadsheets: one for survey dates and counts, and another for early season survey status. The dates and counts spreadsheet will be very helpful as a quick reference update and for planning.

TEN-DAY SURVEY ROTATION

Each random survey must be performed within ten days of the previous valid survey (those with a visibility code of 2 or lower). Any survey performed with a visibility code of 3 does not count toward this goal, and so surveyors must revisit that site within the original ten-day period.

Example: A survey is performed on Monday. Tuesday would be day 1, Wednesday day 2, and so-on. On the following Monday (day 7) the survey is blown out with a visibility code of 3. The surveyors monitor this site for several days and return on Thursday (day 10) when conditions have improved. The survey is performed with a visibility code of 2 (acceptable). Friday then becomes day 1 of the newest survey schedule. In this example the survey was performed on the last day which would be within the required schedule.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Survey-Vis 1	day 1	day 2	day 3	day 4	day 5	day 6
Survey-Vis 3	day 8	day 9	Survey-Vis 2	day 1	day 2	day 3

Figure 15. Example of survey rotation.

Multiple surveys may threaten to go beyond the 10-day schedule simultaneously. Careful planning of site rotations can help. Watch weather carefully, and if a storm is looming anticipate your post-storm survey schedule by visiting (before the storm) those sites likely to stay blown-out after a storm hits. In this way you maximize the chance of maintaining the rotation schedule. Also remember that a survey should be conducted as often as possible. There may be times when a survey could be performed twice in the same work week. Such a schedule may get old, but the quality of data would be much higher. We like this.

Inform your crew leader immediately for suggestions or help if it appears that a survey may go beyond its 10-day rotation. Once over 10 days it is important to get a viable survey completed as soon as possible. Continue surveying the site on the regular schedule after that.

The 10-day rotation is based on experiments which suggest that the average lifespan of adult salmon on spawning grounds is slightly more than ten days. As a result, surveys performed more than ten days apart could potentially miss successfully spawning salmon. This means that surveys performed outside of the recommended rotation are not useful in providing estimates of abundance, though some valuable timing and distribution information can still be harvested from continuing the survey schedule.

DEALING WITH SPECIAL CIRCUMSTANCES

MISSING SURVEY PARTNER:

What should you do if your partner does not return from a survey? Partners will survey separately unless specifically noted in the directions or in special circumstances. There may be times when you will find yourself waiting long periods of time for your partner to return. Keep in mind that surveys can take two to three times as long during periods of heavy carcass processing and scale recovery. High flows also make surveys more time consuming. If, after taking these and any other relevant factors into account, you determine that your partner has been gone too long, it may be time to go looking for them. Before leaving the predetermined pick-up spot, leave a very visible note (use flagging or survey sheets). The note should state when you left and your exact search plan. Start your search by going in the exit route, and then downstream from the end to the start. The next step, if necessary, would be to contact your crew leader and the state police. Do not attempt this search by yourself if it is late in the day. If cell coverage allows, stay on site near the survey. Leave the site only if you have to do so to contact help. Keep a flashlight or headlamp in the rig or in your survey gear. Always keep an ODFW contact list with phone numbers with you in case of an emergency. If cell phone service is not available, ask a nearby resident to use their phone. Do not start surveys late in day if they cannot be completed before dark.

LANDOWNER DENIALS:

It may be possible to complete surveys with one or more denials. There may be past denials that the current description already takes into account. Surveys can be cut short at the start or end to avoid denied property. In some cases, small portions can be skipped. Creeks are often used as property boundaries. When landowners own only one side, the opposite bank can be walked to avoid the denied property. If you encounter denials while contacting landowners, do not automatically drop the survey. Unless a major landowner denies access, contact all landowners, and then check the feasibility of the survey. It will be necessary to use the tax lot maps to check exact property boundaries. Use caution and good judgment when conducting a survey with partial denials. Do not put yourself in a dangerous position. **Consult with your crew leader prior to dropping a survey or deciding to do a survey with partial denials**.

CREEKS ARE UNSURVEYABLE:

Any creek with a visibility of “3” cannot be surveyed. **Before making this determination, check several areas within the route**. It is worthwhile to check several different spots, sometimes a creek may clear up a little way into the survey. If you cannot see more than a couple of inches into riffles or the tail outs of pools, you should not survey the creek.

There are a few guidelines that may help you during periods of high flows. Creeks have varying degrees of susceptibility to blowing out. If you know a big weather system is

moving into the area, try to get the creeks that are more susceptible to blowing out done first. Once a storm has hit, focus on getting the smaller, less prone to blowing out, creeks done. Once the water level goes back down you can survey those creeks which you were not able to before. Planning and careful scheduling will help in keeping the surveys within the 10-day survey limit. It may be helpful to create a spreadsheet to help you plan. Consult regularly with your crew leader during periods of heavy rainfall when there are multiple creeks blown out. In general, when in doubt about the status of a creek go ahead and take the time to check it out.

FISHING AND HUNTING REGULATIONS:

Two current copies of the ODFW fishing rules and regulations brochure may be provided at training or can be obtained at any ODFW office and should be stored in the glove box of your vehicle. Review the local regulations. Bear in mind that you are not an enforcement officer. If you encounter someone fishing illegally, use your best judgment on how to proceed. Often it is just a matter of the fisherman not understanding or knowing the regulations. Suggesting a check of the regulations is often all it takes to get them to move on. Be careful about confrontations. If you do not feel comfortable approaching certain individuals, try to obtain relevant information such as a license plate number. Report illegal activity to the state police or your supervisor (Oregon State Police tip line: 1-800-452-7888). Do not put yourself in a dangerous or an uncomfortable position.

COHO SPAWNING IN SMALL TRIBUTARIES:

Tributaries with less than 150 meters of habitat are known as spur tributaries. The description and/or special instructions for a survey may include directions to walk up spur tributaries to the end of habitat (typically less than 150 meters). Any fish or redds found in spur tributaries will be included in the total count for the parent survey.

In some cases, you may find coho spawning in tributaries within the survey boundaries that are not mentioned in the survey description. In this case you should document that you saw fish spawning in a tributary by recording **comment code 01** (**“Includes tributary to index”**) in the Comments Section on your PDA and record the number of fish and redds in the comment section only. Consult with your crew leader on how to proceed when you return to this site on your next visit.

CELL PHONES

All crews will be issued a cell phone. If it does not have a relevant voicemail greeting already, update the voicemail greeting with both crew members’ names and that you are with Oregon Department of Fish and Wildlife. Cell phones are for work and emergency use only (not for routine personal calls) and should be taken with you in the vehicle every day. Check and respond to your messages daily. Be professional when answering the phone and when leaving your greeting.

Your crew leader or supervisor will help you set up your phone so that you can access your messages and record a greeting.

PUBLIC RELATIONS AND SAFETY

When driving a state vehicle, accessing sites, or conducting surveys, you are personally representing ODFW to landowners, anglers, and the general public. To ensure continuing cooperation with our efforts, it is essential that we maintain a positive image and constructive relationships with members of the public.

If a landowner challenges your right to conduct surveys on their land, explain it was your understanding that permission was obtained, apologize for the misunderstanding, and request permission to continue the survey. **Under no circumstances** conduct a survey if the landowner denies you permission. If someone other than a landowner challenges your right to conduct a survey, tell him or her that you will seek confirmation of permission through the owner and your supervisor. Do not conduct a survey if you feel that it is unsafe to do so.

Always treat members of the public with respect. In recent years, ODFW has generally improved its public image, having demonstrated respect for landowners, a high level of scientific credibility, and budgetary responsibility. However, it is not uncommon to encounter a person who has complaints about ODFW or other fish and wildlife management issues. If you encounter an angry person and you feel unsafe, end the encounter. Otherwise, repeating or paraphrasing back what the person says will help you gain that person's trust by letting them know that you hear and understand what they are saying. Find a point of agreement and end the conversation. Avoid prolonged discussions, you can always refer the individual to your supervisor if they want to follow up with more questions.

Be careful of other cars and trucks on the road, especially on logging roads. Generally, emergency vehicles, low boy trailers, log trucks, and pick-ups (in that order) have the right-of-way. **Use your CB radio when you are on industrial forest roads but NEVER assume that other vehicles are using their CBs!** The CB channel used in a particular area is generally painted on a tree or rock at the beginning of the road. If none is visible, set your CB radio to scan until you can locate the channel used in a particular area. If your radio has no scan feature, check with your Crew Leader about any active logging operations and/or CB channels typically used in the area. Please add this information on your Description Change Form for future surveys in this area. An example of how you might use your CB to warn unseen vehicles of your approach is "Milepost 17 up the Eighty-one Fifty-five Road".

Respect your physical and mental limits when conducting a survey. Don't take unnecessary chances when walking across rapidly flowing streams, on slick rocks or bedrock, and on slick, unstable, or rotten logs. Always stay aware of your surroundings (i.e., that bear needs that salmon more than we need the data) and never assume the creek is the same this week as it was last week since high flows can change the stream

throughout the season. Pay particular attention to fatigue or the potential for hypothermia as each will affect your judgment. You can probably make that jump to the log 9 times out of 10, but it will be that one time you miss that you'll probably regret for the rest of the day, if not the rest of the season.

Every work location needs to have a surveyor check-in system and search plan to locate missing surveyors. It is a good idea to let your crew lead know what order you plan to do the surveys in. Your crew leader will set up a daily check-in system to make sure each crew safely returns from the field. If for any reason your original plans change, you must let your crew leader know.

HAND HELD 2-WAY RADIOS

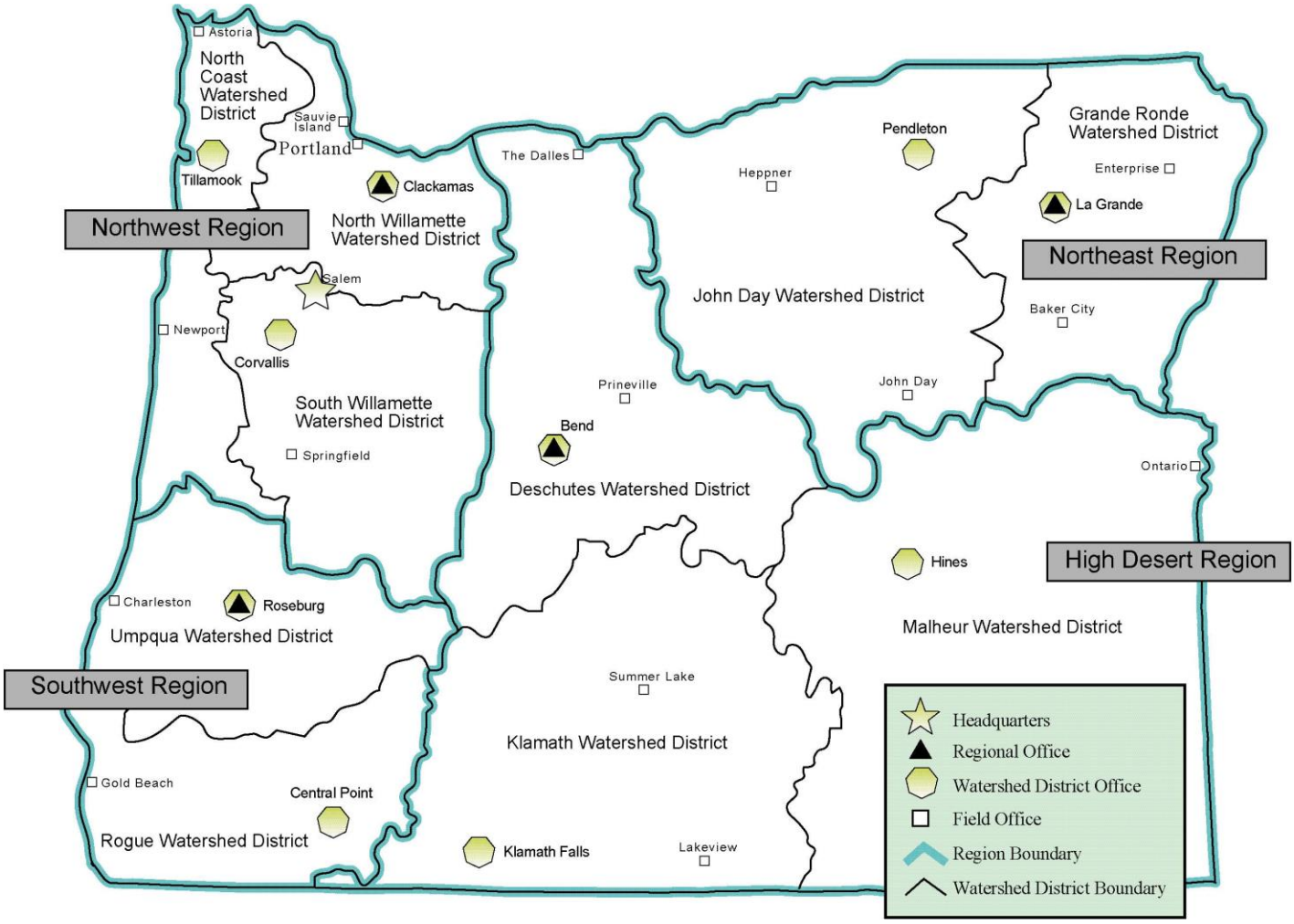
Each crew will be assigned a set of 2-way radios. The radios are *not waterproof*, but your crew leader can provide plastic bags or other means to help protect them. These radios are handy to keep in communication with your partner for safety or to meet up and help them process carcasses if you have finished your half of the survey. The radios are state property and for official business only. As with the CB radios, keep in mind that they are not secure lines and anyone else on the same channel will hear what you are saying.

If you get into an emergency (lost, injured, etc.), the standard channel we use for the project is main channel "1". You have been issued extra batteries (4 AAA) that you should always carry in case you need them in an emergency. If your survey partner, crew leader, other staff, or emergency personnel need to contact you this is the number that will be used to try to contact you for help.

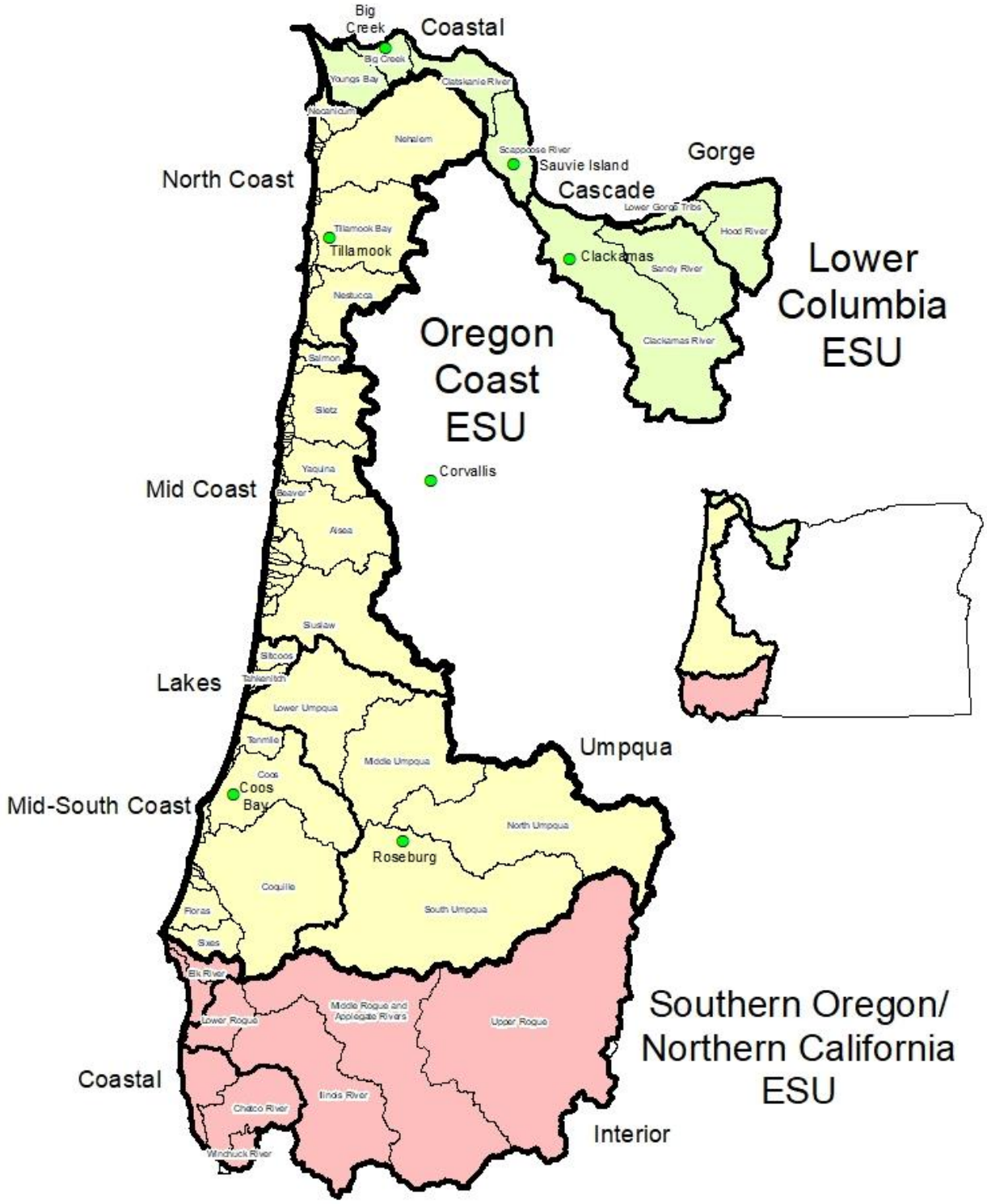
We Would Rather Lose A Survey Than A Surveyor

AT ALL TIMES
MAKE SAFETY YOUR TOP PRIORITY

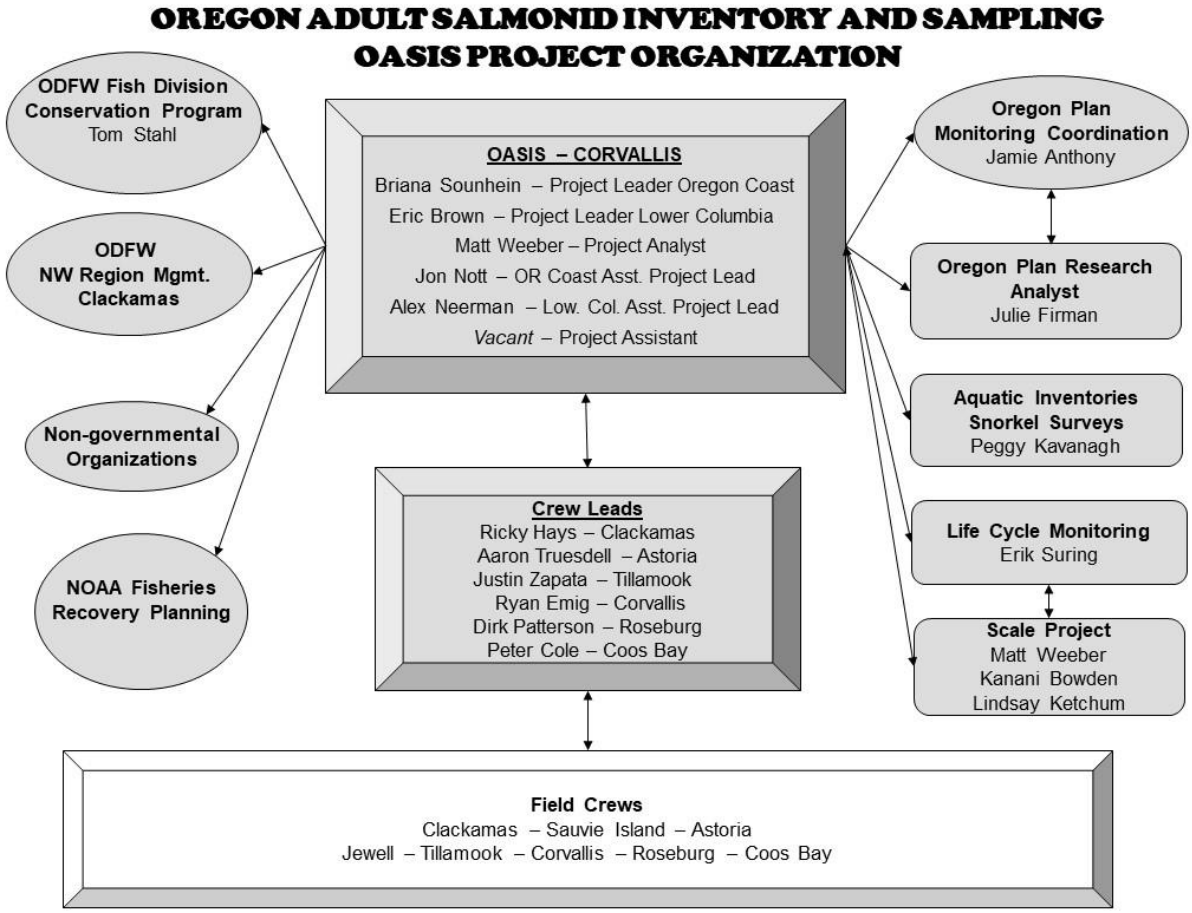
APPENDIX A. ODFW'S GEOGRAPHIC STRUCTURE AND OFFICE LOCATIONS



APPENDIX B. MONITORING AREA AND LOCATIONS OF ODFW SPAWNER SURVEY CREWS



APPENDIX C. OREGON ADULT SALMONID INVENTORY AND SAMPLING (OASIS) ORGANIZATIONAL FLOW CHART.



APPENDIX D. IMPORTANT PHONE NUMBERS

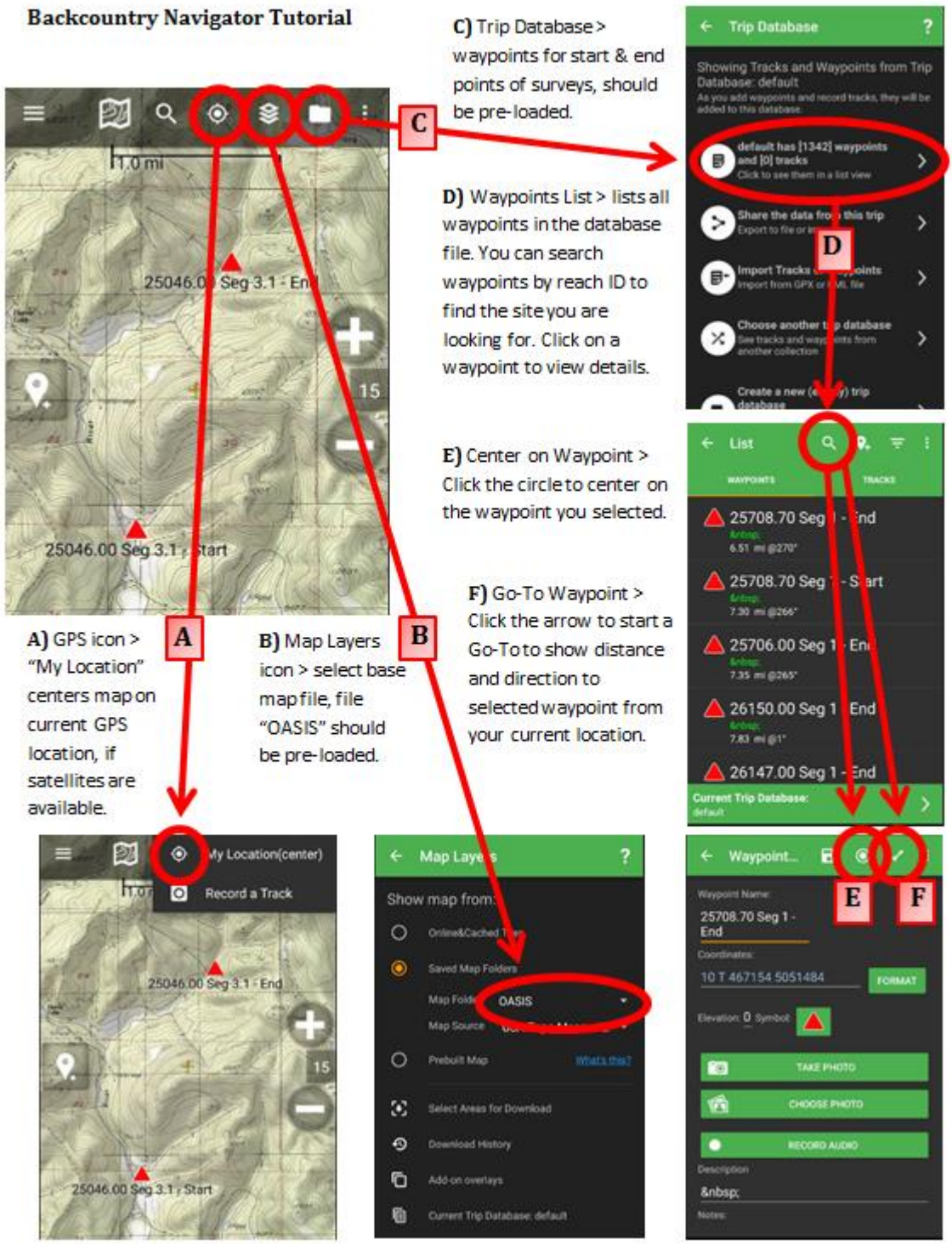
NAME	TITLE	NUMBER
OSP Tip Line	Oregon State Police anonymous tip line	(800) 452-7888
Motor pool questions	Oregon motor pool accidents/maintenance	(800) 378-0077
Mac Barr	North Willamette Coast Range District Fish Biologist	(971) 673-6081
Kevin Stertz	North Willamette Coast Range Asst. Fish Biologist	(971) 673-6044
Ben Walczak	North Willamette Cascade Unit District Fish Biologist	(971) 673-6013
Michael Hayworth	North Willamette Cascade Unit Asst. Fish Biologist	(971) 673-6011
Chris Knutsen	North Coast District Manager	(503) 731-8605
Robert Bradley	North Coast District Fish Biologist	(503) 842-2741
Michael Sinnott	North Coast Asst. Fish Biologist	(503) 842-2741
John Spangler	Mid Coast District Fish Biologist	(541) 265-8306
Paul Olmsted	Mid Coast Asst. Fish Biologist	(541) 265-8306
Greg Huchko	Umpqua District Fish Biologist	(541) 440-3353
Evan Leonetti	Umpqua Asst. Fish Biologist	(541) 440-3353
Mike Gray	Coos-Coquille District Fish Biologist	(541) 888-5515
Gary Vonderohe	Coos-Coquille Asst. Fish Biologist	(541) 888-5515
Steve Mazur	South Coast District Biologist	(541) 247-7605
Laura Green	South Coast Asst. Fish Biologist	(541) 247-7605
Dan VanDyke	Upper Rogue District Biologist	(541) 826-8774
Pete Samarin	Upper Rogue Asst. Fish Biologist	(541) 826-8774
Dave Jepsen	NW Region Research Program Manager	(541) 757-5148
Kerrie Tarkinton	Corvallis Research Lab Office Manager	(541) 757-5101
Briana Sounhein	OASIS Project Leader Oregon Coast	(541) 757-5136
Eric Brown	OASIS Project Leader Lower Columbia	(541) 757-5133
Matt Weeber	OASIS Project Analyst & Scale Reading Project	(541) 757-5120
Alex Neerman	OASIS Assistant Project Leader - Lower Columbia	(541) 760-7723
Jon Nott	OASIS Assistant Project Leader - Oregon Coast	(541) 231-3412
Vacant	OASIS Project Assistant	(541) 757-5134
Erik Suring	Life Cycle Monitoring (LCM) Project Leader	(541) 286-5328
Peggy Kavanagh	Aquatic Inventories (AQI) Project Leader	(541) 757-5124
Brian Riggers	CCRMP Project Biologist	(541) 757-5132
Katie Woodside	CCRMP Project Leader	(541) 757-5121
Aaron Truesdell	Crew Leader for Lower Columbia (West) – Astoria	(971) 320-0536
Ricky Hays	Crew Leader for L. Columbia (East) – Clackamas	(541) 223-4366
Justin Zapata	Crew Leader for North Coast – Tillamook	(541) 231-1958
Ryan Emig	Crew Leader for Mid Coast – Corvallis	(541) 760-7746
Dirk Patterson	Crew Leader for Umpqua – Roseburg	(541) 231-1961
Peter Cole	Crew Leader for Mid-South Coast – Coos Bay	(541) 231-1802

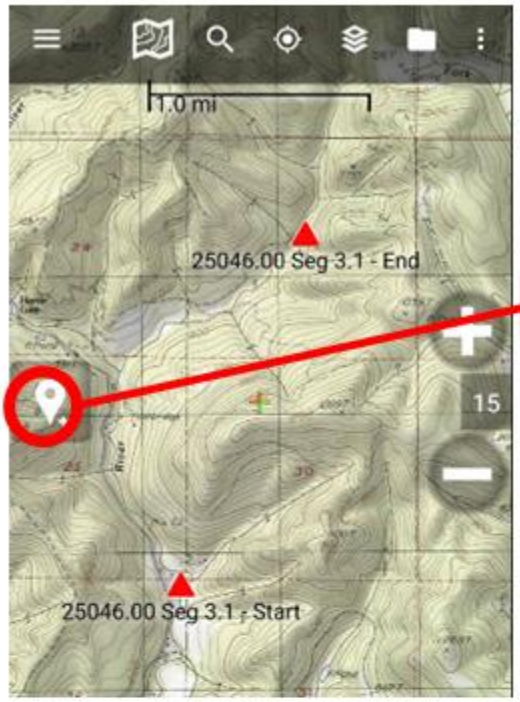
APPENDIX E. SALMON SPAWNING SURVEYOR ID LIST

List unavailable at time of printing. See addendum/handout from pre-season training.

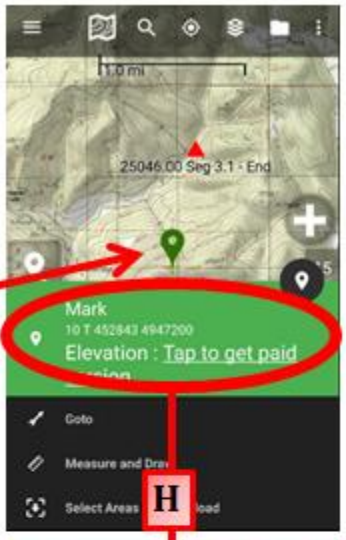
CREW LOCATION	ID #	SURVEYOR	PROJECT

APPENDIX F. PDA APPLICATIONS & PROGRAMS

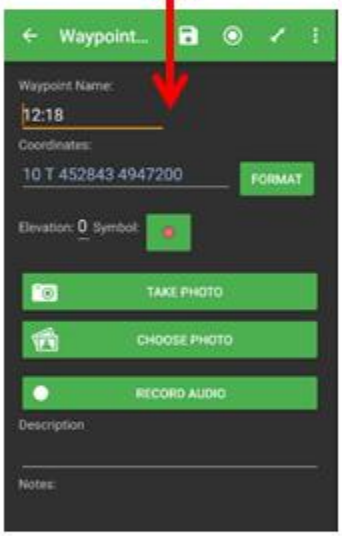


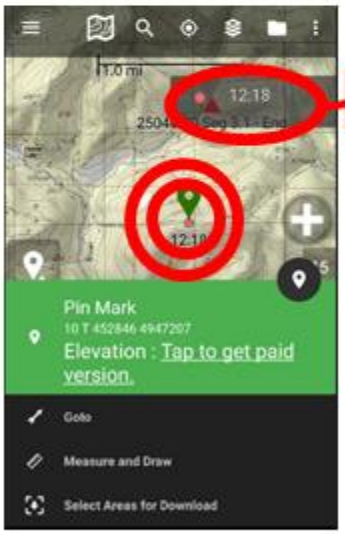


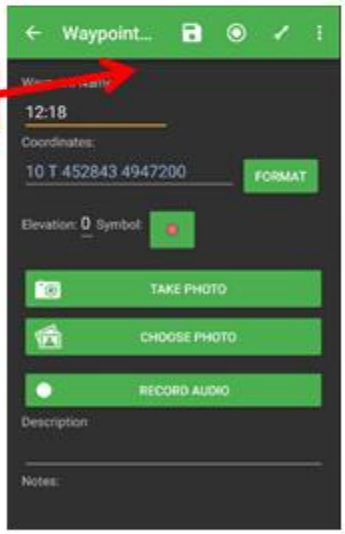
G) Create Waypoint > Click waypoint button to create a new waypoint at the crosshairs at the center of the screen.



H) Edit Waypoint > Click the green bar to take you to the waypoint details, where you can edit the name and coordinates of the waypoint, as well as save, center on and start a Go-To.

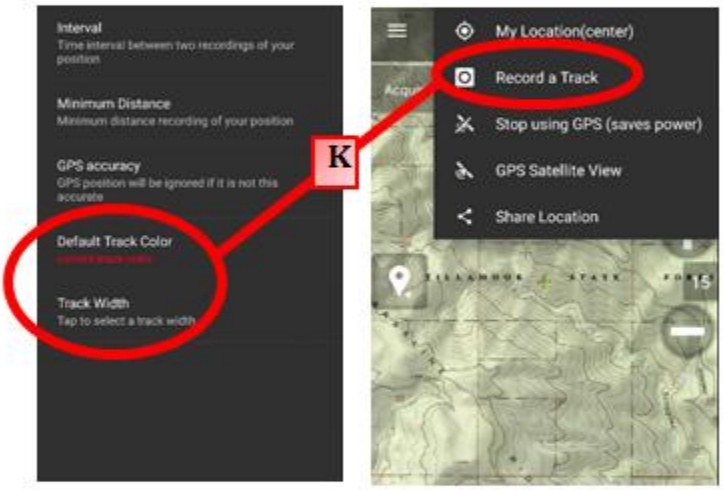






I) Select Waypoint from Map > Hold down on an existing waypoint on the map to view the waypoint details, center screen on waypoint, or start a Go-To to the waypoint.

J) Coordinate Format > From the main screen, click on the Menu, Settings, Coordinate Options, Coordinate Format, and select **UTM**. Likewise, datum type can be selected from Menu, Settings, Coordinate Options, Datum Type, and select **WSG84/NAD83**. These settings should already be in place, but it is good to know how to access them.



K) Track > To record a track (a record of where you hiked and/or drove), go to Menu, Settings, Track Options, select a Default Track Color and select a Track Width. Then click on the GPS icon and select "Record a Track".

L) GPS and Stats > Under the Menu, there are two screens with additional resources. Compass screen uses the phone compass, and as with GPS location, should not be fully relied upon as it does sometimes malfunction. The other is the Stats screen which shows a variety of stats including current GPS coordinates, etc. A simplified version of these two resources can be accessed by dragging up from the bottom of the main map screen.

APPENDIX G. SANITIZING SAMPLING GEAR

Disinfecting Field Gear to Reduce the Spread of Invasive Snails and Fish Pathogens

ODFW / Oregon Adult Salmonid Inventory and Sampling Project (OASIS)

Background

Aquatic pathogens such as bacteria, viruses and parasites, and invasive species such as New Zealand Mud Snails (NZMS) can adhere to or be trapped in field gear such as boots, waders, dry suits, nets, coolers, boats etc. New Zealand mud snails (*Potamopyrgus antipodarum*) are an introduced species spreading rapidly among rivers and streams in the western United States. Since they were reported in the Snake River in Idaho in the 1980's, the snails have been discovered in at least ten western states. New Zealand mud snails are parthenogenic, so a single introduced snail has the potential to start a new population. In Oregon, mud snails have been found in tributaries of the lower Columbia River, Devil's Lake on the central coast, Garrison Lake near Port Orford, and several sites in the Snake River basin.

Researchers believe wading by recreational anglers may be a primary vector by which mudsnails are transported among streams. The ODFW Fish Health Management Policy (635-007-0965) states that it is the Department's responsibility to restrict the introduction, amplification, and dissemination of disease agents in the natural environment. Because OASIS spawning survey crews wade in multiple watersheds during the field season, it is important that the Project take measures to minimize the spread of invasive snails and other pathogens. Mud snails are resistant to desiccation and may survive for days out of water on moist waders and sampling gear.

In the western U.S., mudsnails can reach a max. length of 6mm.

Preventing Mudsnail Transport Between Watersheds

Whenever possible, OASIS crews should avoid surveying in more than one major river basin (e.g., Alsea, Yaquina, Siletz) per day. To avoid mud snail and pathogen transport among basins, crews should sanitize waders and boots daily when they return to their duty station (ODFW office) or between sites if they must survey in two major basins during one day. The sanitization procedure listed below effectively kills New Zealand mud snails with minimal damage to wading gear (Hosea and Finlayson, 2005).

Required equipment:

scrub brush

dishwashing gloves

Formula 409® (100% solution)

clean water supply (not stream water)

Remove waders, boots, dry suits, and when possible, remove insoles from wading boots.

Use the scrub brush to clean loose dirt or mud off boots, waders, and field gear.

Using a spray bottle of Formula 409® cleaning solution (do not dilute), spray waders, wading boots, boot insoles and the streambed contact end of wading staff with the cleaning solution to the point of saturation. Be sure to treat the inside of the wading boots as well as the outside, paying special attention to bootlace grommets, seams, felt soles, and any other places where mud snails might cling.

Allow treated gear to sit for ten minutes.

Rinse gear in clean water. **DO NOT USE STREAM WATER.** Ideal rinse stations are outdoor hoses at ODFW offices. When sanitizing gear in the field a separate spray bottle filled with tap water should be used for rinsing, and the process should occur at least 100m from any waterway or runoff-drain.

When possible, store wading gear in a dry location for later use.

Crews should wear gloves while handling Formula 409® to minimize contact with skin.

Literature Cited

Hosea, R.C. and B. Finlayson. 2005. Controlling the spread of New Zealand Mudsnails on wading gear. California Department of Fish and Game Administrative Report 2005-02.

APPENDIX H. BIO-SAMPLING MATRIX

2022-23 Biological Sampling

	Population (Area)	Tally Carcasses	Bio-Sample Information	Scale	Snout	Otolith	DNA
Chinook	Lewis and Clark River	No	Yes	Every Fish Sampled	If Beeps	No	No
	North Fork Klaskanine			Every Fish Sampled	If Beeps		
	Plympton Creek (Clipped)	No	Yes	1 in 2	If Beeps		
	Plympton Creek (Unclipped without Coded Wire Tag)			Every Fish Sampled	NA		
	Youngs Bay	No	Yes	Every Fish Sampled	If Beeps		
	Big Creek Population (Clipped)	No	Yes	1 in 2	If Beeps		
	Big Creek Population (Unclipped without Coded Wire Tag)			Every Fish Sampled	NA		
	Clatskanie	No	Yes	Every Fish Sampled	If Beeps		
	Scappoose			Every Fish Sampled	If Beeps		
	Clackamas			Every Fish Sampled	If Beeps	No	No
	Sandy (Sample Chinook entire season!)			Every Fish Sampled	If Beeps	No	No

	Population (Area)	Tally Carcasses	Bio-Sample Information	Scale	Snout	Otolith	DNA
Coho	Plympton/Big Cr	No	Yes	1 in 10	If Beeps	No	No
	Youngs Bay						
	Big Creek Population						
	Clatskanie						
	Scappoose						
	Clackamas						
	Sandy			Every Fish			
	Upper Sandy Tribs (Before October 31st)						
	Gorge						
	Hood						

	Population (Area)	Tally Carcasses	Bio-Sample Information	Scale	Snout	Otolith	DNA
Chum	Lower Columbia All	No	Yes	Every Fish	Every Fish	Every Fish	Every Fish

	Population (Area)	Tally Carcasses	Bio-Sample Information	Scale	Snout	Otolith	DNA
Steelhead, Pink and Sockeye	Lower Columbia All	No	Yes	Every Fish	If Clipped	No	No

2022-23 Oregon Coast Bio-Sampling Instructions							
	Population (Area)	**Tally Carcasses**	**Bio-Sample Information**	**Scale**	**Snout**	**Otolith**	**DNA**
Chinook	Necanicum	Yes	No	All Adipose Clipped	All Adipose Clipped	No	No
	Nehalem	No	Yes	All			
	Tillamook Bay						
	- Miami - Kilchis	Yes	No	All Adipose Clipped			
	- Wilson	No	Yes	All			
	- Trask - Tillamook R	Yes	No	All Adipose Clipped			
	Nestucca	Yes	No	All Adipose Clipped			
	NC Dependent	Yes	No	All Adipose Clipped			
	Salmon R	No	Yes	All			
	Siletz						
	Yaquina	Yes	No	All Adipose Clipped			
	Beaver						
	Alsea						
	Siuslaw	No	Yes	All			
	MC Dependent	Yes	No	All Adipose Clipped			
	Siltcoos						
	Tahkenitch						
	Tenmile						
	Coos	No	Yes	All			
	Coquille						
	Floras	Yes	No	All Adipose Clipped			
	Sixes	No	Yes	All			
	Elk R	No	Yes	All			
	MS Dependent	Yes	No	All Adipose Clipped			
	Chetco	No	Yes	All			
	Lower Umpqua	Yes	No	All Adipose Clipped			
	Middle Umpqua						
	North Umpqua						
	South Umpqua						

2022-23 Oregon Coast Bio-Sampling Instructions							
	Population (Area)	**Tally Carcasses**	**Bio-Sample Information**	**Scale**	**Snout**	**Otolith**	**DNA**
Coho	Necanicum	No	Yes	1 in 10	All Adipose Clipped	No	No
	Nehalem						
	Tillamook Bay - Miami - Kilchis - Wilson - Trask - Tillamook R						
	Nestucca						
	NC Dependent						
	Salmon R						
	Siletz						
	Yaquina						
	Beaver						
	Alsea						
	Siuslaw						
	MC Dependent						
	Siltcoos	No	Yes	1 in 25			
	Tahkenitch						
	Tenmile						
	Coos	No	Yes	1 in 10			
	Coquille						
	Floras						
	Sixes						
	MS Dependent						
	Chetco						
	Lower Umpqua						
	Middle Umpqua						
	North Umpqua						
	South Umpqua						

2022-23 Oregon Coast Bio-Sampling Instructions							
	Population (Area)	**Tally Carcasses**	**Bio-Sample Information**	**Scale**	**Snout**	**Otolith**	**DNA**
Chum	All Locations	No*	Yes*	All* (*crew leader may direct subsampling)	All Adipose Clipped	No	No

	Population (Area)	**Tally Carcasses**	**Bio-Sample Information**	**Scale**	**Snout**	**Otolith**	**DNA**
Steelhead, Pink & Sockeye	All Locations	No	Yes	All	All Adipose Clipped	No	No

APPENDIX I. 2022-2023 SPAWNING SURVEY LIST

North Coast — 2022-2023 Spawning Surveys

Basin	Subbasin	Reach ID	Seg.	Survey Name	Type	Species	Status	Year(s) Surv.	Miles
Necanicum River	Mainstem	26196.00	2	Little Muddy Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.79
Necanicum River	Mainstem	26198.00	3	Beerman Cr	Random	Coho	Repeat	22	0.45
Necanicum River	Mainstem	26198.00	4	Beerman Cr	Random	Coho	Repeat	13,14,15,16,17,18,19,22	0.26
Necanicum River	Mainstem	26204.00	2	Circle Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.08
Necanicum River	Mainstem	26204.00	3	Circle Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.66
Necanicum River	Mainstem	26205.00	2.1	Necanicum R Chum (Lower)	Standard	Chum		Annual	0.96
Necanicum River	Mainstem	26208.00	3	Hawley Cr	Random	Coho	Repeat	00,13,22	0.64
Necanicum River	Mainstem	26211.00	1.1	Necanicum R Chum (Upper)	Standard	Chum		Annual	2.39
Necanicum River	Mainstem	26215.00	1	Necanicum R	Random	Coho	New	22	1.14
Necanicum River	Mainstem	26223.00	1	Necanicum R	Random	Coho	Repeat	16,17,18,19,21,22	0.73
Necanicum River	Mainstem	26225.00	2	Necanicum River	Random	Coho	Repeat	22	0.75
Necanicum River	Mainstem	26228.00	2	Necanicum R, N Fk	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.18
Necanicum River	Mainstem	26228.00	4	Necanicum R, N Fk	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.98
Necanicum River	Mainstem	26228.70	1	Necanicum R, N Fk	Random	Coho	Repeat	11,12,13,14,15,17,19,22	0.79
Necanicum River	Mainstem	26239.00	2	Joe Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.43
Necanicum River	Mainstem	26239.00	3	Joe Cr	Random	Coho	Repeat	04,06,07,10,13,16,19,22	0.88
Necanicum River	Mainstem	26243.30	1	Necanicum R, Trib C	Random	Coho	Repeat	16,19,22	0.52
Necanicum River	South Fork	26222.30	3	Necanicum R, S Fk, Trib A	Random	Coho	Repeat	94,95,03,12,13,22	1.07
Necanicum River	South Fork	26222.87	1	Necanicum R, S Fk, Trib B	Random	Coho	Repeat	99,08,13,17,22	0.46
Ecola Creek	Mainstem	26181.30	3	Ecola Cr, Trib A	Random	Coho	Repeat	14,15,16,17,18,19,20,22	0.54
Ecola Creek	North Fork	26183.00	1	Ecola Cr, N Fk	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.89
Ecola Creek	West Fork	26182.00	4	Ecola Cr, W Fk	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.87
Short Sand Creek	Mainstem	26162.00	1	Short Sand Cr	Random	Coho	Repeat	07,08,09,12,13,22	0.56
Nehalem River	Mainstem	25887.00	1	Foley Cr	Random	Coho	Repeat	92,98,01,07,10,13,16,22	0.63
Nehalem River	Mainstem	25887.00	1.1	Foley Cr	Standard	Chum		Annual	1.39
Nehalem River	Mainstem	25887.30	1	Foley Cr	Supplemental	Coho		07,13,16,22	0.77
Nehalem River	Mainstem	25888.00	1	E Foley Cr	Standard	Chum		Annual	1.16
Nehalem River	Mainstem	25905.00	1.1	Cook Cr	Random	Coho	Repeat	22	1.22
Nehalem River	Mainstem	25907.00	1	Cook Cr	Standard	Fall Chinook		Annual	1.05
Nehalem River	Mainstem	25967.00	2.1	Humbug Cr	Standard	Fall Chinook		Annual	0.88
Nehalem River	Mainstem	25980.00	1	E Humbug Cr	Standard	Fall Chinook		Annual	0.94
Nehalem River	Mainstem	25980.40	2	E Humbug, Trib 1	Random	Coho	Repeat	19,22	0.64
Nehalem River	Mainstem	25985.00	1	W Humbug Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.24
Nehalem River	Mainstem	25985.70	1	W Humbug Cr	Random	Coho	Repeat	00,22	0.89

North Coast 2022-2023 Spawning Surveys

Basin	Subbasin	Reach ID	Seg.	Survey Name	Type	Species	Status	Year(s) Surv.	Miles
Nehalem River	Mainstem	25993.00	1	George Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.44
Nehalem River	Mainstem	26024.70	1	Hamilton Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.61
Nehalem River	Mainstem	26037.20	1	Louisgnot Cr, Trib A	Random	Coho	New	22	0.45
Nehalem River	Mainstem	26043.00	2	Deep Cr	Random	Coho	Repeat	04,05,07,10,13,16,19,22	0.76
Nehalem River	Mainstem	26043.00	7	Deep Cr	Random	Coho	Repeat	14,15,16,17,18,19,20,22	0.35
Nehalem River	Mainstem	26061.00	2	Lundgren Cr	Random	Coho	Repeat	22	0.66
Nehalem River	Mainstem	26061.70	1	Lundgren Cr	Random	Coho	Repeat	13,15,16,17,18,19,20,22	0.48
Nehalem River	Mainstem	26065.30	1	Mud Fork Battle Cr	Random	Coho	Repeat	17,18,19,20,21,22	0.49
Nehalem River	Mainstem	26068.00	1	Little Deer Cr	Random	Coho	Repeat	07,22	1.17
Nehalem River	Mainstem	26069.00	3	Deer Cr	Random	Coho	Repeat	98,01,04,07,10,13,19,22	1.28
Nehalem River	Mainstem	26081.00	2	Crooked Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.19
Nehalem River	Mainstem	26093.70	1	Nehalem R, E Fk	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.92
Nehalem River	Mainstem	26094.00	3	Nehalem R (Upper)	Standard	Fall Chinook		Annual	1.26
Nehalem River	Mainstem	26119.00	2	Coon Cr	Random	Coho	Repeat	07,10,13,16,19,22	0.61
Nehalem River	Mainstem	26142.00	3	Wolf Cr, N Fk	Random	Coho	New	22	0.93
Nehalem River	Mainstem	26150.00	1	Nehalem R	Random	Coho	Repeat	01,04,07,10,13,16,19,22	0.90
Nehalem River	Mainstem	26152.30	1	Nehalem R	Random	Coho	Repeat	08,22	
Nehalem River	North Fork	25840.00	2	Coal Cr	Standard	Chum		Annual	0.83
Nehalem River	North Fork	25874.00	2	Lost Cr	Random	Coho	Repeat	01,04,07,10,13,16,19,22	0.88
Nehalem River	Salmonberry River	25931.00	2	Salmonberry R	Standard	Fall Chinook		Annual	0.54
Nehalem River	Rock Creek	26097.00	5	Rock Cr	Standard	Fall Chinook		Annual	2.50
Nehalem River	Rock Creek	26113.00	2	Rock Cr	Random	Coho	Repeat	01,04,07,10,13,16,19,22	0.85
Nehalem River	Rock Creek	26117.00	2	Rock Cr, S Fk	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.03

Tillamook

2022-2023 Spawning Surveys

Basin	Subbasin	Reach ID	Seg.	Survey Name	Type	Species	Status	Year(s) Surv.	Miles
Miami River	Mainstem	25787.00	1	Moss Cr	Standard	Chum		Annual	0.74
Miami River	Mainstem	25790.00	1.1	Miami R	Standard	Chum		Annual	0.68
Miami River	Mainstem	25797.00	1	Prouty Cr	Standard	Chum		Annual	0.44
Kilchis River	Mainstem	25722.00	2	Kilchis R	Standard	Chum		Annual	1.19
Kilchis River	Mainstem	25729.00	1	Clear Cr	Standard	Chum		Annual	0.61
Kilchis River	Mainstem	25729.00	1	Clear Cr	Standard	Fall Chinook		Annual	0.61
Kilchis River	Mainstem	25762.34	2	Kilchis R, N Fk	Random	Coho	Repeat	04,06,07,10,13,16,19,22	1.28
Kilchis River	Mainstem	25763.20	2	Kilchis R, N Fk	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.12
Kilchis River	Little South Fork	25733.00	1	Kilchis R, Little S Fk	Standard	Fall Chinook		Annual	0.82
Wilson River	Mainstem	25675.00	3	Jordan Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.13
Wilson River	Mainstem	25675.10	1	Jordan Cr, S Fk	Random	Coho	Repeat	22	0.96
Wilson River	Mainstem	25675.50	4	Jordan Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.92
Wilson River	Mainstem	25679.00	1.1	Cedar Cr	Standard	Coho		Annual	2.98
Wilson River	Mainstem	25679.00	1.1	Cedar Cr	Standard	Fall Chinook		Annual	2.98
Wilson River	Mainstem	25695.00	1	Ben Smith Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.38
Wilson River	Mainstem	25703.00	2	Elk Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.35
Wilson River	Little North Fork	25641.00	1	Wilson R, Little N Fk	Standard	Chum		Annual	0.59
Wilson River	Little North Fork	25641.00	1	Wilson R, Little N Fk	Standard	Fall Chinook		Annual	0.59
Wilson River	Little North Fork	25641.00	2	Wilson R, Little N Fk (Supp)	Random	Coho	Repeat	95,98,01,04,13,16,19,22	0.69
Wilson River	North Fork	25688.70	1	Wilson R, N Fk, W Fk	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.39
Wilson River	South Fork	25705.40	2	Wilson R, S Fk	Random	Coho	Repeat	92,19,22	0.91
Wilson River	Devil's Lake Fork	25706.00	1	Wilson R, Devil'S Lake Fk	Random	Coho	Repeat	97,03,07,10,13,16,19,22	1.29
Wilson River	Devil's Lake Fork	25714.00	1	Wilson R, Devils Lake Fk	Random	Coho	Repeat	96,05,22	1.19
Trask River	Mainstem	25587.00	2	Green Cr	Random	Coho	Repeat	99,00,01,02,03,22	0.29
Trask River	North Fork	25622.60	1	Michael Cr	Random	Coho	Repeat	95,04,10,12,13,16,19,22	0.96
Trask River	North Fork	25625.00	1	Trask R N Fk, N Fk	Random	Coho	Repeat	03,04,07,10,13,16,19,22	0.96
Trask River	North Fork	25628.00	1	Elkhorn Cr	Random	Coho	Repeat	22	1.20
Trask River	North Fork	25629.00	1	Cruiser Cr	Random	Coho	Repeat	91,97,22	0.76
Trask River	South Fork	25606.30	2	Pigeon Cr	Random	Coho	Repeat	10,13,16,19,22	0.32
Trask River	South Fork	25608.20	1	Trask R, S Fk, E Fk	Random	Coho	Repeat	90,97,04,08,10,22	1.04
Trask River	South Fork	25608.30	1	Boundary Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.60
Trask River	South Fork	25613.00	1	Trask R, S Fk	Random	Coho	Repeat	93,95,07,10,13,16,19,22	1.09
Trask River	South Fork	25616.00	2	Bill Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.77
Tillamook River	Mainstem	25565.00	1	Simmons Cr	Random	Coho	Repeat	96,97,22	0.64

Tillamook

2022-2023 Spawning Surveys

Basin	Subbasin	Reach ID	Seg.	Survey Name	Type	Species	Status	Year(s) Surv.	Miles
Tillamook River	Mainstem	25565.00	2	Simmons Cr	Standard	Coho		Annual	0.59
Tillamook River	Mainstem	25565.00	2	Simmons Cr	Standard	Fall Chinook		Annual	0.59
Tillamook River	Mainstem	25570.00	2	Tillamook R	Random	Coho	Repeat	07,10,13,16,19,22	0.34
Netarts Bay	Mainstem	25543.00	1	Whiskey Cr	Supplemental	Coho		15,16,17,18,19,20,21,22	0.16
Netarts Bay	Mainstem	25543.00	1.1	Whiskey Cr	Standard	Chum		Annual	0.46
Netarts Bay	Mainstem	25543.40	1	Whiskey Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.36
Nestucca River	Mainstem And Bay	25403.70	1	Horn Cr	Random	Coho	Repeat	07,10,22	0.86
Nestucca River	Mainstem And Bay	25407.00	2	Clear Cr	Standard	Chum		Annual	0.79
Nestucca River	Mainstem And Bay	25407.00	2	Clear Cr	Standard	Coho		Annual	0.79
Nestucca River	Mainstem And Bay	25407.00	2	Clear Cr	Standard	Fall Chinook		Annual	0.79
Nestucca River	Mainstem And Bay	25458.00	3	Nestucca R (3rd Bridge to Wolfe Cr)	Standard	Fall Chinook		Annual	0.92
Nestucca River	Mainstem And Bay	25463.00	2	Tony Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.00
Nestucca River	Mainstem And Bay	25471.00	1	Alder Cr	Random	Coho	Repeat	06,17,22	0.74
Nestucca River	Mainstem And Bay	25474.40	1	East Cr	Random	Coho	Repeat	12,13,14,15,16,18,19,22	1.69
Nestucca River	Mainstem And Bay	25475.00	3	Moon Cr	Random	Coho	New	22	0.58
Nestucca River	Mainstem And Bay	25481.00	1	Powder Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.94
Nestucca River	Mainstem And Bay	25482.50	1	Powder Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.83
Nestucca River	Mainstem And Bay	25485.00	1	Niagara Cr	Standard	Fall Chinook		Annual	0.34
Nestucca River	Mainstem And Bay	25502.00	1.1	Nestucca R (Rocky Bend CG to Alder Glen CG)	Standard	Fall Chinook		Annual	2.59
Nestucca River	Mainstem And Bay	25503.00	1	Bear Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.38
Nestucca River	Mainstem And Bay	25505.00	1	Elk Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.53
Nestucca River	Mainstem And Bay	25510.00	3	Nestucca R (Trib A to Trib C)	Standard	Fall Chinook		Annual	1.17
Nestucca River	Mainstem And Bay	25512.70	3	Nestucca R	Random	Coho	Repeat	06,10,13,14,16,17,19,22	0.97
Nestucca River	Three Rivers	25419.00	1	Polland Cr	Random	Coho	Repeat	97,99,05,09,22	1.16
Nestucca River	Three Rivers	25426.00	1	Three Rivers	Random	Coho	Repeat	16,17,18,19,20,21,22	0.93
Nestucca River	Beaver Creek	25441.00	1	Beaver Cr	Random	Coho	Repeat	04,06,07,10,13,16,19,22	0.87
Nestucca River	Beaver Creek	25441.00	1	Beaver Cr	Standard	Fall Chinook	Repeat	Annual	0.87
Nestucca River	Beaver Creek	25445.00	1.2	N Beaver Cr	Random	Coho	Repeat	22	0.91
Nestucca River	Beaver Creek	25451.00	4.1	E Beaver Cr	Random	Coho	Repeat	22	0.64
Nestucca River	Beaver Creek	25451.00	6	E Beaver Cr	Random	Coho	Repeat	22	0.66
Nestucca River	Beaver Creek	25451.00	7	E Beaver Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.92
Nestucca River	Little Nestucca	25354.00	3	Bowers Cr	Random	Coho	Repeat	16,19,22	0.37

Tillamook

2022-2023 Spawning Surveys

Basin	Subbasin	Reach ID	Seg.	Survey Name	Type	Species	Status	Year(s) Surv.	Miles
Nestucca River	Little Nestucca	25370.90	1.1	Little Nestucca R, S Fk	Random	Coho	Repeat	22	1.09
Nestucca River	Little Nestucca	25372.00	1	Little Nestcca R.S Fk	Random	Coho	Repeat	16,22	0.27
Nestucca River	Little Nestucca	25373.00	3	Little Nestucca R	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.76
Nestucca River	Little Nestucca	25377.00	1	Little Nestucca R	Random	Coho	Repeat	14,15,16,17,18,19,20,22	0.72
Nestucca River	Little Nestucca	25383.00	2	Sourgrass Cr	Random	Coho	Repeat	98,07,10,13,16,19,22	0.74
Nestucca River	Little Nestucca	25387.00	1	Little Nestucca R	Random	Coho	Repeat	90,19,22	0.30
Tillamook Bay	Mainstem And Bay	25774.30	1	Jacoby Cr	Random	Coho	Repeat	01,07,08,09,16,17,18,22	0.69
Neskowin Creek	Mainstem	25331.00	2	Butte Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.52
Ocean Trib	Watseco Creek	25812.00	1.1	Watseco Cr	Random	Coho	Repeat	19,20,22	0.62
Ocean Trib	Rover Creek	25537.00	1	Rover Cr	Random	Coho	Repeat	13,15,16,17,18,19,20,22	0.48

Lincoln

2022-2023 Spawning Surveys

Basin	Subbasin	Reach ID	Seg.	Survey Name	Type	Species	Status	Year(s) Surv.	Miles
Salmon River	Mainstem And Bay	25288.00	1	Willis Cr	Random	Coho	Repeat	13,16,19,22	0.17
Salmon River	Mainstem And Bay	25290.00	2		Random	Coho	New	22	
Salmon River	Mainstem And Bay	25292.00	1	Panther Cr	Random	Coho	Repeat	13,14,15,16,17,18,19,22	1.04
Salmon River	Mainstem And Bay	25292.00	3	Panther Cr	Random	Coho	Repeat	14,15,16,17,18,19,21,22	0.19
Salmon River	Mainstem And Bay	25296.00	1.1	Bear Cr (Lower)	Random	Coho	Repeat	07,08,17,18,19,20,21,22	2.12
Salmon River	Mainstem And Bay	25296.00	1.1	Bear Cr (Lower)	Standard	Chum	Repeat	Annual	2.12
Salmon River	Mainstem And Bay	25296.00	1.1	Bear Cr (Lower)	Standard	Fall Chinook	Repeat	Annual	2.12
Salmon River	Mainstem And Bay	25296.20	5	Bear Cr (Upper)	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.13
Salmon River	Mainstem And Bay	25310.00	1	Deer Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.98
Salmon River	Mainstem And Bay	25315.00	1	Salmon R	Supplemental	Fall Chinook		12,13,14,15,19,20,21,22	1.15
Salmon River	Mainstem And Bay	25315.00	1.1	Salmon R (Sulphur Cr to Little Salmon)	Standard	Fall Chinook		Annual	2.53
Salmon River	Mainstem And Bay	25317.00	1	Salmon R	Supplemental	Fall Chinook		14,16,17,18,19,20,21,22	0.55
Salmon River	Mainstem And Bay	25321.00	1	Salmon R	Random	Coho	Repeat	13,14,17,18,19,20,21,22	0.82
Salmon River	Mainstem And Bay	25322.00	1	Little Salmon R	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.80
Salmon River	Mainstem And Bay	25325.00	1	Salmon R	Random	Coho	Repeat	07,10,13,16,19,22	0.64
Salmon River	Mainstem And Bay	25325.70	2	Salmon R	Random	Coho	Repeat	09,13,18,22	0.71
Devil's Lake	Mainstem	25263.00	3.1	Rock Cr	Supplemental	Coho		Annual	1.01
Devil's Lake	Mainstem	25263.17	1	Rock Cr (Upper)	Supplemental	Coho		Annual	0.96
Siletz River	Mainstem	25081.00	1	Bear Cr	Standard	Chum		Annual	0.49
Siletz River	Mainstem	25093.00	1	Roots Cr	Random	Coho	Repeat	92,93,08,19,22	1.30
Siletz River	Mainstem	25101.50	3	Jaybird Cr	Random	Coho	Repeat	06,07,10,13,16,19,22	0.53
Siletz River	Mainstem	25102.30	1	Siletz R, Trib A	Random	Coho	Repeat	22	0.35
Siletz River	Mainstem	25102.50	1	Cedar Cr	Random	Coho	Repeat	11,13,16,17,19,20,21,22	1.76
Siletz River	Mainstem	25102.50	1	Cedar Cr	Standard	Chum	Repeat	Annual	1.76
Siletz River	Mainstem	25102.50	1	Cedar Cr	Standard	Fall Chinook	Repeat	Annual	1.76
Siletz River	Mainstem	25102.52	1	Cedar Cr	Random	Coho	Repeat	08,22	1.41
Siletz River	Mainstem	25102.54	4	Cedar Cr	Random	Coho	Repeat	10,13,21,22	0.69
Siletz River	Mainstem	25105.00	1	Euchre Cr	Standard	Fall Chinook		Annual	1.28
Siletz River	Mainstem	25105.00	2	Euchre Cr	Random	Coho	Repeat	10,13,16,19,22	0.96
Siletz River	Mainstem	25111.00	1	Ojalla Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.75
Siletz River	Mainstem	25123.00	4	Mill Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.57
Siletz River	Mainstem	25125.00	2	Bentilla Cr	Random	Coho	Repeat	97,06,10,22	0.97
Siletz River	Mainstem	25125.00	3	Bentilla Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.49

Lincoln

2022-2023 Spawning Surveys

Basin	Subbasin	Reach ID	Seg.	Survey Name	Type	Species	Status	Year(s) Surv.	Miles
Siletz River	Mainstem	25126.10	2	Sam Cr	Random	Coho	Repeat	99,07,10,13,16,19,22	1.26
Siletz River	Mainstem	25129.00	1	Long Prairie Cr	Random	Coho	Repeat	91,93,22	1.15
Siletz River	Mainstem	25131.70	1	Sam Cr	Random	Coho	Repeat	06,07,10,11,13,16,19,22	0.37
Siletz River	Mainstem	25131.70	3	Sam Cr	Random	Coho	Repeat	14,15,17,18,19,20,21,22	0.90
Siletz River	Mainstem	25148.10	1	Cerine Cr, Trib B	Supplemental	Coho		10,11,12,13,14,15,21,22	0.29
Siletz River	Mainstem	25148.30	1	Cerine Cr, Trib C	Supplemental	Coho		10,11,12,13,14,21,22	0.75
Siletz River	Mainstem	25148.37	1	Cerine Cr, Trib C1	Supplemental	Coho		13,14,21,22	0.12
Siletz River	Mainstem	25149.50	1	Gunn Cr, Trib B	Supplemental	Coho		11,12,13,14,21,22	0.24
Siletz River	Mainstem	25151.00	1	Mill Cr, N Fk (Forks to A)	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.53
Siletz River	Mainstem	25159.00	1	Buck Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.48
Siletz River	Mainstem	25159.00	1	Buck Cr	Standard	Fall Chinook	Repeat	Annual	0.48
Siletz River	Mainstem	25165.00	1	Sunshine Cr	Standard	Fall Chinook		Annual	1.39
Siletz River	Mainstem	25167.00	2	Sunshine Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.36
Siletz River	Mainstem	25168.00	1	Fourth Of July Cr	Standard	Coho		Annual	0.75
Siletz River	Mainstem	25168.00	2	Fourth Of July Cr	Random	Coho	Repeat	09,15,22	1.07
Siletz River	Mainstem	25168.80	1	Fourth Of July Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.70
Siletz River	Mainstem	25172.00	1	Siletz R	Standard	Fall Chinook		Annual	1.49
Siletz River	Rock Creek	25134.00	1	Big Rock Cr	Standard	Fall Chinook		Annual	1.12
Siletz River	Rock Creek	25143.40	2	Beaver Cr	Random	Coho	Repeat	09,22	0.42
Siletz River	Rock Creek	25144.00	2	Brush Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.16
Siletz River	Rock Creek	25145.00	2	Little Rock Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.50
Siletz River	Drift Creek	25235.00	7	Drift Cr (up to North Cr)	Supplemental	Coho		Annual	0.96
Siletz River	Drift Creek	25235.00	7	Drift Cr (up to North Cr)	Supplemental	Fall Chinook		Annual	0.96
Siletz River	Drift Creek	25237.00	1	Drift Cr (North Cr up)	Supplemental	Coho		Annual	0.98
Siletz River	Drift Creek	25237.00	1	Drift Cr (North Cr up)	Supplemental	Fall Chinook		Annual	0.98
Siletz River	Drift Creek	25249.00	1	Drift Cr	Random	Coho	Repeat	07,10,13,19,22	0.56
Yaquina River	Mainstem And Bay	24938.40	2	Montgomery Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.47
Yaquina River	Mainstem And Bay	24951.30	1	W Olalla Cr, Trib A	Random	Coho	Repeat	06,16,17,19,22	1.01
Yaquina River	Mainstem And Bay	24953.30	1	Mill Cr, Trib A (Slack Cr)	Random	Coho	Repeat	22	0.88
Yaquina River	Mainstem And Bay	24953.30	1	Mill Cr, Trib A (Slack Cr)	Standard	Chum	Repeat	Annual	0.88
Yaquina River	Mainstem And Bay	24953.70	1	Mill Cr (Lower)	Standard	Chum		Annual	0.86
Yaquina River	Mainstem And Bay	24953.70	2	Mill Cr (Upper)	Standard	Chum		Annual	1.31
Yaquina River	Mainstem And Bay	24953.80	2	Mill Cr, E Fk	Calibration	Coho		14,15,16,17,18,19,21,22	1.31
Yaquina River	Mainstem And Bay	24953.85	1	Mill Cr (W Fk), Trib B	Calibration	Coho		14,15,16,17,18,19,21,22	0.18

Lincoln

2022-2023 Spawning Surveys

Basin	Subbasin	Reach ID	Seg.	Survey Name	Type	Species	Status	Year(s) Surv.	Miles
Yaquina River	Mainstem And Bay	24953.90	1	Mill Cr (W Fk)	Calibration	Coho		14,15,16,17,18,19,21,22	1.09
Yaquina River	Mainstem And Bay	24953.93	1	Mill Cr, Trib C	Calibration	Coho		14,15,16,17,18,19,21,22	0.22
Yaquina River	Mainstem And Bay	24953.97	1	Mill Cr (W Fk)	Calibration	Coho		14,15,16,17,18,19,21,22	0.10
Yaquina River	Mainstem And Bay	24954.30	1	Abbey Cr	Random	Coho	Repeat	09,15,18,21,22	1.18
Yaquina River	Mainstem And Bay	24997.00	1.1	Simpson Cr	Standard	Chum		Annual	1.60
Yaquina River	Mainstem And Bay	24997.00	1.1	Simpson Cr	Supplemental	Fall Chinook		Annual	1.60
Yaquina River	Mainstem And Bay	25019.00	1	Eddy Cr	Random	Coho	Repeat	93,10,13,16,19,22	0.46
Yaquina River	Mainstem And Bay	25041.00	1	Felton Cr	Random	Coho	Repeat	93,02,11,13,22	0.80
Yaquina River	Mainstem And Bay	25043.00	2	Young Cr	Random	Coho	Repeat	10,12,13,16,19,22	0.93
Yaquina River	Mainstem And Bay	25046.00	3.1	Yaquina R	Standard	Coho		Annual	2.37
Yaquina River	Mainstem And Bay	25046.00	3.1	Yaquina R	Standard	Fall Chinook		Annual	2.37
Yaquina River	Elk Creek	24958.00	1	Bear Cr	Supplemental	Fall Chinook		Annual	0.93
Yaquina River	Elk Creek	24962.40	1	Bull Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.30
Yaquina River	Elk Creek	24962.50	1	Bull Cr, Trib C	Random	Coho	Repeat	22	0.26
Yaquina River	Elk Creek	24962.55	1	Bull Cr, Trib C, Trib 1	Random	Coho	Repeat	16,19,22	0.15
Yaquina River	Elk Creek	24964.90	1	Deer Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.38
Yaquina River	Elk Creek	24968.80	1	Wolf Cr, Trib C	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.29
Yaquina River	Elk Creek	24970.00	1.1	Grant Cr	Standard	Fall Chinook		Annual	1.87
Yaquina River	Elk Creek	24971.00	3	Savage Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.30
Yaquina River	Elk Creek	24976.40	1	Spout Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.55
Yaquina River	Elk Creek	24981.00	1	Elk Cr	Random	Coho	Repeat	97,99,13,16,19,22	0.79
Yaquina River	Elk Creek	24981.70	1	Elk Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.82
Yaquina River	Elk Creek	24982.00	1	Sugarbowl Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.36
Yaquina River	Elk Creek	24985.70	1	Elk Cr	Random	Coho	Repeat	13,16,19,22	0.32
Yaquina River	Little Elk Creek	25022.00	1	Salmon Cr	Standard	Coho		Annual	0.63
Yaquina River	Little Elk Creek	25022.00	1	Salmon Cr	Standard	Fall Chinook		Annual	0.63
Yaquina River	Little Elk Creek	25022.70	1	Salmon Cr	Random	Coho	Repeat	07,10,13,16,19,22	0.65
Yaquina River	Little Elk Creek	25029.95	3	Little Elk Cr	Random	Coho	New	22	0.50
Beaver Creek	Mainstem	24919.20	2	Elkhorn Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.90
Beaver Creek	South Fork	24913.00	3	Beaver Cr, S Fk	Supplemental	Coho		Annual	0.82
Beaver Creek	South Fork	24913.00	4	Beaver Cr, S Fk	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.45
Beaver Creek	North Fork	24923.00	4	Peterson Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.50
Beaver Creek	North Fork	24924.00	3.1	Beaver Cr, N Fk	Standard	Coho		Annual	1.08
Beaver Creek	North Fork	24924.70	4	Beaver Cr, N Fk	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.29

Lincoln

2022-2023 Spawning Surveys

Basin	Subbasin	Reach ID	Seg.	Survey Name	Type	Species	Status	Year(s) Surv.	Miles
Alsea River	Mainstem And Bay	24670.00	1	Bear Cr	Random	Coho	Repeat	96,22	0.89
Alsea River	Mainstem And Bay	24670.00	2	Bear Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.86
Alsea River	Mainstem And Bay	24671.00	1	Canal Cr	Random	Coho	Repeat	07,10,13,22	0.65
Alsea River	Mainstem And Bay	24678.00	1	Canal Cr, E Fk	Random	Coho	Repeat	22	0.94
Alsea River	Mainstem And Bay	24689.00	1	Slide Cr	Random	Coho	New	22	0.21
Alsea River	Mainstem And Bay	24793.00	1	Cow Cr	Random	Coho	Repeat	01,04,07,10,13,16,19,22	0.72
Alsea River	Mainstem And Bay	24796.00	1	Skunk Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.10
Alsea River	Mainstem And Bay	24804.00	1	Bull Run Cr	Random	Coho	Repeat	07,10,13,16,19,22	0.94
Alsea River	Mainstem And Bay	24804.00	3	Bull Run Cr	Random	Coho	Repeat	22	1.09
Alsea River	Drift Creek	24641.00	2	Drift Cr	Random	Coho	Repeat	06,22	0.93
Alsea River	Drift Creek	24641.00	4	Drift Cr	Standard	Fall Chinook		Annual	1.52
Alsea River	Drift Creek	24644.00	1	Meadow Cr	Random	Coho	Repeat	91,10,13,16,19,22	0.63
Alsea River	Drift Creek	24646.00	2.1	Horse Cr	Standard	Coho		Annual	0.79
Alsea River	Drift Creek	24651.50	1	Gopher Cr	Random	Coho	Repeat	05,14,22	0.93
Alsea River	Drift Creek	24652.00	1	Nettle Cr	Standard	Coho		Annual	0.83
Alsea River	Drift Creek	24652.70	1	Nettle Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.53
Alsea River	Five Rivers	24719.00	1	Phillips Cr	Random	Coho	Repeat	07,10,13,16,19,22	0.68
Alsea River	Five Rivers	24721.40	1	Camp Cr	Random	Coho	Repeat	22	0.41
Alsea River	Five Rivers	24725.00	1	Wilkinson Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.76
Alsea River	Five Rivers	24727.00	2	Little Lobster Cr	Random	Coho	Repeat	98,01,07,10,22	0.66
Alsea River	Five Rivers	24744.00	2	Lobster Cr (Upper)	Standard	Coho		Annual	1.44
Alsea River	Five Rivers	24745.00	2	Lobster Cr, E. Fk	Random	Coho	Repeat	10,12,15,16,18,19,21,22	1.30
Alsea River	Five Rivers	24754.00	1	Cherry Cr	Standard	Coho		Annual	0.67
Alsea River	Five Rivers	24776.00	1	Green R	Random	Coho	Repeat	01,04,10,12,13,16,19,22	0.94
Alsea River	Five Rivers	24776.20	1	Green R	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.64
Alsea River	Five Rivers	24778.00	2	Fendall Cr	Random	Coho	New	22	0.43
Alsea River	Five Rivers	24783.00	3	Five Rivers	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.72
Alsea River	Five Rivers	24783.30	2	Woosley Cr (Prindle Cr)	Random	Coho	Repeat	22	0.64
Alsea River	North Fork	24835.00	1.1	Alsea R, N Fk	Standard	Fall Chinook		Annual	2.24
Alsea River	North Fork	24838.00	1	Honey Grove Cr	Random	Coho	Repeat	07,10,22	1.48
Alsea River	North Fork	24850.00	1	Crooked Cr	Random	Coho	Repeat	13,16,19,22	0.29
Alsea River	North Fork	24850.00	2	Crooked Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.00
Alsea River	South Fork	24882.80	1	Swamp Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.64
Alsea River	South Fork	24883.00	2	Bummer Cr	Random	Coho	Repeat	13,22	0.59

Siuslaw

2022-2023 Spawning Surveys

Basin	Subbasin	Reach ID	Seg.	Survey Name	Type	Species	Status	Year(s) Surv.	Miles
Yachats River	Mainstem	24593.00	2	Yachats R, School Fork	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.94
Yachats River	Mainstem	24593.00	2	Yachats R, School Fork	Standard	Coho	Repeat	Annual	0.94
Yachats River	Mainstem	24596.00	1	Yachats R	Supplemental	Coho		Annual	0.95
Yachats River	Mainstem	24596.00	2	Yachats R	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.33
Cummins Cr	Mainstem	24544.00	2	Cummins Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.14
Tenmile Creek	Mainstem	24527.00	4	Mill Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.03
Big Creek	Mainstem & S Fk	24510.00	2	Big Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.15
Cape Creek	Mainstem	24498.00	2	Cape Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.56
Cape Creek	Mainstem	24500.50	2	Cape Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.36
Siuslaw River	Mainstem	24054.00	2	Divide Cr	Random	Coho	New	22	0.53
Siuslaw River	Mainstem	24060.70	1	Sweet Cr	Random	Coho	Repeat	13,16,19,22	0.92
Siuslaw River	Mainstem	24084.20	1	Hadsall Cr, Trib D	Random	Coho	Repeat	01,04,07,10,13,16,19,22	0.81
Siuslaw River	Mainstem	24084.90	2	Hadsall Cr	Random	Coho	Repeat	01,04,07,10,13,16,19,22	0.72
Siuslaw River	Mainstem	24100.90	1	Knowles Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.40
Siuslaw River	Mainstem	24270.20	1	Pataha Cr	Random	Coho	Repeat	07,10,22	0.74
Siuslaw River	Mainstem	24301.00	2	Whittaker Cr (Lower)	Standard	Fall Chinook		Annual	0.33
Siuslaw River	Mainstem	24303.00	2	Whittaker Cr (Upper)	Standard	Fall Chinook		Annual	0.32
Siuslaw River	Mainstem	24349.00	1.1	Esmond Cr	Standard	Fall Chinook		Annual	1.29
Siuslaw River	Mainstem	24359.00	1	Esmond Cr	Random	Coho	Repeat	16,17,18,19,20,21,22	0.26
Siuslaw River	Mainstem	24373.00	1	Clay Cr	Random	Coho	Repeat	17,18,19,20,21,22	0.64
Siuslaw River	Mainstem	24384.30	1	Siuslaw R, East Trib	Random	Coho	Repeat	98,01,04,07,10,13,19,22	0.99
Siuslaw River	Mainstem	24389.00	1	Oxbow Cr	Random	Coho	New	22	0.91
Siuslaw River	Mainstem	24405.00	2.1	Dogwood Cr	Random	Coho	Repeat	91,97,22	0.68
Siuslaw River	Mainstem	24405.00	2.1	Dogwood Cr	Standard	Coho	Repeat	Annual	0.68
Siuslaw River	Mainstem	24421.00	1	Buck Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.89
Siuslaw River	Mainstem	24423.00	3	Doe Cr	Standard	Coho		Annual	0.30
Siuslaw River	Mainstem	24425.00	1	Russell Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.87
Siuslaw River	North Fork	24026.00	1	Siuslaw R, N Fk	Standard	Fall Chinook		Annual	1.30
Siuslaw River	North Fork	24032.00	1.3	Siuslaw R, N Fk	Random	Coho	Repeat	22	1.27
Siuslaw River	Lake Creek	24135.00	1	Rogers Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.66
Siuslaw River	Lake Creek	24135.00	1.1	Rogers Cr	Standard	Coho		Annual	1.29
Siuslaw River	Lake Creek	24135.00	1.1	Rogers Cr	Standard	Fall Chinook		Annual	1.29
Siuslaw River	Lake Creek	24135.30	1	Rogers Cr	Supplemental	Coho		15,16,17,18,19,20,21,22	0.63
Siuslaw River	Lake Creek	24136.00	1	Indian Cr, W Fk	Standard	Fall Chinook		Annual	1.10

Siuslaw

2022-2023 Spawning Surveys

Basin	Subbasin	Reach ID	Seg.	Survey Name	Type	Species	Status	Year(s) Surv.	Miles
Siuslaw River	Lake Creek	24149.60	1	Indian Cr, N Fk, Trib D	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.48
Siuslaw River	Lake Creek	24153.00	4	Deadwood Cr	Random	Coho	Repeat	01,07,10,13,16,19,22	0.75
Siuslaw River	Lake Creek	24159.20	3.1	Misery Cr	Standard	Coho		Annual	0.66
Siuslaw River	Lake Creek	24168.00	3	Bear Cr	Random	Coho	Repeat	19,22	0.25
Siuslaw River	Lake Creek	24177.00	1	Panther Cr; N Fk	Standard	Coho		Annual	0.81
Siuslaw River	Lake Creek	24177.00	3	Panther Cr, N Fk	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.98
Siuslaw River	Lake Creek	24206.00	2	Lake Cr	Standard	Fall Chinook		Annual	0.86
Siuslaw River	Lake Creek	24217.00	1	Pontius Cr	Random	Coho	New	22	0.23
Siuslaw River	Lake Creek	24228.50	1	Leibo Canyon	Random	Coho	Repeat	16,19,22	0.41
Siuslaw River	Lake Creek	24232.70	1	Pucker Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.34
Siuslaw River	Wolf Creek	24310.00	1	Bill Lewis Cr	Random	Coho	New	22	0.77
Siuslaw River	Wolf Creek	24319.00	1	Oat Cr, Trib A	Random	Coho	New	22	0.95
Siuslaw River	Wolf Creek	24333.00	2	Wolf Cr	Random	Coho	Repeat	01,04,07,10,13,16,19,22	1.53
Siltcoos River	Fiddle Creek	23965.00	2	Alder Cr	Lake	Coho		Annual	0.89
Siltcoos River	Fiddle Creek	23974.80	1.1	Fiddle Cr	Lake	Coho		Annual	1.58
Tahkenitch Creek	Fivemile Creek	23957.40	2	Fivemile Cr	Lake	Coho		Annual	0.54
Tahkenitch Creek	Leitel Creek	23949.70	3	Leitel Cr	Lake	Coho		Annual	1.16

Umpqua

2022-2023 Spawning Surveys

Basin	Subbasin	Reach ID	Seg.	Survey Name	Type	Species	Status	Year(s) Surv.	Miles
Umpqua River	Mainstem And Bay	22624.00	1	Dean Cr	Random	Coho	Repeat	16,19,22	0.78
Umpqua River	Mainstem And Bay	22642.70	1	Charlotte Cr	Random	Coho	Repeat	07,13,19,22	1.03
Umpqua River	Mainstem And Bay	22646.00	2	Mill Cr	Random	Coho	Repeat	22	0.46
Umpqua River	Mainstem And Bay	22653.00	5	Camp Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.57
Umpqua River	Mainstem And Bay	22654.70	1	Buck Cr, Trib. B	Random	Coho	New	22	0.15
Umpqua River	Mainstem And Bay	22686.90	1	Weatherly Cr	Random	Coho	Repeat	98,01,04,07,13,22	1.33
Umpqua River	Mainstem And Bay	22688.00	3	Lutsinger Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.41
Umpqua River	Mainstem And Bay	22690.00	2	Butler Cr	Random	Coho	Zero	22	0.29
Umpqua River	Mainstem And Bay	22698.00	1	Paradise Cr	Random	Coho	New	22	0.74
Umpqua River	Mainstem And Bay	22834.00	2	McGee Cr	Random	Coho	Repeat	98,04,07,10,13,22	0.67
Umpqua River	Mainstem And Bay	22845.00	1	Galagher Canyon	Random	Coho	Repeat	95,12,22	0.58
Umpqua River	Mainstem And Bay	22857.80	1	Little Wolf Cr, Trib D	Random	Coho	Repeat	01,04,07,10,13,16,19,22	1.00
Umpqua River	Mainstem And Bay	22857.90	1	Little Wolf Cr	Random	Coho	Repeat	05,08,11,14,17,20,22	1.28
Umpqua River	Mainstem And Bay	22862.00	1	Wolf Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.05
Umpqua River	Mainstem And Bay	22863.60	1	Rader Cr, Trib C	Random	Coho	Repeat	22	0.81
Umpqua River	Mainstem And Bay	22876.00	1	Hubbard Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.78
Umpqua River	Mainstem And Bay	22973.10	1	Turkey Cr	Random	Coho	Repeat	19,22	0.66
Umpqua River	Smith River	22452.00	1	Sulphur Cr	Random	Coho	Repeat	94,97,98,01,04,07,10,22	1.08
Umpqua River	Smith River	22464.70	1	Cedar Cr, Trib A	Random	Coho	New	22	0.87
Umpqua River	Smith River	22485.00	2	Spencer Cr	Random	Coho	Repeat	97,01,07,10,13,16,19,22	1.56
Umpqua River	Smith River	22503.30	1	Smith R, W Fk	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.40
Umpqua River	Smith River	22504.00	2	Beaver Cr	Supplemental	Coho		07,11,12,13,16,22	0.75
Umpqua River	Smith River	22504.00	2.1	Beaver Cr	Standard	Coho		Annual	1.64
Umpqua River	Smith River	22504.70	1	Beaver Cr	Random	Coho	Repeat	06,07,10,11,13,16,19,22	1.18
Umpqua River	Smith River	22521.00	1	S Sister Cr	Random	Coho	Repeat	00,01,03,04,07,12,18,22	1.58
Umpqua River	Smith River	22523.20	1	Bum Cr	Random	Coho	Repeat	98,00,01,02,04,07,22	0.69
Umpqua River	Smith River	22526.00	2	N Sister Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.93
Umpqua River	Smith River	22530.00	1	N Sister Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.93
Umpqua River	Smith River	22530.30	1	N Sister Cr, Trib B	Random	Coho	New	22	1.08
Umpqua River	Smith River	22537.50	1	Marsh Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.31
Umpqua River	Smith River	22541.00	1	Big Cr	Random	Coho	New	22	1.09
Umpqua River	Smith River	22546.60	1	Mosetown Cr, E Fk, Trib A	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.35
Umpqua River	Smith River	22547.00	1	Mosetown Cr	Random	Coho	Repeat	98,01,02,04,07,22	0.75
Umpqua River	Smith River	22549.30	1	Halfway Cr, Trib A	Random	Coho	Repeat	97,07,10,13,16,19,22	0.89

Umpqua 2022-2023 Spawning Surveys

Basin	Subbasin	Reach ID	Seg.	Survey Name	Type	Species	Status	Year(s) Surv.	Miles
Umpqua River	Smith River	22575.20	1	Haney Cr	Random	Coho	Repeat	10,22	0.93
Umpqua River	Smith River	22577.30	1	Panther Cr	Random	Coho	Repeat	13,15,16,17,18,19,20,22	0.63
Umpqua River	Elk Creek	22712.00	2	Big Tom Folley Cr, N Fk	Random	Coho	Repeat	92,07,10,13,16,19,22	0.91
Umpqua River	Elk Creek	22719.00	1	Brush Cr	Random	Coho	Repeat	13,16,19,22	0.35
Umpqua River	Elk Creek	22721.00	2	Brush Cr	Random	Coho	Repeat	03,05,08,11,12,17,20,22	1.05
Umpqua River	Elk Creek	22722.00	1	Blue Hole Cr	Random	Coho	Repeat	19,22	0.68
Umpqua River	Elk Creek	22725.00	1	Green Cr	Random	Coho	New	22	0.89
Umpqua River	Elk Creek	22735.00	1	Hardscrabble Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.82
Umpqua River	Elk Creek	22741.00	3	Billy Cr	Random	Coho	New	22	0.58
Umpqua River	Elk Creek	22764.00	1	Buck Cr	Random	Coho	New	22	1.22
Umpqua River	Elk Creek	22771.50	1	Pass Cr, Trib N	Random	Coho	New	22	0.54
Umpqua River	Elk Creek	22771.60	1	Pass Cr	Random	Coho	Repeat	19,22	0.47
Umpqua River	Elk Creek	22805.00	1	Curtis Cr	Random	Coho	New	22	0.77
Umpqua River	Elk Creek	22807.00	2	Curtis Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.81
Umpqua River	Elk Creek	22812.00	3	Elk Cr	Random	Coho	New	22	1.60
Umpqua River	Elk Creek	22816.30	3	Lane Cr	Random	Coho	Repeat	13,16,19,22	0.43
Umpqua River	North Umpqua	23618.70	2	Sutherlin Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.84
Umpqua River	North Umpqua	23621.00	3	Cooper Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.71
Umpqua River	North Umpqua	23622.00	2	Sutherlin Cr	Random	Coho	Repeat	16,19,22	0.83
Umpqua River	North Umpqua	23622.00	3	Sutherlin Cr	Random	Coho	Repeat	22	0.14
Umpqua River	South Umpqua	22981.00	2	Doerner Cr	Random	Coho	Repeat	13,19,22	1.29
Umpqua River	South Umpqua	22996.70	1	Deer Cr, S Fk	Random	Coho	Repeat	10,13,16,19,22	0.57
Umpqua River	South Umpqua	22999.00	1	Deer Cr, N Fk	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.15
Umpqua River	South Umpqua	23021.00	4	McNabb Cr	Random	Coho	Repeat	22	0.95
Umpqua River	South Umpqua	23122.00	1	Slide Cr	Random	Coho	Repeat	04,05,08,11,14,17,20,22	1.09
Umpqua River	South Umpqua	23123.00	1	N Myrtle Cr	Random	Coho	Repeat	99,22	1.45
Umpqua River	South Umpqua	23128.00	2	Lee Cr	Random	Coho	New	22	1.11
Umpqua River	South Umpqua	23130.00	1.1	Buck Fork Cr	Random	Coho	Repeat	22	0.45
Umpqua River	South Umpqua	23198.00	1		Random	Coho	New	22	
Umpqua River	South Umpqua	23209.30	1	Elk Valley Cr, E Fk	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.90
Umpqua River	South Umpqua	23264.00	1	Middle Cr, S Fk	Random	Coho	Repeat	01,04,07,10,13,16,19,22	0.57
Umpqua River	South Umpqua	23299.00	2	Wood Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	0.85
Umpqua River	South Umpqua	23304.90	1	Windy Cr	Random	Coho	Repeat	16,19,22	0.45
Umpqua River	South Umpqua	23313.00	1	Bull Run Cr	Random	Coho	Repeat	15,16,17,18,19,20,21,22	1.25

Sampling Record

Stream Name: _____

Site Number: _____

Field Crew: _____

_____

Agency: _____

Local Phone: _____

Supervisor: _____

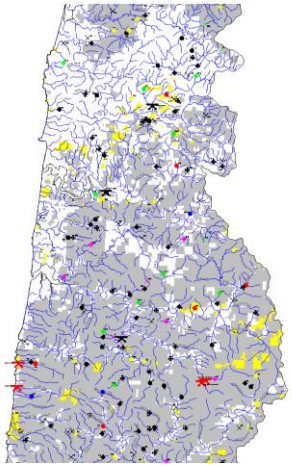
Phone: _____

Comments: _____

_____

_____

Example of sample sites in the Mid-Coast



Streams are randomly selected for sampling using a computer program. Landowner names and addresses are not used in reports or data summaries. If you would like a copy of the report summary for your area, we will gladly supply it without charge.

What is the Oregon Plan?

The Oregon Plan for Salmon and Watersheds is a broad-based effort of citizens, local watershed groups, the State of Oregon, and federal agencies to restore healthy salmon populations and their watersheds.

The most important part of the Plan is the idea that people working together, with the support of state and local government, can do more to help fish than could be accomplished by a strict regulatory approach.

The Plan has been in effect for about ten years. Hundreds of projects designed to improve stream habitat and watershed conditions have been completed. Support for watershed groups, soil and water conservation districts, and landowners has brought people together to develop stream restoration plans tailored to the needs of the local community.

<u>For more information:</u>

Oregon Plan for Salmon and Watersheds
Program Office (503) 378-3589 x821
Monitoring: (541) 757-4263 x226
www.oregon-plan.org

APPENDIX J. OREGON PLAN FOR SALMON AND WATERSHEDS

2022-2023

The Oregon Plan Monitoring Program is designed to assess the current status of fish populations and their habitat and to document the effectiveness of restoration and enhancement programs.

Streams in your area have been randomly selected for salmon population surveys, habitat surveys, and assessing overall stream health. Sampling is coordinated using an unbiased statistical survey plan. Specially trained field crews conduct the various sampling tasks described in this pamphlet.

Monitoring Program Activities

These Oregon Plan Monitoring Projects are designed to work together to give us basic information on salmon populations and conditions across large geographic areas.

Activities that we would like to conduct on the stream or streams on your property are marked in the checkbox by the name of each project.

❒ Stream Habitat Assessment

Stream habitat surveys are conducted from June through September in one-half mile long sections of stream. Each section takes about a day to survey. Surveyors will collect information on channel size, flow, substrate composition, large wood, habitat complexity, and riparian characteristics.

ODFW Contacts:

Peggy Kavanagh (541) 757-5124

❒ Adult Salmon Spawning Surveys

Counts of spawning adult salmon are a key indicator of abundance. A team of one or two surveyors will visit each potential site once during the summer to mark the boundaries of the survey and collect data on stream size, availability of spawning gravel, and possible barriers to fish-passage.

Each survey covers about one mile of stream. Coho surveys will be conducted from October through January while Steelhead surveys will be conducted from January through the end of May.

Crews will visit each site about once every 10 to 14 days depending on the spawning season to count the salmon.

ODFW Contacts:

Oregon Coast:
Briana Sounhein (541) 757-5136

Lower Columbia:
Eric Brown (541) 757-5133

❒ Juvenile Salmon Population Census

Divers will snorkel pool habitats to count juvenile salmon. Over time, these counts help us understand trends in the abundance and distribution of juvenile salmonids. At some of the sites, more precise population estimates will be made for juvenile coho, cutthroat, and steelhead.

Survey sites will vary in length. Field crews will spend about one day at each site over the summer sampling period.

ODFW Contacts:

Ron Constable (541) 757-5107

Corvallis Research Laboratory
28655 Hwy. 34
Corvallis, OR 97333
541-757-4263

https://odfw.forestry.oregonstate.edu/spawn/index.htm