ANGLER SURVEYOR

PROCEDURES MANUAL

2004

WILLAMETTE SALMONID INVENTORY PROJECT

OREGON DEPARTMENT OF FISH AND WILDLIFE

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WILLAMETTE SALMONID INVENTORY PROJECT

The Willamette Salmonid Inventory Project is charged with the task of monitoring the status of naturally produced and hatchery produced salmonid stocks. One important aspect of this monitoring effort is an estimate of fish that are caught in recreational fisheries. State and Federal fishery managers use the results of these surveys to manage Oregon's fisheries resources.

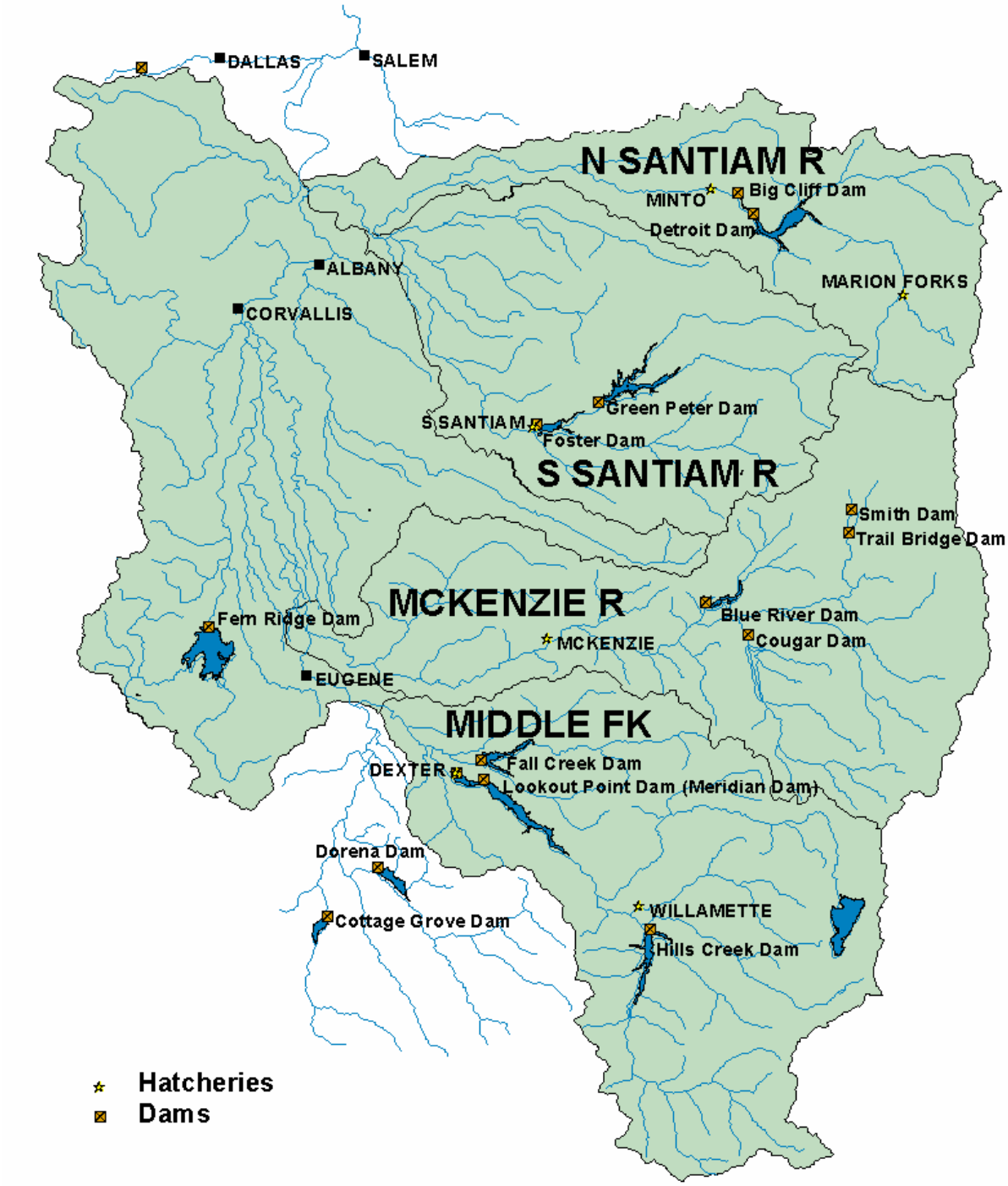
Project Objectives

The goal of the river creels is to estimate effort and catch of marked and unmarked spring chinook, steelhead, and young salmonids, including catchable rainbow, cutthroat and juvenile chinook and steelhead. The basic approach is a roving creel in which the sampler travels up and down the river interviewing bank anglers and boat anglers as they are encountered. The sampler queries anglers about catch numbers, catch composition, time spent fishing and other auxiliary information. At assigned times during the sampled day; the sampler travels the length of the river counting boat trailers (without boats), individual bank anglers at some locations, and cars at other locations. The goal of these counts is to estimate the number of people fishing at a given time.

The goal of the Foster Reservoir creel survey is to estimate angler effort and catch of juvenile winter steelhead and trout throughout the year. The fishery has been surveyed at a reduced level of sampling effort during the winter and is now ramped up to a full time sampler. The basic approach is similar to that for the river creels.

The results of these surveys are used in a variety of ways:

- They allow us to assess how well the hatchery programs are serving the public by giving an estimate of how many hatchery-produced fish are caught.
- By combining creel data with counts at fish ladders and hatchery traps, we can construct a more reliable estimate of how many fish return to sub-basins of the Upper Willamette.
- Creel data help us to evaluate the effectiveness of the hatcheries' recycling programs.
- Data on how many naturally-produced (unmarked) fish are caught and released allow us to estimate mortality for naturally-produced fish.
- Coded wire tag data are also used in making estimates of run size, and give information on the origin and stray rates of hatchery fish in the fishery.



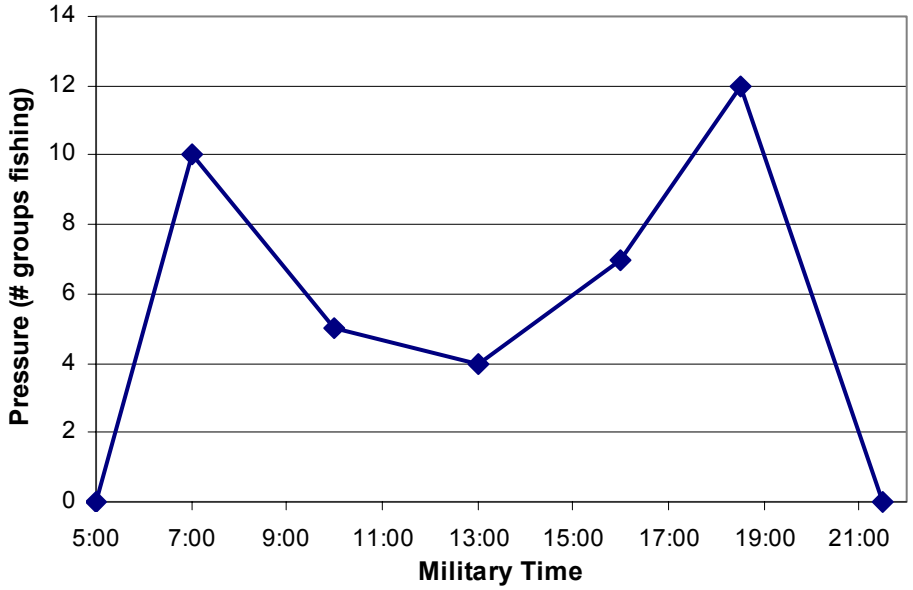
Map of the Willamette Basin showing major river basins, rivers with creel surveys, major dams and hatcheries.

So what is a statistical creel anyway?

A statistical creel combines a random sampling of fishing pressure and catch in order to make an estimate of how many fish are caught. Here's a simplified example: If your pressure count tells you that there are10 parties fishing, and your interviews with anglers tell you that each party has an average of two people and fishes an average of 3 hours, and that each person catches an average 1 fish/hour, then you would estimate that:

# parties fishing	*	people per party	*	fish caught per hour	*	# hours fished	=	total fish caught
10	*	2	*	1	*	3	=	60

Now, of course, it's not quite that simple. The number of parties fishing changes continually throughout the day. That's why you do pressure counts several times during your shift, with 5 or 6 scheduled between the early and late shifts. We combine all of the pressure counts from several days in order to draw a curve that describes how the number of parties fishing changes throughout the day. For example, assume that pressure counts were made at 7:00, 10:00, 13:00, 16:00, and 18:30. The average pressures at each time period were 10, 5, 4, 7, and 12 respectively, and we'll assume that fishing pressure was zero at the start and end of the legal fishing day. This gives us the following curve:



By calculating the total area under the curve, we can estimate the average total pressure per day in angler party hours.

There are several other factors that complicate the analysis, for example more people tend to fish on the weekends than on weekdays. This is why we stratify our sample and keep the data from the weekdays and the weekends separate. We also keep data on bank anglers and boat anglers separate. But this brief introduction should give you enough to understand why and how to collect good data on your pressure counts and interviews. If you want to learn more about how statistical creels are designed and analyzed, Mary can answer questions and point you to good references.

Why is a random sample important?

The best possible accounting of the numbers of fish caught would be a census where we interviewed every single angler when they were finished fishing. Obviously, this is not feasible – we'd need to station samplers at every single place that people could fish, and have them work from 6am to 10pm 7 days a week. Not only would this be incredibly expensive, it would be wasteful – we can obtain an accurate and precise estimate from a relatively small random sample. **Once we have made the commitment that we are going to make an estimate by expanding the data from a small sample, rather than conducting a census, it becomes very important that the sample that we use for our expansion is representative of the entire group that we are sampling**.

The best way to ensure that a sample is representative is to sample randomly. We all have our biases – some that we're not even aware of. Samplers tend to gravitate toward locations where there are more anglers, and toward parties or locations that tend to catch more fish. Anglers that have caught a lot of fish, or a very large fish, are more likely to seek you out to volunteer information. We have taken steps to randomize some aspects of the creel in the way that it is structured – which days you work, whether you work an early or late shift, and the times for pressure counts. However, which parties you interview is completely under your control, and it is of the utmost importance that you poll a random and thereby representative sample of the anglers fishing.

Sometimes there are so many people bank fishing at a given location that you could spend all of your interview time there. This is tempting on the surface, as it appears to give you the most bang for your buck – the greatest number of interviews in the time available. It's even more tempting if you know that most of the fish are being caught there. Resist this dangerous temptation!! You'll see why in an example that will follow. If you know that there will be too many anglers in your area to interview them all, interview every other group of bank anglers (or even every third or every fifth group) so that you can spread out your interviews around the entire area.

Boat anglers require a somewhat different strategy. Because boat anglers are only available for interviews for a short period of time while they pull out, most surveyors have trouble getting enough interviews of boat anglers. For this reason, you will always collect data from any boat angler that you can get your hands on. If you're having trouble getting enough interviews from boat anglers, it's even OK to interrupt a pressure count in order to get their data. You will often need to spend time twiddling your thumbs waiting for boats to come in, even when there are bank anglers that you have not yet interviewed. You might want to randomly choose half of your shift to spend waiting at pullouts, or to randomly choose days during the week to focus on boat interviews rather than bank interviews. Be sure to spread out your sampling among different boat ramps over the course of the week.

Here's a simple example of how biasing your sample toward locations with more anglers, or parties with more fish, can throw off the accuracy of your estimate: Let's say that there are 100 people fishing in your area and you only have the time to interview 50-60 depending on how you divvy up your time among locations. Most of the people are fishing near the dam, with another fairly large group fishing at a favorite spot about a mile away. If your focus your efforts on these two areas, you can interview everyone there and get 60 interviews. If you decide to interview every second group, you can sample every location in your creel survey, but you'll only get 50

interviews (20% less!). You don't know this, but the group at the dam is catching fish at a higher rate than people on other parts of the creel – that's a big part of the reason why they're all there! We randomly assigned catch to each angler based on the catch rates at each location (an average of 2 fish per angler at the dam, 1.5 fish per angler at the favorite spot, and 1 fish per angler everywhere else). Since we are creating this universe, we know the actual number of fish that were caught. In this case there were 140 fish caught.

Let's see what happens to the estimates based on the two different approaches (focusing on the dam and the favorite spot or sampling every other anger in the entire area):

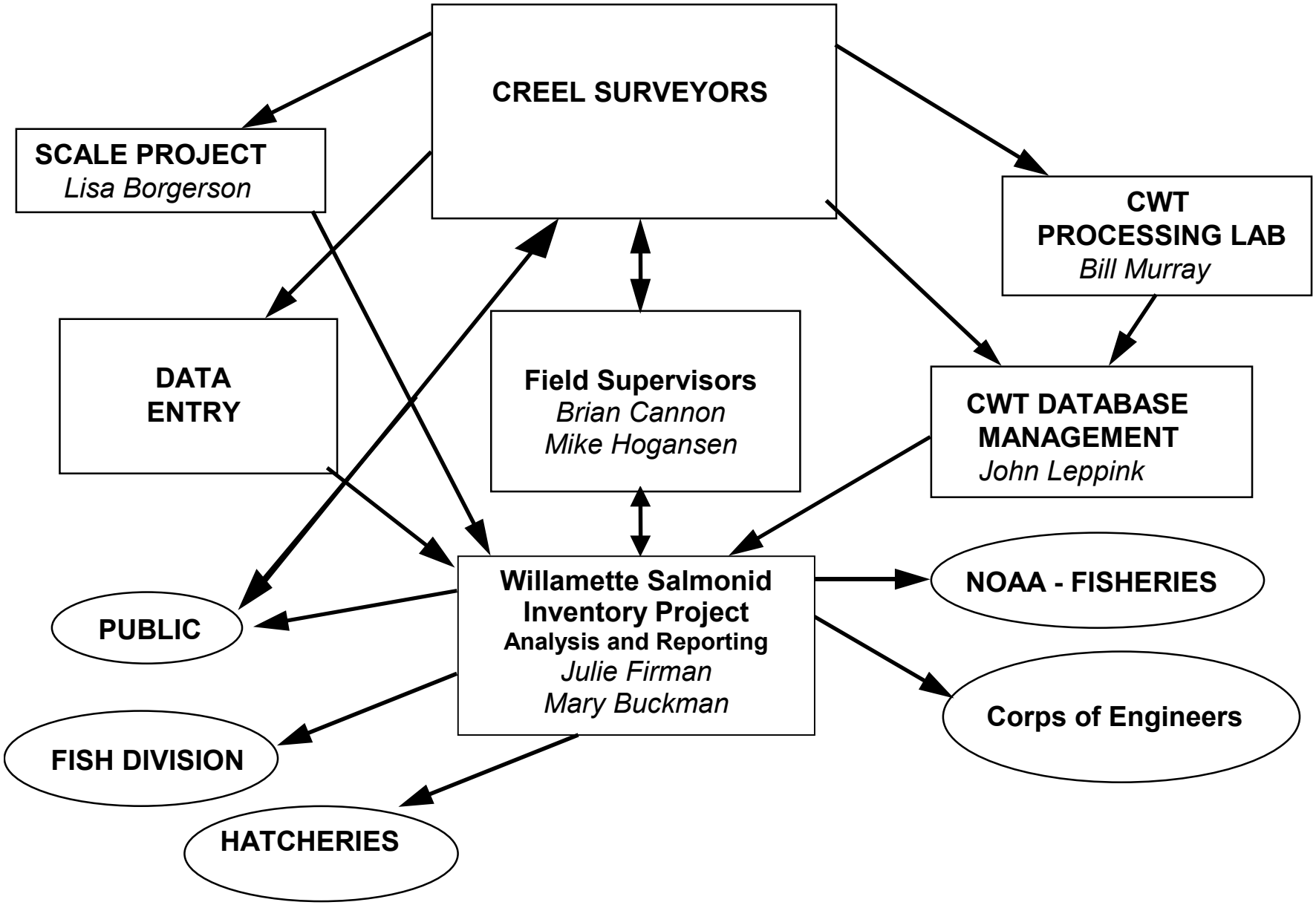
By sampling just the anglers at the dam and the favorite spot we interviewed 60 people and counted 100 fish. Since we know that there are 100 anglers in our area from the pressure count, then the number of fish caught divided by the number of people interviewed multiplied by the total number of people fishing gives us our estimate of the total number of fish caught: 100/60*100=167. We know that 140 fish were actually caught, so this calculation overestimates the number of fish caught by 27.

By sampling every second angler, but sampling the entire area we interviewed only 50 people and counted only 74 fish. This gives us an estimate of 74/50*100=148 fish caught. Even though we interviewed fewer people and counted fewer fish, we obtained a much more accurate estimate of the number of fish actually caught!

Let's look at one more scenario. Let's say you think to yourself, "I know the purpose of the creel is to find out how many fish are caught, so it would be better for me to spend my time sampling people who have caught fish. That way I'll maximize the number of fish I can record." So, you sample just at the dam and the favorite spot, and you interview only people who have caught fish. In this way, you are able to record the same number of fish caught (100) but with only 44 interviews rather than 60 – how efficient! However, let's look at what that does to the estimate. This approach gives us an estimate of 100/44*100=227 – an overestimate of 87 fish! Obviously, we <u>don't</u> want to employ this tactic!

	# Interviews	Fish counted	Estimate	Actual	Error
Dam + Favorite	60	100	167	140	27 over
Every other angler	50	74	148	140	8 over
Dam + Favorite, >0	44	100	227	140	87 over

WILLAMETTE ANGLER SURVEY INFORMATION FLOW



SUPPLY LIST FOR SURVEYORS

Forms and documents:

1. Pressure count form.
2. Angler interview forms.
3. Cheat sheets for codes.
4. Coded Wire Tag (snout) biological information form.
5. Snout ID tags.
6. Fishing regulations (bring extras to give to anglers).
7. Stocking schedules.
8. Phone list.
9. Report of Operations Form.
10. Work schedule.
11. Vehicle mileage log.
12. Manual.

Equipment:

1. Uniform.
2. Cell Phone.
3. (Measuring tape).
4. (Binoculars).
5. (Coded Wire Tag detection wand).
6. (Knife with sheath for cutting snouts).
7. (Plastic bags and ID tags for snouts).
8. (Cooler for storing snouts).
9. (Forceps for scale collection).
10. (Scale envelopes).

Not everyone will use items in parentheses ( )

Scheduling

Fishing day: Days are long during this time of year, and the legal start and stop of fishing is 1 hour before sunrise and 1 hour after sunset (dawn and dusk). The average start and end of fishing and day length during May, June and July is:

	Start of fishing day	End of fishing day	Day length
May	4:43 AM	9:35 PM	16.9 hours
June	4:26 AM	9:59 PM	17.5 hours
July	4:42 AM	9:54 PM	17.1 hours

Sampling should begin a couple hours after the start of fishing (before people have begun to leave) and should go until the end of fishing (dusk) or until all anglers are gone. Some of the parks and boat ramps close at dusk so that makes things easier on that end.

Sampled days: The sampled day will be divided into two 8 or 10 hour shifts, an early and a late shift. Sampling will be both weekend days and two to three weekdays. You will have to allow time for travel from the office to the river or reservoir in your schedule, while still keeping your work day within 8 or 10 hours, and making sure that you are on the river or reservoir from 2 hours after dawn to dusk, depending on your shift. We have provided approximate shift start and end times by month that reflects the average times of sunrise and sunset for the month, but you will need to customize your shift to make sure that you cover the fishing day and stay within your 40-hour work week.

There will probably be very few if any anglers at dusk, but we need to sample late initially to be sure we are not missing people. Some parks close earlier and if there are no anglers or boat trailers after about 8:00PM, there is no reason to stay. Stay in touch with your supervisor and we can adjust schedules appropriately. If you need to take time off, please contact your supervisor as early as possible so that we can find ways to cover your shift.

Data Forms

General Instructions:

It is important that you write legibly, and that what you have written is dark enough to come out clearly in a photocopy. If the data entry folks can't decipher what you've written, we can't use the data. It's also important that your data is complete. If you leave fields out, we often have to throw out the data. Enter only the appropriate codes, entering only 1 digit or character per box. If something occurs that does not fit a code, put a 1 in the comment column and give more info on the back of the page. This will make data entry faster and more accurate.

River Creels

TYPICAL INTERVIEW DATA FORM

Leading zeros are not required to be entered; empty fields are treated as zero (# caught, etc.) or no data (species, fin mark, etc.).

HEADER
SAMPLER: Write your name on the line and your initials in the boxes

PAGE/OF PAGE: Pages are numbered within a day for each type of data form.

MONTH: Month numbers are right justified, i.e. June is 06 or _6.

DAY: Days are also right justified, i.e. the first is 01 or _1.

YEAR: The last two digits.

SHIFT: The shift codes described elsewhere and assigned on the schedule.

SHIFT START/END TIME: The actual time, in military time, that sampling began and ended.

RIVER/LAKE: SS for South Santiam, NS for North Santiam, MC for McKenzie, MF for Middle Fork, and FR for Foster Reservoir.

ROUTE: Ignore this field - the route codes will not be used.

Interviews for the survey are conducted on parties of anglers, not individuals within a party. This is more efficient and helps us to expand counts of vehicles from the pressure counts to make an estimate of how many people are fishing at any given time. For boat anglers it is usually obvious and is the group of people that are fishing in a boat. For bank anglers it might be harder to interview if they are spread out, but is the group of people that came together to fish. Each line or group of data lines represents the hours and catch for the angling party. When the interview number changes, it identifies a different party. The fields INTERVIEW LOCATION through TARGET SPECIES are only entered on the first line of data about each party. Time fishing in each area of the river and catch of each species and/or clip are recorded on a separate line, but retain the same interview number.

Codes are listed on a separate sheet. Most fields have a code 8 for OTHER when the appropriate response is not listed and a code 9 for UNKNOWN to use when information is not available. Use the comment field to clarify lines with these codes.

INTERVIEW DATA: SAMPLER ____ PAGE ____ OF ____

FORM C 0 3 0 1 MONTH ____ DAY ____ YEAR ____ SHIFT ____

SHIFT START TIME ____ SHIFT END TIME ____ WATER BODY ____ ROUTE ____

	INTERVIEW NUMBER	INTERVIEW LOCATION	TIME OF INTERVIEW (MILITARY TIME)	COMPLETE OR INCOMPLETE	TRIP TYPE	ANGLER ORIGIN	NUMBER OF ANGLERS	PARTY SIZE	# VEHICLES **W/OUT** TRAILERS	# VEHICLES **WITH** TRAILERS	TARGET SPECIES	FISHING LOCATION	HOURS FISHED (TO NEAREST TENTH OF AN HOUR)	GEAR	CATCH								COMMENT ?
															SPECIES	MARK/TAG	NUMBER KEPT	NUMBER RELEASED	LENGTHS OF KEPT FISH (TO NEAREST 0.1 INCH) FISH 1	FISH 2	FISH 3	FISH 4	
1																							
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
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11																							
12																							
	1 2 3	4 5	6 7 8 9	10	11	12	13 14	15 16	17	18	19	20	21 22 23	24	25 26	27 28	29 30	31 32	33 34 35	36 37 38	39 40 41	42 43 44	45

INTERVIEW NUMBER: These are the sequentially numbered parties that are interviewed. Each day starts a new series of numbers. If more than one person is sampling on a day, they each begin the day with 1.

INTERVIEW LOCATION: Location where the interview occurs. For anglers interviewed away from the identified codes, use the code for the nearest location. If any locations are missing or are no longer fishing locations, let your supervisor know.

TIME OF INTERVIEW: Time, in military time, of the start of the interview.

COMPLETE/INCOMPLETE: A complete angler has finished their fishing trip. Most boat anglers will be complete; most bank anglers will be incomplete. Enter 1 for complete and 2 for incomplete (**not I and C!!**)

TRIP TYPE: Identify boat and bank anglers as per the codes. Non-random anglers are anglers that approach the sampler with their catch, i.e. anglers that would not have been encountered in the normal sampling. It is easier/better to record their information rather than tell them it is not useful.

ANGLER ORIGIN: The area where most of the anglers in the group live, as per the code sheet. If people get irritable about answering, skip the question. If a party is evenly split, just use the combination code.

NUMBER OF ANGLERS: Number of people in the group interviewed that are/were fishing. For boat anglers, this is fairly straightforward and will probably be 1 – 4 people. Bank anglers might be more spread out. If they cannot be interviewed together, they can be recorded as separate parties. The following three items are used to estimate total pressure based on the number of cars parked along the river. Vehicles with empty trailers represent a boat on the river and vehicles without represent either a bank angling party, a shuttle car, or non-anglers.

NUMBER IN PARTY: This is the number of anglers that came together in a group. It is used to estimate pressure based on the car counts. The party size might be obvious with boat anglers, but ask if there is any doubt. It will usually be the same as the "Number of Anglers" field.

NUMBER OF VEHICLES WITHOUT TRAILERS: The number of vehicles without trailers on the river used by this party. For most bank parties, this will be one. If the fishers got dropped off this number might be zero.

NUMBER OF VEHICLES WITH TRAILERS: The number of vehicles with trailers used by the party on the river. For most boat anglers this will be one. If the fishers got dropped off or rode a bicycle this number might be zero.

TARGET SPECIES: The primary target species for this party. Most will be salmon and steelhead. If the anglers switched target species during the trip or different people are fishing for different species, use the code for combination. Do not record separate entries for hours spent within an outing targeting different species.

The previous fields are recorded only on the first line of data for each party. It is important that these fields are recorded only once for each group otherwise numbers of anglers will be double counted. The remaining fields are for fishing location and catch. **The numbers of fish caught of each different species/mark in each river area are recorded on a separate line, all listed under the same party number.**

FISHING LOCATION: Enter the area code from the code sheet. During the angler interviews, ask anglers how much time was spent fishing and what was caught from each section. Most anglers will have fished only in one section, but some boat and a few bank anglers may have traveled between sections. For anglers that fished in several locations, record the hours and catch separately for each section of the river where they fished. If bank anglers fish in several locations, but all are within the same area of the river, they do not require separate lines. **Do not use the specific Interview Location codes, but the more general Fishing Location codes.**

HOURS FISHING: Hours fishing in each river area, measured to the nearest tenth of an hour. Do not worry too much about exact 0.1 hours – close is fine.

GEAR: The primary gear used for this party. If the anglers switched gear or different people used different gear during the trip, use code 7 for combination. Do not record separate entries for the hours spent within an outing using different gear.

CATCH

SPECIES: Species of fish caught in the area. Number and species of released fish will be based on the angler's statement. For adult and jack chinook and adult steelhead, this should not be a problem. Smaller fish of each species may be difficult for the angler to identify; however, some anglers will be fairly certain and may learn as the season progresses. The codes are structured so that released fish can be identified as precisely as the angler and sampler feel comfortable. For released fish, mainly "trout", use the most specific species code the angler can recite – i.e. if they are sure it was a cutthroat, etc. record that, but if they are uncertain, use the code for "Trout-Species Unknown". For example, if a group caught 6 "trout" and knew one was a cutthroat, and of the remaining, 1 had an adipose fin clip but the species was uncertain, the sampler would record 1 cutthroat, no fin clip (species 12, mark 00); 4 trout with no fin clip (sp 10, mark 00); and 1 trout with an adipose clip (species 10, mark 02). Each species/mark entered on a data line should uniquely identify the fish in the "catch" field.

FINCLIP MARK / TAG: Fin clip or tag on fish caught. See code sheet. Use a separate data line for each species and mark as described above. If a fish has a numbered or colored tag, enter a comment and record the line number of the data form and tag number on the back of the data sheet. For released fish, be liberal about using the "Unknown" code, depending on your judgment of the anglers' accuracy. If the mark filed is left empty, it is assumed to mean no mark or fin clip. If the angler did not look for fin marks or does not remember, use the code for unknown mark.

NUMBER KEPT: Total number of fish of a species and fin clip/tag kept.

NUMBER RELEASED: Estimated number of fish of a species and fin clip mark / tag caught and released. You will rely on the anglers for species ID and count.

LENGTHS: Lengths of fish kept. Record the lengths of fish kept to the nearest approximate tenth of an inch. The exact 0.1 of an inch is not critical, but it fits the data form. Round to the nearest even number, i.e. ¼ inch would be xx.2, ¾ inch would be xx.8. If more than 4 fish of one type from an angler measured, use the same angler number and species and mark codes and enter more lengths. It is not necessary to measure all fish, but those measured should be a random sample of the catch.

COMMENT ?: Enter 1 in this field if there are comments that impact the quality or interpretation of the data in any of the fields to the left. Record information on the back of the page, identifying the line number to which a comment refers.

If someone keeps an illegal fish, record the information, put a 1 in the comment column and make a note on the back of the sheet. It is not for enforcement but to make it clear that it is not a mistake in recording the data.

Recycled fish may turn up. They will have floy tags. Put a 1 in the comment column and write the tag number on the back of the data sheet.

Coded-wire tags/snouts: The sampler should attempt to collect snouts from coded-wire tagged (CWT) chinook. (this only applies to surveyors that are equipped with a CWT detector wand to detect snouts). Snouts are collected in the lower Willamette creel and anglers are pretty accepting. A portion of the adipose fin clipped chinook will have a coded-wire tag. If a CWT is found, cut off the snout and put it in a plastic bag with the numbered tag. Tie the bag shut. Record the information on the accompanying tag information sheet, record a 1 in the comment column on the main data sheet, and write the tag number on the back of the data sheet along with the data line to which it refers.

TYPICAL PRESSURE DATA FORM

Pressure counts should be done approximately every 3 hours. The hours should be approximately:

7:00 AM	0700	Count number 1
10:00 AM	1000	Count number 2
1:00 PM	1300	Count number 3
4:00 PM	1600	Count number 4
6:30 PM	1830	Count number 5

When the time arrives for the pressure count, the sampler should set out and travel the length of the route counting bank anglers, boat trailers and cars at fishing locations and boat ramps. The early shift will have three counts and the late shift will have two pressure counts. It is not necessary to always begin at the same point, just ensure that the entire route is covered. It is good to vary the starting point of the pressure counts and run them in opposite directions to prevent the sampler from being in the same section of the river at the same time each day. There is some flexibility in the exact start time for the counts -- plus/minus 10 minutes is okay.

For *boat anglers*, we will use boat trailers (without boats) to estimate the number of boats on the river. Boats without associated trailers on the river will be accounted for using information gathered in the interviews. Examples might be the single person cataraft boats that ride in the back of a pickup, a canoe, or drift boaters that get dropped off and picked up later.

For *bank anglers*, some locations will be suitable for counting cars and at other locations the samplers will have to count individual anglers. Generally, cars are good for pressure counts in areas where people are likely fishing, such as roadside pullouts. In parks and other areas where vehicles could be from other uses, it is necessary to count anglers. This is complicated when it is a long hike or very brushy. Generally, counting individual anglers is the best, most direct method and should be used whenever possible.

Instructions for completing the form:

HEADER: Same as for interview form.

LINE 1: Enter the count number (1-5) and the start time in military time for each count. Counts 1-3 are in the AM, counts 4 and 5 in the PM.

COUNTS BY LOCATION: The total number of vehicles with trailers, vehicles without trailers, and bank anglers for each count for each location. Some counts are not relevant for some locations – they should be exed out. If something is confusing, enter a 1 in the comment column and make a note on the back of the page.

COMMENT ?: Enter 1 in this field if there are comments that impact the quality or interpretation of the data in any of the fields to the left. Record information in the comment column or on the back of the page, identifying the corresponding line number.

END TIME: Enter the count number and the end time in military time for each count.

WEATHER: Record a few phrases about the weather - cool/warm/hot, windy/calm, rainy/sunny, etc. at each count.

Pressure Count Form – example. Pressure count forms are unique for each creel.

PRESSURE DATA: MCKENZIE RIVER CREEL SURVEY | M | C | SAMPLER _____

FORM | P | 0 | 3 | 0 | 6 | MONTH | | | DAY | | | YEAR | | | PAGE | | | OF | | |

SHIFT START TIME | | | | | SHIFT END TIME | | | | | SHIFT | | | ROUTE | | |

1		Start Time	#		TIME					#		TIME					#		TIME					
LINE NO	CODE	LOCATION	VEHICLES **WITH** TRAILERS		VEHICLES **WITHOUT** TRAILERS		BANK **ANGLERS**			VEHICLES **WITH** TRAILERS		VEHICLES **WITHOUT** TRAILERS		BANK **ANGLERS**			VEHICLES **WITH** TRAILERS		VEHICLES **WITHOUT** TRAILERS		BANK **ANGLERS**			
2	17	Bellinger Landing																						
3	18	Walterville Canal																						
4	19	Walterville Powerhouse																						
6	21	Dot's Landing			x	x						x	x						x	x				
7	22	Walterville Canal Intake			x	x						x	x						x	x				
8	23	Partridge Lane Slide			x	x	x	x	x			x	x	x	x	x			x	x	x	x	x	
9	24	Hendricks State Park			x	x						x	x						x	x				
10	25	Lower Deerhorn Road	x	x	x	x				x	x	x	x				x	x	x	x				
11	26	Emmerick and Vicinity	x	x	x	x				x	x	x	x				x	x	x	x				
12	27	Deerhorn Road Landing			x	x						x	x						x	x				
13	28	Upper Deerhorn Road	x	x	x	x				x	x	x	x				x	x	x	x				
14	29	Leaburg Powerhouse	x	x	x	x				x	x	x	x				x	x	x	x				
15	30	Baxter Acres (Richey Creek)	x	x			x	x	x	x	x			x	x	x	x	x			x	x	x	
16	31	Deerhorn County Park Landing			x	x						x	x						x	x				
17	32	Leaburg Town Landing			x	x						x	x						x	x				
18	33	Above Leaburg to Greenwood					x	x	x					x	x	x					x	x	x	
19	34	Greenwood Drive					x	x	x					x	x	x					x	x	x	
20	35	Leaburg Rocks-North Bank	x	x	x	x				x	x	x	x				x	x	x	x				
21	36	Leaburg Hatchery Pole Slide			x	x						x	x						x	x				
22	37	Leaburg Hatchery			x	x						x	x						x	x				
23	38	Leaburg Hatchery Groins	x	x	x	x				x	x	x	x				x	x	x	x				
24	39	Other North Bank Locations																						
25	40	Other South Bank Locations																						
26																								
27		End Time	#		TIME					#		TIME					#		TIME					
1	2		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

c:\!cree\ssant03\form03.ss.xls MAB3/28/03

WEATHER	Count #		
	Count #		
	Count #		

Foster Reservoir Creel

INTERVIEW DATA FORM (C0403)

During the time intervals between the pressure counts, the sampler will travel among fishing locations on the shore and among the boat ramps to interview anglers. The two main boat ramps are Sunnyside Park and Gedney Creek Park. Bank access is available all around the lake, but is concentrated near the Dam.

The Reservoir, up to the slack water mark, will be spatially stratified into three areas: (1) Foster Reservoir, (2) South Santiam arm, and (3) Middle Santiam arm. The upper end of sampling, the slack water area, changes as the reservoir fills/empties. The demarcations for the reservoir are the two bridges. Anglers will be queried about the time they spent fishing in each of the three locations (the Reservoir, the Middle Fork, and the South Fork), their catch of each species of fish from each of the areas, both kept and released fish, and the lengths of some of the kept fish. For people that just motor out from the boat ramp at Sunnyside into the lake, don't worry about that small amount of time – we are only interested in time that people spend actively fishing above the bridges. We will use the information from angler interviews about the proportion of time spent fishing in each of the two arms to adjust the effort counts for the non-visible boat anglers in the rivers.

In many roving creel surveys, it is difficult to intercept boat anglers because they are on shore for a short period of time. They are often, however, the bulk of the anglers and catch most of the fish. As you become familiar with the patterns of the lake or when you see boats heading into shore, it is important to try to interview the boat anglers.

Completing the form:
Leading zeros are not required to be entered; empty fields are treated as zero (# caught, etc.) or no data (species, length, etc.).

HEADER:

SAMPLER: Write your name on the line and your initials in the boxes.

PAGE/OF PAGE: Pages are numbered within a day for each type of data form.

MONTH: Month numbers are right justified, i.e. June is 06 or _6.

DAY: Days are also right justified, i.e. the first is 01 or _1.

YEAR: The last two digits.

SHIFT: The shift codes are listed on the schedule.

SHIFT START/END TIME: The actual time, in military time, that sampling began and ended.

ROUTE: Ignore this field, the route codes will not be used for now.

INTERVIEW DATA

FOSTER RESERVOIR CREEL SURVEY

SAMPLER _____ PAGE ____ OF ____

FORM C 0 4 0 3 MONTH ____ DAY ____ YEAR ____ SHIFT x ____

SHIFT START TIME ____ SHIFT END TIME ____ RIVER/LAKE F R ROUTE x x

	INTERVIEW NUMBER			INTERVIEW LOCATION		TIME OF INTERVIEW (MILITARY TIME)				COMPLETE OR INCOMPLETE	TRIP TYPE	ANGLER ORIGIN	NUMBER OF ANGLERS		GEAR			FISHING LOCATION	HOURS FISHED (TO NEAR-EST TENTH OF AN HOUR)			CATCH										COMMENT ?
															BAIT	LURE	FLY					SPECIES	SMOLT FEATURES	NUMBER KEPT	NUMBER RELEASED			LENGTHS OF KEPT FISH (TO NEAREST TENTH OF AN INCH)								
																									LEGAL	SUB-LEGAL	FISH 1			FISH 2			FISH 3		
1																																		
2																																		
3																																		
4																																		
5																																		
6																																		
7																																		
8																																		
9																																		
10																																		
11																																		
12																																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

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Each line or group of data lines represents an angling party or group of anglers fishing together. When the interview number changes, it identifies a different party. The fields INTERVIEW LOCATION through NUMBER OF ANGLERS are only entered on the first line of data about each angler. Time fishing in each area of the river and catch of each species/type/smolting characteristic is recorded on a separate line, each with the same angler number.

Codes are listed on a separate sheet. Most fields have a code 8 for OTHER when the appropriate response is not listed and a code 9 for UNKNOWN to use when information is not available. Use the comment field to clarify lines with these codes.

INTERVIEW NUMBER: Sequentially numbered parties that are interviewed, beginning at 1 each day. If more than one person is sampling on a day, they each begin the day with 1.

INTERVIEW LOCATION: Location where the interview occurs. Use the code for the nearest and most specific location.

TIME OF INTERVIEW: Time, in military time, of the start of the interview.

COMPLETE OR INCOMPLETE: A complete angler has finished their fishing trip. Most bank anglers will be incomplete; most boat anglers at the boat ramps will be complete.

TRIP TYPE: Boat and bank anglers as per the codes. Non-random anglers are anglers that approach the sampler with their catch, i.e. anglers that would not have been encountered in the normal sampling. It is easier/better to record their information rather than tell them it is not useful.

ANGLER ORIGIN: Origin of most of the people in the party. Use code 4 for combination if the group is from a relatively even mix of locations.

NUMBER OF ANGLERS: Number of people in the group interviewed that are/were fishing. For boat anglers, this is fairly straightforward and will probably be 1 – 4 people. Bank anglers might be more spread out. If they cannot be interviewed together, they can be recorded as separate parties.

GEAR: Gear used by this party. Enter a “1” under each of the gears used by the group.

The previous fields are recorded only on the first line of data for each party. It is important that these fields are recorded only once for each party or individuals will be counted more than once. The remaining fields are for fishing location and/or catch. The numbers of fish caught of each different species/mark in each reservoir area are recorded on a separate line, all listed under the same angler number.

FISHING LOCATION: Using the three FISHING LOCATION codes on the code sheet, enter the fishing locations for different parts of the fishing outing.

HOURS FISHED: Hours fishing in each area of the reservoir, measured to the nearest approximate tenth of an hour. Do not get too worried about being precise to 0.1 hour, close is fine.

CATCH

SPECIES: Species/type of fish caught. **Stocked** fish are the fish from this year. Once stocking has begun for 2004, **holdovers** will be the larger hatchery fish. They will both have fin clips. **Wild** *O. mykiss* have no fin clip. Counts and species of released fish are up to the judgment of the angler. If they can tell and you trust them, record what they say. If they are unsure of the species but know that it was a salmonid use code 16. If they have no clue what they caught, use code 99 for **unknown**.

SMOLT FEATURES: Enter a 1 if a fish had obvious smolt characteristics. Each species/smolt attribute will be a separate data line within the party.

NUMBER KEPT: Total number of fish of a species/type and smolt attribute kept.

NUMBER RELEASED, LEGAL: Estimated number of fish of a species/type and smolt attribute caught and released. You will rely on the anglers for species ID and count.

NUMBER RELEASED, SUBLEGAL: Number of fish of a species/type and smolt attribute caught and released. You will rely on the anglers for species ID and count.

LENGTHS: Fork lengths of fish kept other than the *O. mykiss* stocked legals, including unmarked steelhead smolts. Lengths are not required for the *O. mykiss* stocked legals, but collect lengths on any large holdovers that you encounter. For now, we will measure length of all other fish, but may reduce that to a sample of the fish as the summer progresses. (From November 1 to April 1 we will measure all fish). Record the lengths of fish kept to the nearest approximate tenth of an inch. The exact 0.1 of an inch is not critical, but it fits the data form. Round to the nearest even number, i.e. ¼ inch would be xx.2, ¾ inch would be xx.8. If more than 4 fish of one type from an angler measured, use the same angler number and species and mark codes and enter more lengths.

COMMENT ?: Enter 1 in this field if there are comments that impact the quality or interpretation of the data in any of the fields to the left or if the fish had a floy tag or a snout was taken. Record information on the back of the page, identifying the line number to which a comment refers.

PRESSURE DATA FORM (P0403)

Periodic pressure counts are used to estimate total fishing effort. We will use direct counts of fishing boats to estimate pressure by boat anglers. This requires using binoculars and observing the lake from a variety of vantage points. Fishing boats and individual fishing crafts are counted on the main reservoir, but not in the arms. Boat pressure up the two arms will be estimated using the information gathered in the interviews.

Bank angling pressure will be estimated from a combination of direct counts of bank anglers and counts of vehicles parked at known fishing locations. The type of count is identified on the pressure form. Pressure counts should include a walk around Sunnyside Park near the boat ramp to see bank anglers and driving up the middle and south Santiam to count cars of people that are probably fishing (parked in pullouts). During the early spring, there is not a lot of other activity so the counts are pretty straightforward. As the summer nears, it gets more complicated.

The pressure counts should be done at the times listed below.

AM Shift		**PM Shift**	
Count 1	8:00	Count 4	2:00
Count 2	10:30	Count 5	4:00
Count 3	1:00	Count 6	6:00

Generally pressure counts should be done as rapidly as possible without spending time on interviews. Pressure counts for this type of survey are assumed to be “instantaneous”. An exception occurs if the sampler sees a bank angler leaving a fairly obscure location or sees a boat docking during the pressure count -- stop and interview those folks. It is hard to get some of these interviews so you should take advantage of the opportunity.

HEADER: Same as for interview form.

START TIME OF COUNT: Enter the time, in military time that each pressure count began.

VIS(IBILITY): Enter a 2 or 3 in this field if visibility is impaired. Leave the field blank if there is no problem with visibility. Code 2 means minor problems with the count, 3 means major problems with the count. Examples might be a smoky or foggy day. It is likely to affect the boat counts and angler counts made across the lake. If the field is blank or 1, it is assumed visibility in not a problem.

COUNT: The total number of bank anglers, vehicles, vehicles with trailers (without boats), boats or individual fishing craft at each location. The type of count is identified in bold. These locations may be more or less specific than the interview locations. They are designed to make counting complete and efficient. In areas where bank anglers are hard to count, vehicles are used to represent an angling party. If it is clear the vehicle is not associated with anglers, do not count it. For the counts in the “Bridge Area”, count vehicles likely associated with fishing without worrying about whether they are above or below the bridge. The “Above Bridge” locations are those up the South and Middle arms except those at/around Sunnyside Park.

COMMENT?: Enter 1 in this field if there are comments that impact the quality or interpretation of the data in any of the fields to the left. Record information in the comment column or on the back of the page, identifying the corresponding line number.

WEATHER: Record a few words about the weather - cool/warm/hot, windy/calm, rainy/sunny, etc.

PRESSURE DATA FOR FOSTER RESERVOIR CREEL SURVEY SAMPLER _____

FORM P 0 4 0 3 MONTH ___ DAY ___ YEAR ___ SHIFT x ___

SHIFT START TIME ____ SHIFT END TIME ____ RIVER/LAKE F R ROUTE x x

		LOCATION	COUNTS												COMMENT ?	
1		Start Time of Count														
			VIS	Count 1			VIS	Count 2			VIS	Count 3				
2	11	Dam South of Boom - **Anglers**														
3	12	Gravel Lot - **Anglers**														
4	12	Shea Point - **Anglers**														
5	15	South Shore Pullouts - **Vehicles**														
6	13/14	S. Sant. Arm Bridge Area - **Vehicles**														
7	14	S.Sant. Arm Above Bridge - **Vehicles**														
8	16	East Shore - **Vehicles**														
9	17/18	Mid. Sant. Arm Bridge Area - **Vehicles**														
10	18	Sunnyside Park - **Anglers**														
11	18	Sunnyside Park - **Vehicles with trailers**														
12	18	Mid. Sant. Arm Above Bridge - **Vehicles**														
13	19	Lewis Creek Park - **Anglers**														
14	20	Gedney Creek Park - **Anglers**														
15	20	Gedney Creek Park - **Vehicles with trailers**														
16	21	North Shore Pullouts - **Vehicles**														
17	10	Dam North of Boom - **Anglers**														
18																
19																
20		Reservoir - **Fishing Boats** **(under and below bridges)**														
21		Reservoir - **Individual Fishing Craft** **(same as above)**														
22																
23		End Time of Count														
			1	2	3	4	5	6	7	8	9	10	11	12	13	

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WEATHER	
	1
	2
	3

TALLY SCRATCH AREA				

CODES FOR FOSTER RESERVOIR CREEL SURVEY DATA FORM C0403, P0403

LOCATION OF INTERVIEW

10	Dam - North of boom
11	Dam - South of boom
12	Rest Area (Shea Point)
13	South Santiam Arm Bridge Area, Below Bridge
14	South Santiam Above Bridge
15	South Shore - Other Areas
16	East Shore
17	Middle Santiam Arm Bridge Area, Below Bridge
18	Middle Santiam Arm Above Bridge, inc. Sunnyside Park
19	Lewis Creek Park
20	Gedney Creek Park
21	North Shore - Other Areas

TRIP TYPE

1	Boat angler
2	Bank Angler
3	Float tube Angler
4	Individual fishing craft
5	Canoe
7	Non-random angler
8	Other
9	Unknown

ANGLER ORIGIN

1	Local - Lebanon/Sweethome area
2	Linn, Benton, Marion counties
3	Elsewhere
4	Combination of places
9	Unknown, will not tell

COMPLETE OR INCOMPLETE

1	Complete
2	Incomplete

FISHING LOCATION

R	Reservoir
S	South Santiam Arm, above bridge
M	Middle Santiam Arm, above bridge

VISIBILITY

Blank	Perfect/no problem
2	Minor impairment
3	Major impairment

SPECIES CAUGHT

10	O. mykiss stocked
11	O. mykiss holdover
12	O. mykiss wild
13	Chinook
14	Kokanee
15	Cutthroat
16	Trout/salmonids, species/clip unknown
20	Bass, large mouth
21	Bass, small mouth
22	Other warmwater fish
88	Other
99	Unknown

EVIDENCE OF SMOLTING

1	Yes
0/blank	No

COMMENT ?

1	Comments on reverse

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3/31/04MAB

Reporting

Email FAX or call your field supervisor and Asst. DB at the end of your shift every Sunday with the following weekly summary:

Creel Survey Data for the week of _____ to _____ Surveyor _____

Creel Location _____ Anglers interviewed _____

Weekly totals:

	Adult Steelhead			Adult Spring Chinook			Juv steelhead			Juv Chinook			RBT	Cutt	Other	Other
	Marked	Unmk	Unkn	Marked	Unmk	Unkn	Marked	Unmk	Unkn	Marked	Unmk	Unkn				
Kept																
Released																

Where is the greatest fishing pressure?

Where are the most fish being caught?

Comments:

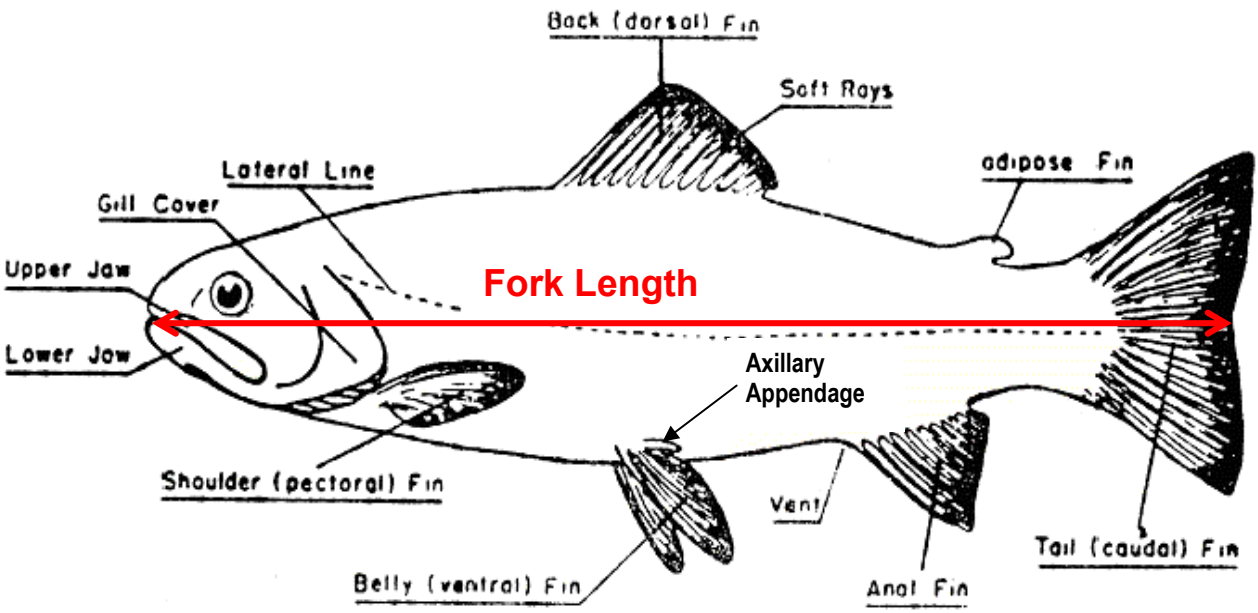
FISH IDENTIFICATION

You will be expected to identify the species fish that you observe during angler surveys. To accomplish this you will use a number of characteristics including size, coloration, body morphology, and markings.

Chinook are generally larger than steelhead (adult length 20”- 47”, jacks <20”). They have large irregular spots on their backs and both lobes of their tails, and the gums at the base of their teeth are black.

Steelhead 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 to gray on their lower halves. They have completely white mouths and small spots on their tails.

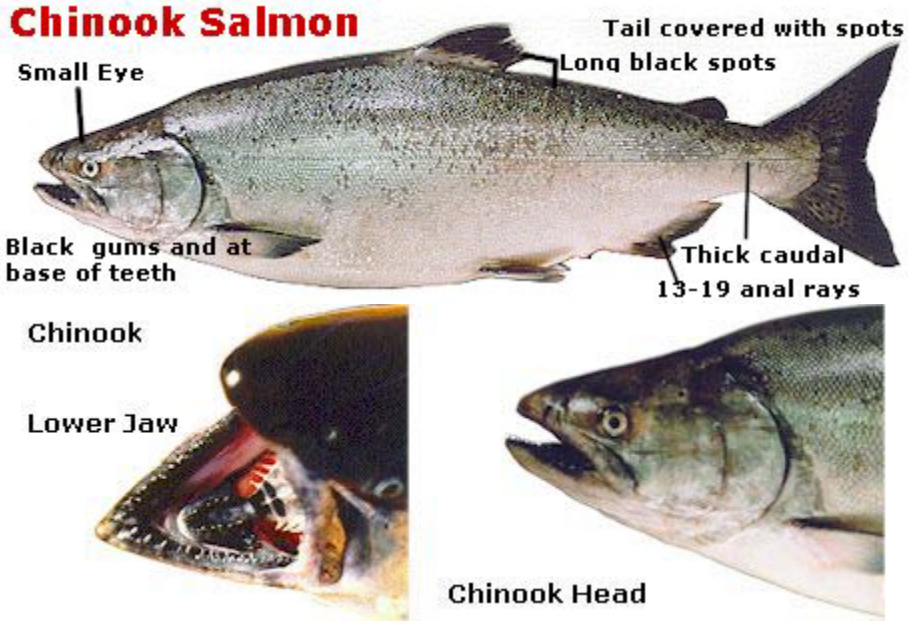
FIN NOMENCLATURE OF SALMON



Schematic of a salmon identifying fin names, location of *Key Area* for scale sampling and location of start and end points for measuring fork lengths.

CHINOOK

(***Oncorhynchus tshawytscha***)



The chinook is the largest of Oregon's salmon species, weighing in at 10-50 pounds. The chinook is a powerfully built fish with a football-shaped body and triangular head. While still feeding in salt water, the chinook has a dark back, with a greenish blue sheen. As it approaches fresh water to spawn, its color darkens and it develops a reddish hue around the fins and belly. It has large irregular spots on its back. The gums at the base of the teeth are black. The teeth of adult spawning males become enlarged and the snout develops into a hook.

Juvenile chinooks have narrow parr marks and a more deeply forked tail. The length of the base of the anal fin is greater than the base of the doral fin. There are no spots on the dorsal fin.

The major runs of Chinook salmon are in the larger rivers. Most of the chinook that return to the Willamette Basin are spring chinook (peak returns from April through June). There is a very small run of fall chinook that return in August and September.


Chinook Smolt

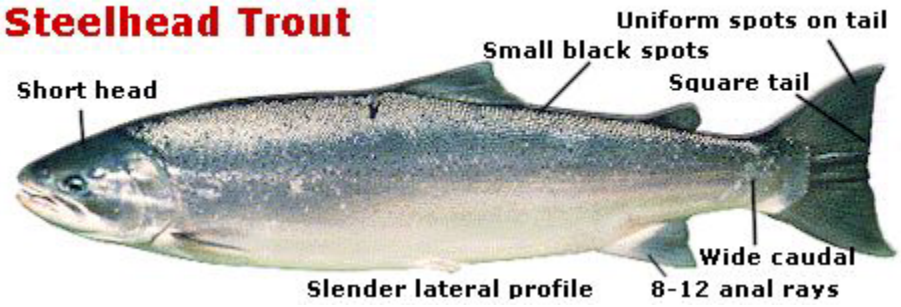

Spawning Male Chinook

Chinook returning to spawn vary greatly in age - from two to eight years. In southern areas, three, four and five-year-old chinook are most common, while farther north, five, six and seven-year-olds are more abundant.

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. Smaller two or three-year-old male fish returning to spawn are called jacks.

STEELHEAD

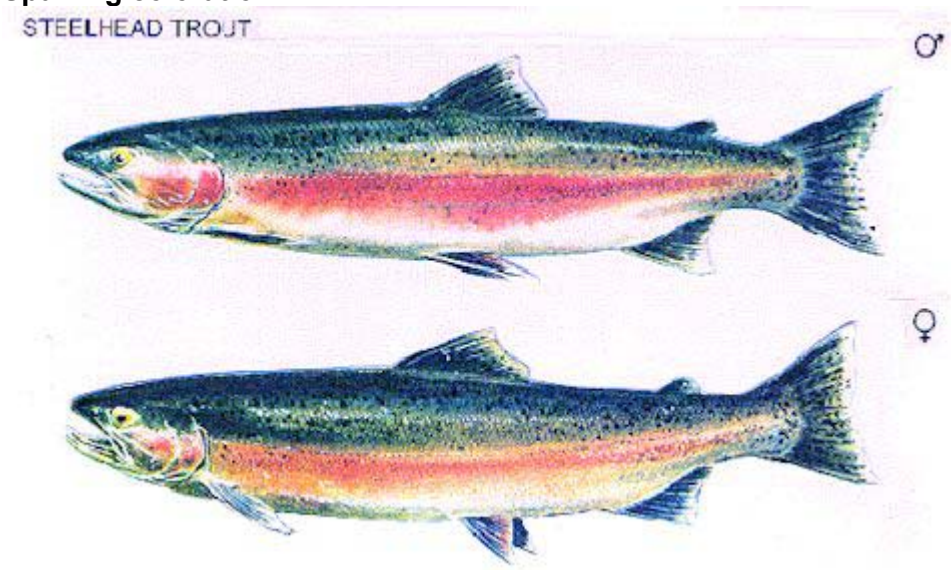
(***Oncorhynchus mykiss***)



Steelhead are more elongated than chinook. The jaw is longer in proportion to the head, and the head appears more round compared to the triangular shape of the chinook head. The jaw and mouth of a steelhead are all white. When still fresh from the ocean, steelhead are a silvery blue on the upper half of their bodies with silvery white bellies. As spawning approaches, steelhead develop a red streak along their sides that extends all the way to the gill cover. Steelhead have square tails with small uniform spots on both lobes of the tail. They also have small black spots on their backs.
Juvenile trout have round parr marks and a more rounded, blunt tail (although the tail is still slightly forked). The length of the base of the anal fin is less than the base of the doral fin, and there are distinct spots on the dorsal fin.

Steelhead trout spawn in larger streams and rivers. Mature adults enter rivers and larger streams year round, but generally concentrated as winter (November to May) and summer (May to October) runs. Steelhead may spawn more than once (3-40% of population). Eggs are laid in gravel redds prepared by female in tributary streams or in the inlet/outlet of a nursery lake from January to June. Juveniles rear in freshwater for 2-4 years prior to migrating to sea as smolts. Adults usually complete extensive feeding migrations in the Pacific Ocean before returning to spawn after 2-3 summers (range 1-4) in the ocean. Adults generally live to 6-8 years.

Spawing coloration:



Other Species:

Coastal Cutthroat Trout

(*Oncorhynchus clarki*)

Cutthroat trout coloration is variable but is generally dark green to greenish-blue on back, olive-green on upper flank, and silvery on lower flank and belly. It is distinguished from other trout and salmon species by bright red streaks located on the lower jaw, and the dense patterns of spots across the body and completely covering the tail. Those found at sea or recent migrants to freshwater are silvery with a bluish back, yellowish lower flanks and fins, and sparse spots. Adult cutthroat can weigh over 4 pounds, and can reach 20+ inches in length.

Rainbow Trout

(*Oncorhynchus mykiss*)

Rainbow trout vary in color from olive green to grey to bluish on their backs. Rainbows show the red or pink rainbow stripe at least when in spawning condition. The dorsal and caudal fins are heavily spotted and the pelvic and anal fins may be white-tipped. Spotting typically is irregular in shape and may be restricted to the area above the lateral line. Lake-dwelling fish are more silvery than riverine populations.

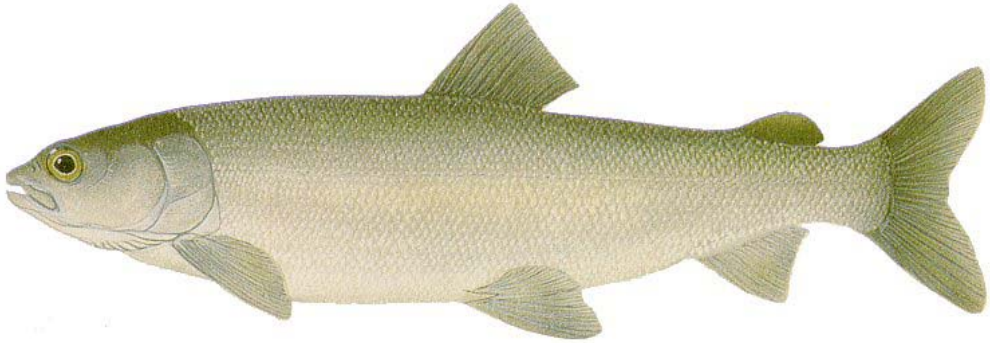
Bull Trout

(*Salvelinus confluentus*)

The bull trout has a large head and jaws in comparison to its body. No spotting is present on the dorsal fin. Bull trout have a distinctive dark olive green back with pale yellow or red spots on a dark background. A white margin on the leading edges of the ventral fins is often apparent. Their bellies are cream colored or white. Spawning males turn darker in coloration and the spotting becomes much more distinctive. Bull trout can live over 12 years and reach 30 pounds.

Mountain Whitefish

(*Prosopium williamsoni)*



Mountain whitefish have large scales, no spots and small mouths with no teeth. The general body color is a bronze-white or greenish white. The mountain whitefish maintains an average length of 8-12 inches and the world record weight is 4 pounds 7 ounces. The overall coloration is silvery with light or dark brown or olive on the back. This fish is in the Salmonidae family and has an adipose fin. Young whitefish have oval (almost round), widely spaced parr marks.

Northern Pikeminnow

(*Ptychocheilus oregonensis*)

The northern squawfish is a large minnow (family Cyprinidae). Body coloration is dark olive or greenish-brown on the back, fading to white on the sides and yellowish or milky on the belly. General body features include a flattened head, large terminal mouth, pharyngeal teeth, elongate body, clear fins, one dorsal fin, and a deeply forked tail or caudal fin.

Largescale Sucker

(*Catostomus macrocheilus*)

Largescale sucker has a long, moderately deep body with a subterminal “sucker” mouth. Their eye is located high on the head and their snout is bluntly rounded, with a depression ahead of the nostrils. They are blue-gray to olive above the lateral line and cream to white on their ventral surface. Their scales are large, particularly starting after the dorsal fin to the caudal peduncle.

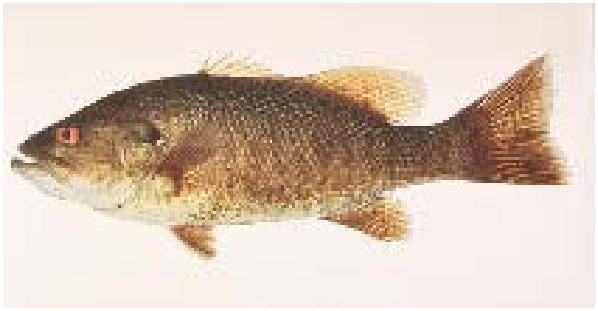
Largemouth Bass

(*Micropterus salmoides*)

Largemouth Bass are usually green with dark blotches that form a horizontal stripe along the middle of the fish on either side. The underside ranges in color from light green to almost white. The dorsal fin is almost divided, with the anterior portion containing 9 spines and the posterior portion containing 12-13 soft rays. The mouth is large with the maxillary extending beyond the eye.

Smallmouth Bass

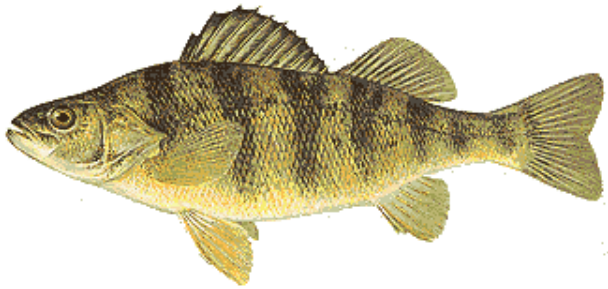
(*Micropterus dolomieui*)



Smallmouth Bass are moderately large, robust fish, most individuals are 8-15 inches long. The coloring is variable with size, condition and habitat but usually they range from brown to olive or green on the back with golden flecks.

Yellow Perch

(*Perca flavescens*)



This oval shaped fish is generally 4-10 inches long. The coloring varies with size and habitat but usually the back and head are a bright green to olive or golden brown, the sides are a yellow green to yellow with the color of the back extending down in about seven tapering bars.

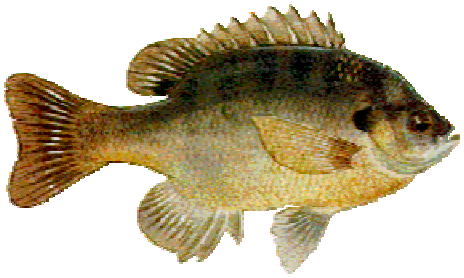
Brown Bullhead

(*Ameiurus nebulosus*)

Brown bullheads lack of light-colored band near its tail fin. You can distinguish brown bullheads from the yellow bullheads by its darker coloring. The brown bullheads have a spine that is serrated with numerous sharp, thorny protrusions.

Bluegill

(*Lepomis macrochirus*)

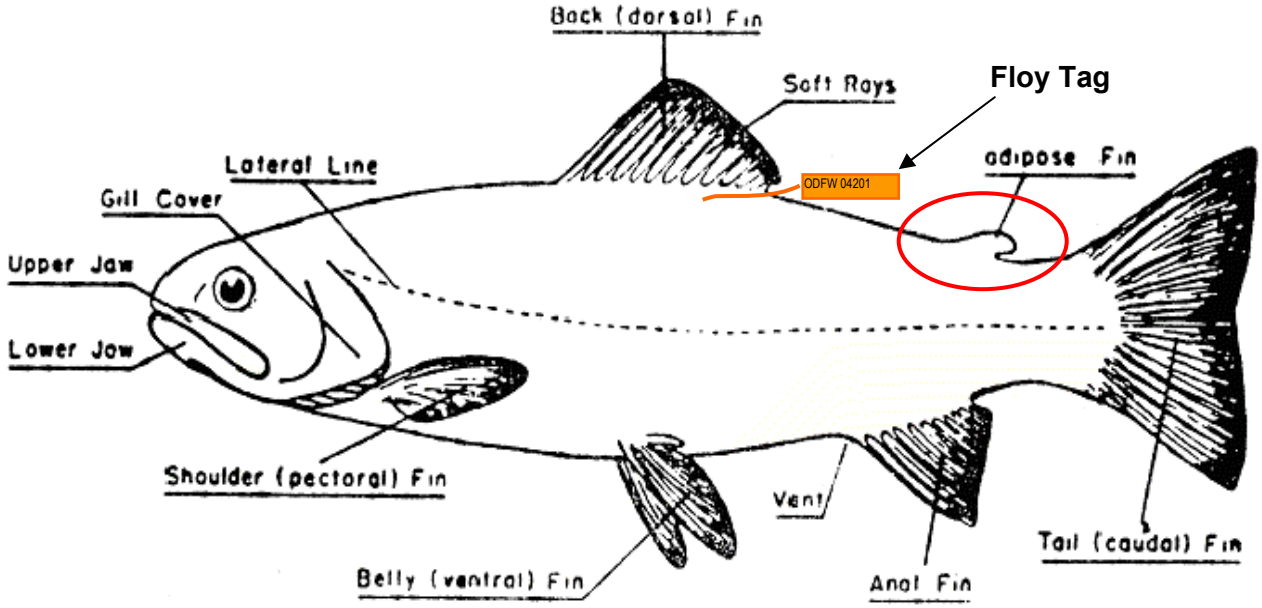


This is a very deep-bodied, laterally compressed, almost disc-like fish, usually 7 to 9 inches in length. Bluegill have a dark blue or black "ear" on an extension of the gill cover called the opercular flap, a prominent dark blotch at the base of the dorsal fin close to the tail, typically have olive-green backs with a blue or purplish sheen along the sides and faint vertical bars along the sides. Breeding males may have more blue and orange coloration on their flanks.

FIN CLIP MARKS AND TAGS

Fin Clips

All hatchery-reared chinook and steelhead produced in the Willamette Basin are marked with an adipose clip. You may occasionally encounter fish that have strayed from other hatcheries that have other or additional fin marks. Record all fin marks on your interview form.



Floy Tags

Throughout the season, hatcheries will transport salmon and steelhead that are caught in their traps back downstream so that anglers have another chance to fish for them. This process is referred to as recycling. Recycled fish are marked with a numbered floy tag, or a generic spaghetti tag. Tag colors vary among basins. When you encounter a floy tag or a spaghetti tag, enter a comment on your interview sheet, and record the color and number (if there is one) on the back of your data sheet. Keep a separate tally of tags that are recovered, and provide these data to the hatchery manager at regular intervals.

Coded Wire Tags

Recoveries of Coded-wire tags (CWT) in chinook salmon recovered from angler surveys are used to assess ocean survival, stray rates, and fishery utilization of hatchery stocks. CWT's are uniquely marked minute pieces of wire that are inserted into the fleshy part of a salmon snout prior to being released from hatcheries. These tags are the primary means of uniquely identifying groups of salmon released from hatcheries. Roughly 10% of the salmon from Oregon's hatcheries receive CWTs prior to being released. CWT recoveries are decoded by removing the snout and sending the snout to the CWT processing lab for dissection and reading. In addition to CWT's, adipose fin clips and other fin marks are used to identify hatchery salmon. The following procedures are used to sample CWTs and record recovery data:

We have two CWT detector wands that will be rotated among surveyors in order to detect and collect coded wire tags. You do not need to worry about collecting CWTs during the times that other crewmembers are using the wand. The CWT detectors are extremely expensive (each of the wands costs over $7,000.00). Please take good care of them! **If you need to leave the wand in the rig for some reason, lock it in the trunk**. Take care to keep it dry and clean (to the degree possible), and secure it so that it doesn't roll around in your rig. When you need to replace the batteries, be sure to seat the battery case fully before screwing on the cap. If the batteries aren't completely seated, the extra force exerted on the cap can strip the threads or even crack it. Like everything else associated with these, the cap is expensive too. There is a detailed manual including an instructional CD on the use of the wand inside its carrying case.

1. Carry Snout ID Labels with you at all times while surveying.

2. Scan all marked chinook for tags using the CWT wand. For very large fish, also scan inside the mouth. Avoid scanning inside the mouth otherwise; the teeth erode the wand.

3. When a CWT is detected, politely ask the angler if you may remove the snout. Explaining what you are doing and why may help to convince the angler to allow you to mangle their catch.

4. Record a comment on your interview form, then complete one line for each CWT chinook in the CWT Sampling Form, completing all applicable fields, including the snout ID code, and noting the apropriate code for the corresponding fin-clip.

5. **Remove the snout by cutting from just behind the eye to the back of the jaw.** Placing your fingers in the gill slits will help you hold the fish steady. Place the snout in a plastic snout bag with a snout ID label, and pace the bag in a cooler. Early in the season, identify someplace where you can keep snouts frozen until they are collected at the end of the season. Most ODFW offices and hatcheries have freezers for keeping samples. Keep your snouts together and clearly mark them. A small box or a large plastic bag would work well for this purpose.

6. At the end of the season, snouts will be picked up from the field offices and transported to Clackamas for processing. Coordinate with your field supervisor to make sure that snouts aren't overlooked. 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*. Make copies of the CWT data sheets and send them along with the snouts.

2004 SNOUT ID LABELS

NUMBER SERIES	CREW / LOCATION
	North Santiam
	South Santiam
	McKenzie
	Middle Fork

EXAMPLE OF SNOUT ID LABEL
(actual size)

04E 9999

Fishery and Area codes for the CWT recovery form

Basin	Fishery	Area
N. Santiam	27	301
S. Santiam	27	305
McKenzie	27	32
Middle Fk	27	30

CODED-WIRE TAG RECOVERIES FROM WILLAMETTE CREELS

Creel: _____

NO.	ID NUMBER ON SNOUT LABEL *(eg. 03E 1002)*	FISH-ERY	AREA	LOC. CODE 2-DIGIT CODE FROM CREEL	DATE MM/DD/YY *(eg. 06/05/03)*	SPECIES CODE	FORK LENGTH (IN)	FIN MARK CODE	SEX CODE	SNOUT TAKEN NO=0 YES=1	LOCATION NAME
1						1					
2						1					
3						1					
4						1					
5						1					
6						1					
7						1					
8						1					
9						1					
10						1					
11						1					
12						1					
13						1					
14						1					
15						1					
16						1					
17						1					
18						1					
19						1					
20						1					
21						1					
22						1					
23						1					
24						1					
25						1					

CODES:

SPECIES

1 = CHINOOK
2 = COHO
3 = STEELHEAD
5 = CHUM
0 = UNKNOWN

FIN MARKS

1 = DORSAL
2 = ADIPOSE
3 = ANAL
4 = L VENTRAL
5 = R VENTRAL
6 = L PECTORAL
7 = R PECTORAL
8 = L MAXILLARY
9 = R MAXILLARY

SEX

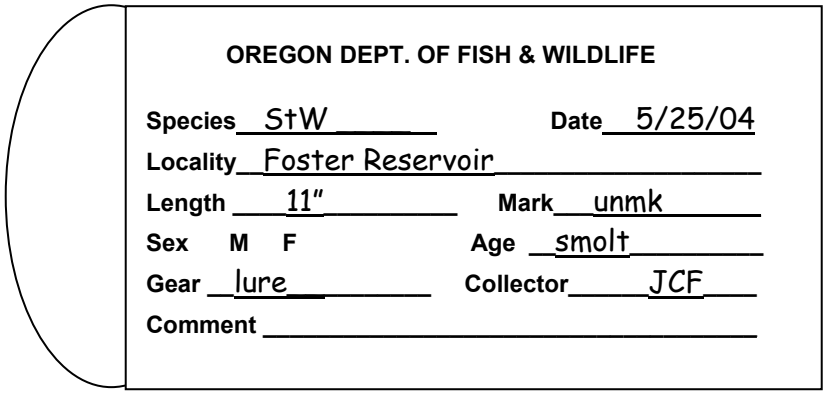
0 = UNKNOWN
1 = MALE
2 = FEMALE

Scale Sampling

Scale samples are used to assess age composition, hatchery-wild ratios, and growth rates of salmonids. Growth is recorded on scales in rings or circuli, not unlike those found on trees. When mounted and projected these circuli patterns can be read to reveal the life history of each fish sampled, including 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.

We will only collect scales from steelhead smolts recovered in the Foster creel. All steelhead smolts recovered in the creel should be sampled.

Example of a Scale Envelope with data fields completed



Filling Out the Scale Envelope

Species
Enter StW for winter steelhead.
Date
Enter month, day, and year.
Locality
Foster Reservoir.
Length
Enter length in inches.
Mark
Since these are naturally-produced smolts, there will not be any marks (if there is, it's not a smolt). Enter "unmk" for unmarked.
Sex
Ignore this field.
Age
Enter the age of the fish sampled (smolt).
Gear
Enter the gear that was used to catch the fish.
Collector
Enter your initials.

Comments

Scale Sampling Procedures

This procedure should be followed when sampling scales from any salmon or steelhead.

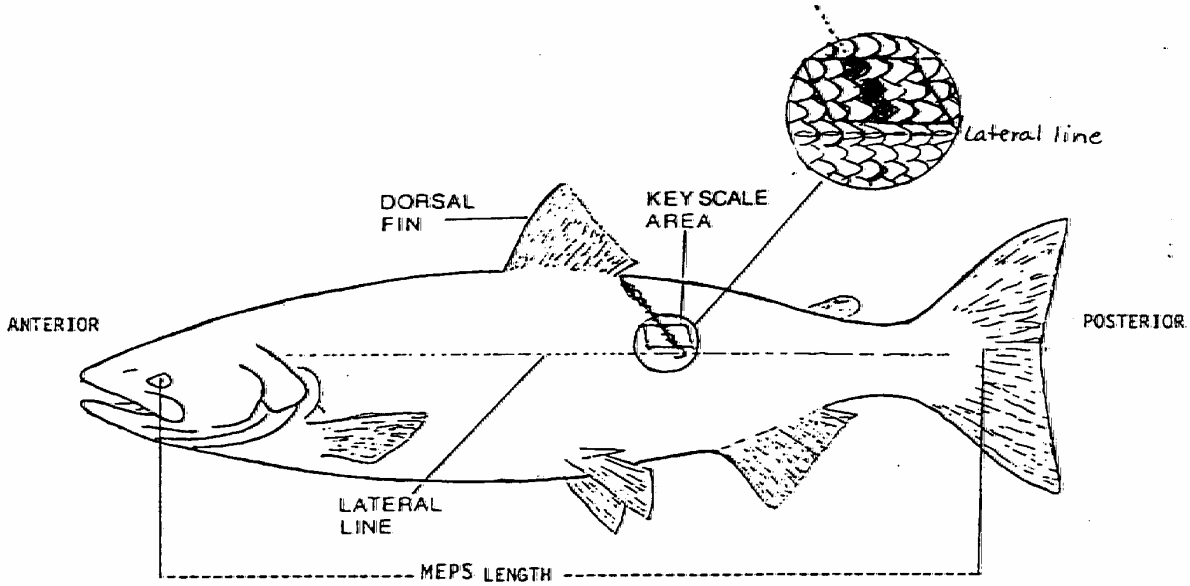
1. Locate key area by following the diagonal row of scales down and back from the posterior insertion of the dorsal fin to the first 3 scales above, but not including the lateral line. One to two scales in front of (anterior) and behind (posterior) these three scales are within the key area.

2. With forceps, pluck 4-5 scales from this area and place between the paper insert in the envelope. With juvenile fish, it is often easier to scrape the blade of a knife gently along the key area in the same direction as the scales. **Be very careful that the scales come from <u>the key area</u>**.

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

4. Write any pertinent information regarding that fish on the envelope.

5. 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.



Tips From Sampling Veterans

• **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.** Taking the sleeve completely out of the envelope not only takes more time, but causes wrinkling of the scales and can render them (and you) useless.

• **Don't clump or pile scales on top of one-another.** Clumping maintains moisture, which can cause the scales to decompose. This in turn makes your rig smell like dead fish. Yum.

PUBLIC RELATIONS AND SAFETY

When you are conducting surveys, you are personally representing the Oregon Department of Fish and Wildlife to anglers, and the general public. In order to ensure continuing public cooperation with our efforts, it is essential that we maintain a positive image and relationship with the public.

Always treat members of the public with respect. 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; your time and skills as a surveyor are valuable.

FISHING REGULATIONS

Obtain current copies of the ODFW fishing rules and regulations brochure, and keep them in the rig – people will often ask you for copies of the regulations. Review the local regulations. Bear in mind that you are not an enforcement officer. You are not trained in enforcement, you are not armed, and it is not safe or appropriate for you to act as an enforcement officer. Taking the role of an enforcer can also impair your ability to collect good data – we want to hear what's really going on out there, not just what people tell you to avoid getting in trouble.

On the other hand, the enforcement officers are stretched thin, and we also have a vested interest in protecting listed species. If you encounter somebody fishing illegally, use you best judgment on how to proceed. Often times it is just a matter of the angler not understanding or knowing the regulations. Suggesting a check of the regulations is often all it takes to get them to change their practices. If you creel someone with illegal catch, record the information from their fishing license and instruct them not to dispose of the fish. Do not confiscate their catch. Pass the information on to the State Police. If they refuse to give you their fishing license, don't push it. Try and get their vehicle license number if you can. Be careful about confrontations. In some cases you may not feel comfortable approaching certain individuals. Avoid them, but if possible try to obtain any relevant information, such as license plate, description, and what exactly they may have been doing. Report illegal activity to the state police. Do not put yourself in a dangerous position.

SAFETY

Don't let this section scare you – we have never had an incident where a creel surveyor was injured or lost, but it is important to have safety checks in place to prevent possible incidents, and to enable us to respond quickly if something should happen.

All creel surveyors have been issued cell phones and paired with a partner for safety. Although you will be working alone, your partner will work the same schedule and will be working in the same geographic area (surveyors in the McKenzie and the Middle Fork are the most far removed from each other). Check in with your partner at the beginning and the end of your shift. If your shift has ended, and you cannot find your partner, first allow ample time for them to complete an interview or reach a safe place to talk on the phone. If you have allowed ample time and have called several times to no avail, start driving their route and look for their rig. Continue to call periodically.

If you or your partner have a problem that requires assistance, do not hesitate to call the State Police, your supervisor, or other crew members. You will be provided with the work, cell and home numbers of all personnel on the project.

It is OK to avoid an individual who threatens you – excluding one person from the survey won't affect the data that much. Do not put yourself in a dangerous position.

All employees are required to have an emergency medical form on file. Report any on-the-job injuries to your supervisor immediately. A Report of Accident form needs to be completed for every on-the-job injury, preferably within 24 hours of the incident. If medical attention is required a SAIF Workers' Compensation Claim Form 801 also needs to be completed.

Vehicle accidents need to be reported to DAS as soon as possible. An accident form also needs to be filled out. This form is located in the vehicle packet of each DAS vehicle.

STATE VEHICLE USE

- State vehicles are for official use only, and must be kept at state facilities (not at home).
- Children and pets are not allowed in vehicles.
- Smoking in vehicles is prohibited.

Fuel

- Use State of Oregon Voyager credit card.
- Make sure vendor will take card prior to purchase.
- Vendor needs to record odometer reading for each fuel purchase.

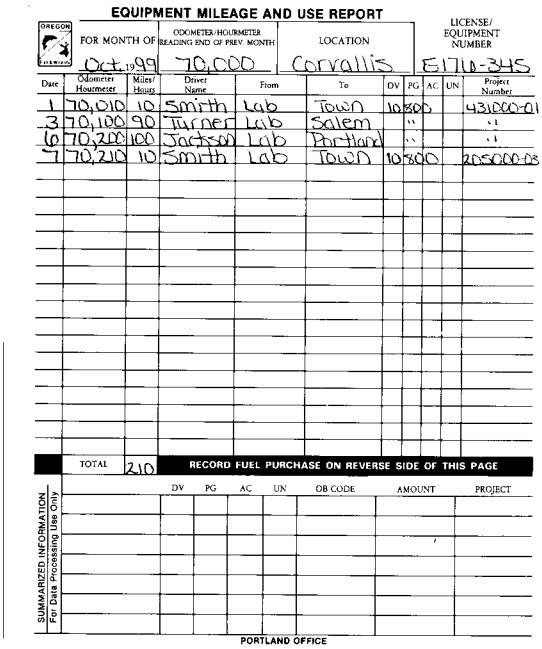
Maintenance and Repairs

Have vehicle maintained on schedule (multiples of 5000 miles)

- Pre-authorize any service or repair by calling **1-800-378-0077** (0700-1800 M-F)
- If you need a tow-truck – call Motor Pool. If you lock your keys in the truck, do not break a window. Call for a locksmith – most towing companies or police officers can help. It is a good idea to make a spare set of keys and leave them with your partner or in a magnetic hide-a-key box hidden on your rig.

ODFW Mileage Report

- Record from the first of the month to the last day of the month.
- At the end of the month give the white and yellow copy to your crew chief or send it to Lori Turner at the Corvallis Research Lab.



EQUIPMENT MILEAGE AND USE REPORT

OREGON DEPARTMENT OF FISH AND WILDLIFE

FOR MONTH OF: Oct. 1999 | ODOMETER/HOURMETER READING END OF PREV. MONTH: 70,000 | LOCATION: Corvallis | LICENSE/EQUIPMENT NUMBER: 61710-345

Date	Odometer Hourmeter	Miles/ Hours	Driver Name	From	To	DV	PG	AC	UN	Project Number
1	70,010	10	Smith	Lab	Town	10800				431000-01
3	70,100	90	Turner	Lab	Salem	"				"
6	70,200	100	Jackson	Lab	Portland	"				"
7	70,210	10	Smith	Lab	Town	10800				205000-08
	TOTAL	210								

RECORD FUEL PURCHASE ON REVERSE SIDE OF THIS PAGE

SUMMARIZED INFORMATION For Data Processing Use Only

DV	PG	AC	UN	OB CODE	AMOUNT	PROJECT

PORTLAND OFFICE

Cell Phones

Cell phones are for work and emergency use only 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.

Personnel Policies and Procedures

Work Periods

Your normal workweek is 40 hours, beginning on Sunday and ending on Saturday. Your work schedule is irregular, meaning that the days you work during this period are not fixed. Fill out a weekly Report of Operations to record your work hours and general work activities. It is important to keep track of your hours throughout the week and to keep them to 40. You are not approved for overtime. If you leave the survey a little early one day because there are no anglers in the area, make up the time on another day of the week - maybe taking care of vehicle maintenance or making copies. If you have to work later than you expected one day of the week (perhaps an interview took longer than you expected or you had trouble with your vehicle), leave early another day that week. If by some strange combination of cosmic forces you are forced to work late on the last day of your week (Saturday), contact your field supervisor.

Holidays and Leave

There are 2-3 paid Holidays during the survey season

n: Memorial Day, Independence Day, and Labor Day. ODFW employees earn 8 hours of vacation and 8 hours of sick leave per month, however vacation cannot be used until an employee has worked 6 months. Please submit requests for leave as early as possible so that we can adjust schedules to maintain the integrity of our survey sample. Employees will be paid unused vacation leave upon termination.

Benefits and Insurance

All employees appointed for 90 days or longer receive a monthly insurance contribution that can be applied to a “Cafeteria Style” benefits package. Work related injury or illness is covered through employer provided workers compensation insurance.

Safety

All employees are required to have an emergency medical form on file. Report any on-the-job injuries to your supervisor immediately. A Report of Accident form needs to be completed for every on-the-job injury, preferably within 24 hours of the incident. If medical attention is required a SAIF Workers’ Compensation Claim Form 801 also needs to be completed.

Vehicle accidents need to be reported to DAS as soon as possible. An accident form also needs to be filled out. This form is located in the vehicle packet of each DAS vehicle.

Uniform Clothing

Employees are required to wear uniforms while working in the field. Uniform items displaying Department logos are not to be worn during personal business or recreation.

There is currently a freeze on new uniform purchases due to the state's budget difficulties. Uniform requests must be approved by the Fish Division director. We will file a uniform request memo for all members of the project near the beginning of the season.

Pets and Volunteers

Pets are not allowed to accompany employees during fieldwork. People who are not employed by ODFW may accompany employees as volunteers for fieldwork. A completed and signed volunteer form needs to be on file prior to any work with volunteers.

Weapons

Possession or use of any weapon is strictly prohibited while on ODFW property (including vehicles) or while engaged in official agency business. This applies to both employees and volunteers.

Report of Operations Form (example)

Complete daily to log activities and work hours

OREGON DEPARTMENT OF FISH AND WILDLIFE
REPORT OF OPERATIONS

Prepared by L. WILKINSON 12

Location ASTORIA/SEASIDE **For the Week Ending** 12/07/97

Date	Activities
MONDAY Month: 12 Date: 01 (8)	0800-1600 Foley upper, mid, lower + E fork Foley / paperwork in office
TUESDAY Month: 12 Date: 02 (8)	0800-1600 Miami upper + lower, Prouty 1+2 moss 1+2, + Peterson
WEDNESDAY Month: 12 Date: 03 (8)	0800-1600 N fork Nehalem, Soapstone 1+2 Salley, Sweethome + Gods Valley
THURSDAY Month: 12 Date: 04 (8)	0800-1600 Ecola – trib A, W fork 2+4 Arch Cape Short Sands – car trade w/ Joe – hatchery vehicle
FRIDAY Month: 12 Date: 05 (8)	0700-1500 Coal cr, W fork Coal 1+2, Bobs + Anderson
SATURDAY Month: 12 Date: 06	OFF
SUNDAY Month: 12 Date: 07	OFF
(40)	

OREGON DEPARTMENT OF FISH AND WILDLIFE
REPORT OF OPERATIONS

Prepared by _____

Location _____ For the Week Ending _____

Date	Activities
MONDAY	
Month:	
Date:	
TUESDAY	
Month:	
Date:	
WEDNESDAY	
Month:	
Date:	
THURSDAY	
Month:	
Date:	
FRIDAY	
Month:	
Date:	
SATURDAY	
Month:	
Date:	
SUNDAY	
Month:	
Date:	

Phone Listings

NAME	LOCATION	CELL	OFFICE	HOME
Jason Tavares	N. Santiam	(541) 231-3412	(503) 373-1658 x29	(503) 508-3028
Greg Gilham	N. Santiam	(541) 602-5914	(503) 373-1658 x29	(503) 362-3044
Donna Sharp	S. Santiam	(541) 231-5848		(541) 935-5229
Bob Pucillo	S. Santiam	(541) 602-0009		(541) 752-8454
Deanna Emig	Foster Reservoir	(541) 990-1883		(541) 754-8490
Lisa Riley	M Fk / McKenzie	(541) 231-7174		(541) 747-2854
Wendy MacLean	McKenzie	(541) 231-3268		(541) 510-1283
Brian Cannon	Santiam	(541) 231-3194	757-4263 x247	(541) 752-1189
Mike Hogansen	M Fk / McKenzie	(541) 736-8791	896-3294 x227	(541) 736-8791
Julie Firman	Corvallis Research		757-4263 x249	(541) 738-6356
Mary Buckman	Corvallis Research		757-4263 x229	
Brent Reed	Leaburg		896-3294 x227	(541) 607-9027
Jon Kluck	Santiam		757-4263 x247	(541) 753-6741
Bart DeBow	Santiam	(503) 551-4058	373-1658 x29	(503) 378-0000

NAME	TITLE	LOCATION	NUMBER
Steve Mamoyac	District Biologist	Corvallis	(541) 757-4186 x249
Wayne Hunt	Assistant District Biologist	Salem	(503) 373-1658 x26
Gary Gallovich	STEP Biologist	Corvallis	(541) 757-4186 x251
Bart DeBow	STEP Biologist – job rotation	Corvallis	(541) 757-4186 x251
Jeff Ziller	District Biologist	Springfield	(541) 726-6515 x26
Kelly Reis	Assistant District Biologist	Springfield	(541) 726-6515 x29
Erik Moberly	Assistant District Biologist	Springfield	(541) 726-6515 x28
Terry Jones	Manager – Marion Forks Hatchery	Idanha	(503) 854-3522
Bill Nyara	Manager – S. Santiam Hatchery	Sweet Home	(541) 367-3437
Kurt Kremers	Manager – McKenzie Hatchery	Leaburg	(541) 896-3513
Tim C. Wright	Manager – Leaburg Hatchery	Leaburg	(541) 896-3294
Gary Yeager	Manager – Willamette Hatchery	Oakridge	(541) 782-2933
Tim W. Wright	Technician – Dexter Pond	Fall Creek	(541) 937-2714
Tim Schamber	Manager – Roaring R. Hatchery	Scio	(503) 394-2496
Lisa Borgerson	Scale Reading Project Leader		(541) 757-4263 x232

Phone Listings (continued)

NAME	TITLE	LOCATION	NUMBER
Dispatch	**State Police**		**1-800-452-7888**
Kenneth Allison	Sergeant	Salem	*(503) 931-7270*
Guy Oliver	Senior Trooper	Salem	*(503) 559-4797*
Michael Dingeman	Senior Trooper	Salem	(503) 378-3387
Craig Ball	Trooper	Salem	(503) 378-3387
Mari Branson	Trooper	Salem	(503) 378-3387
Salem Dispatch			(503) 375-3555
Andrew Heider	Trooper	Albany	(*541) 409-1865*
Adam Turnbo	Trooper	Albany	(503) 967-2021
Tom Hulett	Sergeant x206	Springfield	*(541) 954-5401*
Klye Elmenhurst	Senior Trooper x410	Springfield	(541) 726-2536 x410
Jeff Hagerdorn	Senior Trooper x409	Springfield	*(541) 953-3676*
Marshal Maher	Trooper	Springfield	(541) 726-2536
Vonn Schleicher	Trooper x442		