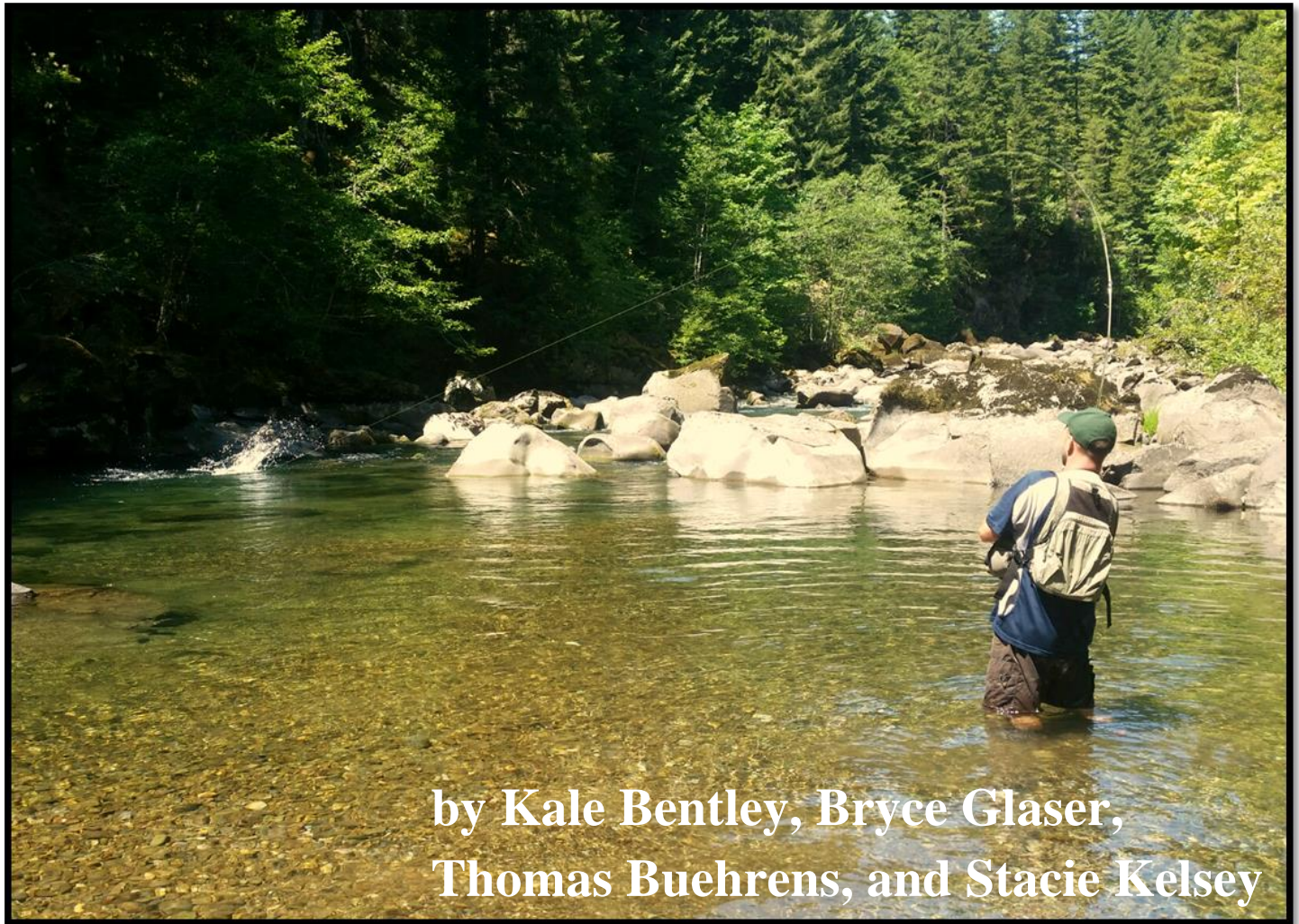


WDFW Steelhead Creel Protocol for Lower Columbia River Tributaries, 2014 - 2017



by Kale Bentley, Bryce Glaser,
Thomas Buehrens, and Stacie Kelsey



Washington
Department of
**FISH and
WILDLIFE**

**Washington Department of Fish and Wildlife Steelhead Creel Protocol
for Lower Columbia River Tributaries, 2014 – 2017**

Washington Department of Fish and Wildlife
2108 Grand Boulevard, Vancouver, WA 98661

Kale Bentley
Fish Science Division

Bryce Glaser
Region 5 Fish Management

Thomas Buehrens
Fish Science Division

Stacie Kelsey
Region 5 Fish Management

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Background and Rationale

The mission of the Washington Department of Fish and Wildlife (WDFW) is to preserve, protect and perpetuate fish, wildlife, and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities. Specifically in the lower Columbia River (LCR), WDFW's goal is to recover populations of steelhead (*Oncorhynchus mykiss*), which are listed as threatened under the Endangered Species Act (ESA) in the LCR distinct population segment (DPS), while simultaneously managing rivers for recreational fishing opportunities through harvest of hatchery fish and some catch and release (i.e., non-retention) of wild fish. To meet these goals, WDFW must maintain the impacts these fisheries have on wild stocks of steelhead within levels authorized by Fisheries Management and Evaluation Plans (FMEP). By achieving this, the rebuilding of wild stocks can progress and fishing opportunity can be maximized. Therefore, WDFW is using angler surveys to monitor the impacts recreational fisheries have on wild stocks of steelhead in the LCR.

As recreational angling has increased in popularity over time, angler surveys have become an established method to estimate fishing pressure and catch. Angler surveys generally fall into two categories: (1) "on-site" surveys such as roving creels and (2) "off-site" surveys such as phone interviews or catch cards. The advantages of estimating catch through on-site creel surveys is that the data collection is almost instantaneous and does not suffer from the vagaries of anglers' memory and knowledge relative to off-site methods. Additionally, creel surveys can provide information on angler effort, catch rates, fishing location, gear type, hooking location, and other biological information from harvested fish. A disadvantage of creel surveys is that they are typically more expensive to conduct than off-site collection methods.

Over the last fifty years, WDFW has been using an annual, off-site Catch Record Card (CRC) system to monitor the impacts of recreational steelhead fisheries in the LCR. However, the CRC system is only focused on capturing catch information from retention fisheries. Thus, the CRC system does not currently provide scientific information needed to assess risk to wild steelhead populations posed by their handle in both indirect fisheries targeting hatchery steelhead and directed (catch and release) fisheries targeting wild steelhead. In order to fill this data void, WDFW began implementing steelhead creel surveys in LCR tributaries and has developed a plan for continued implementation on a three-year rotating basis.

Overall, the specific objectives of the steelhead creel surveys in the LCR are to: (1) Quantify monthly, seasonal (summer and winter), and yearly patterns of effort and catch for hatchery and wild steelhead using creel surveys; (2) Compare CRC and creel estimates of hatchery catch and determine the feasibility of using CRC estimates of hatchery catch to estimate wild catch based on relative handle rates in co-mingled fisheries; and (3) Estimate wild population impact rates resulting from non-retention sport fisheries (i.e., hooking mortality) as well as determining the relationship between gear type and hooking location for use in studies of non-retention mortality.

Creel Surveys

A creel survey is an on-site angler survey during which anglers are interviewed, catch and effort are enumerated, and harvested fish are examined by the creel technician. A creel survey that follows accepted statistical sampling theory in an attempt to achieve estimates of interest that are unbiased (i.e., spatially and temporally representative) and precise is referred to as a programmed creel survey. During a creel survey, the two primary objectives for a creel technician are to interview anglers and conduct effort counts (see “Components of a Creel Survey” section). There are many different creel survey designs that can be used to interview anglers and enumerate effort, but the specific approach used for a particular waterbody will largely depend on the size of the fishery area and number of angler access points along a river.

The most commonly employed creel survey designs are the “access point” and “roving”. The access point creel survey design is most appropriate when a particular river has only a handful of defined access locations (e.g., boat ramps or small parking lots) that both bank and boat anglers must use to access the fishery. Under these circumstances, creel technicians wait at a (few) access site(s) and interview anglers once they have completed their fishing trip. However, a roving creel survey design is often the most appropriate when anglers can access a fishery from many points along a river over a larger area. Here, creel technicians move throughout different fishing areas and interview anglers at various locations regardless of whether their trip has been completed. Often a fishery has both predictable access locations, but there are still too many access points to accommodate a traditional access point survey. Therefore, the roving creel design will typically be used for steelhead creel surveys in LCR tributaries. These surveys are referred to as “roving-roving” creel surveys with the two roving parts referring to survey method used to both interview anglers and enumerate effort.

Components of a Creel Survey

The three principle components of any creel survey are the creel schedule, angler counts, and angler interviews (contacts). Tie-in counts are an additional component that may be necessary if angler counts do not cover (i.e., census) the entire area open to fishing. Each of these components must exist to produce valid estimates of effort, catch rates, and catch. Therefore, it is critical that each of these components is collected in accordance to the outlined methods in this manual in order for useful and valid estimates to be produced. If proper conditions do not exist for a survey to be conducted correctly, it is better to forego the scheduled survey until such time that it can be executed properly. Collecting incomplete data can lead to biased estimates. In turn, management decisions based on those estimates will be compromised and unsubstantiated. If questions regarding survey methods or conditions arise **DO NOT HESITATE** to contact a project supervisor.

Creel Schedule

The creel schedule has two distinct functions, which are defining the survey length and period, and providing a sampling structure for the river (fishery) of interest. The survey length is defined as the start date of the survey period to the last day of the survey period. The survey period is typically the first day of the fishing season (e.g., late May) until the last day of the fishing season (mid-March), but will vary depending on the river system and specific study objective.

The sampling structure is broken down into two stages. The first stage consists of selecting sample days, and the second stage consists of selecting start and count times. Reductions in variances are achieved, and more meaningful results are produced, when the sample period is stratified into smaller time frames that may have differing fishing pressure. For instance, weekends and holidays typically have higher fishing pressure than normal weekdays. Therefore, if half of the total fishing effort occurs on weekend days, then half of the creel surveys days should also occur on weekend days.

A stratified random survey design is used for conducting creel surveys in LCR tributaries, following the methods outlined in Malvestuto et al. (1978), Pollock et al. (1994) and Hahn et al. (2000). First, surveys are stratified by day-type (weekday or weekend). Typically, four to five sample days are randomly selected per week consisting of two to three weekdays and two weekend days. Second, surveys are stratified within each sample date by shift (AM or PM) and a random survey start time is selected within that shift. The length of time the creel technician spends on the river conducting angler counts and interviews is up to the project lead. However, these creel survey periods should encompass the same time periods anglers are present on the river. This typically means that creel surveys should occur sometime between dawn and dusk. Lastly, angler count start times are selected within each shift (see following section).

Angler Counts

Angler counts are designed to accurately estimate angler effort by enumerating the number of anglers on a given river on the sample day. Since it is impractical, and often impossible, to enumerate the total time every angler spent fishing on a given day, angler counts are used to estimate angling pressure. The goal of an angler count is to provide a temporally representative “snap-shot” of fishing effort on a given day and time. Generally, effort counts are conducted in specific reaches along the length of river and these reaches are surveyed on each sample day to serve as an index of effort. During an effort count, surveyors enumerate bank and boat anglers that are fishing in the select index reaches. Effort in index reaches is expanded to the entire fishing area of a river through the use of “tie-in” surveys (see section below).

Effort during a roving survey can be measured in two ways: with an “instantaneous” count or a “progressive” count. Instantaneous counts are designed to enumerate bank and boat anglers quickly from an airplane, vantage point, fast-moving boat, or an automobile. Technically, these counts are not truly instantaneous but should occur in a relatively short period

of time. If all sampling areas cannot be viewed from vantage points or surveyed quickly, and the count occurs over an extended period of time, the count is termed progressive. During a progressive count, bank and boat anglers are enumerated as the creel technician moves through the sample area. The time division between an instantaneous and progressive count is not concrete. In general, a count that lasts less than one hour can be considered instantaneous while a count that lasts longer than one hour is considered progressive. The main difference between the two count types is that during a progressive count there is likely a change in both angler numbers and locations.

Effort counts should be conducted on each sample day. Determining the “ideal” number of effort counts to be conducted on each day will depend on both the within day variability of angler effort, the time allocation of the creel technician’s duties (i.e., effort counts vs. interviews), and the desired precision of the effort and catch estimate. In theory, conducting more effort counts will lead to a more accurate estimate of fishing effort. However, there is a trade-off between time spent conducting effort counts and time spent interviewing anglers. At minimum, two effort counts should be conducted each day.

Within a day, angler count times should be scheduled to temporally represent angler effort based on a sampling distribution. The intent is to obtain counts of anglers at certain times throughout the sample day that would lead to an “average” representation for all fishing hours available. Therefore, either systematic or random count time selection should be used. In both cases, the sample day is divided into equal time periods, based on the number of counts. For instance, if the sample day is 12 hours long, and three count times are selected, the sample day is split into three equal time periods of four hours each. If a random sample time selection is chosen, the three count times are randomly selected from within each of the four-hour time periods. If the systematic count time selection is chosen, the first sample time is randomly selected from within the first four-hour time period, and the following two sample times are set at equivalent intervals from the first sample time, in the subsequent two four-hour time periods. The systematic sample is preferred to avoid randomly selecting count times with close intervals and will generally decrease the odds of obtaining a biased estimate.

Angler Interviews

In order to obtain accurate estimates of angler use and harvest, angler interviews must be a representative cross-section of the population of anglers on a given day. Depending on the size of the fishery, there will certainly be days in which angling pressure is low enough to allow for a near census of all anglers. However, there will be many days in which it is not logistically possible to interview all angler parties. Therefore, on these days, it is absolutely critical that angler interviews (contacts) are representative of the overall angler pool. To ensure a representative sample is collected, interviews need to be conducted “randomly” from the available pool of anglers in each category. One common error creel technicians often make is to put more interview emphasis on anglers that have caught fish. Interviewing anglers that have not

caught any fish is equally important as interviewing those that have caught fish. Because angler interviews are used to estimate catch rates, the creel technician only needs to pick anglers randomly.

Each category of fishermen (bank, boat, other) should be interviewed in proportion to their counts. For example, if on a given day, 60% of the anglers are bank fishermen and 40% are boat fishermen, then the interviews should consist of roughly the same proportions of each of the fisherman categories. Additionally, anglers should be interviewed in proportion to their approximate spatial distribution. Here, creel technicians should use information gathered from their angler counts to decide how to “distribute” angler interviews. For example, if particular river has 15 miles of fishable area and approximately 10%, 65%, and 25% of anglers fish use the lower 5 miles, the middle 5 miles, and the upper 5 miles, respectively, then the number of interviews conducted in each “section” should reflect roughly the same proportion.

All fishermen categories identified in the counts should have at least some interview information. Angler counts without corresponding interviews for a particular angler category will result in zero estimates of catch for that fisherman category. A general rule is that a creel technician should interview at least 20% of the available fishermen for each category. An exception would be if there are hundreds of fishermen within each category, in which case as many should be interviewed as possible within the existing time constraints. If all anglers cannot be interviewed, creel technicians should pick a route and interview every 2nd, 3rd, 4th, etc. angler or group.

Interviews conducted during roving creel surveys will likely consist of both incomplete (i.e., anglers will continue to fish after the interview) and completed interviews. Completed trip interviews are preferred as the information collected from the angler is representative of the entire trip. Additionally, completed trips allow for the calculation of an average trip time by angler category, which is needed to estimate total fisherman. However, incomplete trip interviews are still very valuable and due to the inherent design of roving creel surveys, the majority of interviews will be from incomplete trips. In general, completed trip contacts should comprise at least 10% (preferably more) of all contacts. One way to ensure adequate completed trip contacts is to contact anglers as they are leaving the fishing area, such as at boat launches or parking lots.

When interviews are made, it is possible to interview a party of fishermen all at once as a single contact. For instance, if there are three fishermen in a boat and they all fished for two hours, then the anglers in the contact will be three, and the total hours fished will be six. Their catch and harvest information will be recorded all as one contact. Interviewing parties rather than individuals is absolutely critical if the counts are made by counting boats, rather than anglers in boats. If individual boat anglers are interviewed, but only boats are counted, the boat angler estimates will be grossly underestimated. In general, it is best to interview parties of fishermen because they are all usually fishing in a similar manner for a similar duration and may

even be sharing the same equipment. It is very important to be consistent in recording this information.

Tie-in Counts

In order to produce unbiased estimates of angler effort, the area surveyed during daily angler counts must be representative of the entire fishery area. One way to achieve this is for the daily angler counts to encompass (i.e., census) the entire area open to recreational steelhead fishing. While this may be possible for some fisheries in the LCR, census counts will often be impractical or impossible, as the entire fishery area may be too large to sample “instantaneously” or proportions of the fishing area may be unsurveyable (e.g., private property). Therefore, an alternative to a census count is to sample smaller index reaches within the fishery and extrapolate these index counts to make total effort estimates. In order to do so, “tie-in” counts are needed (Figure 1).

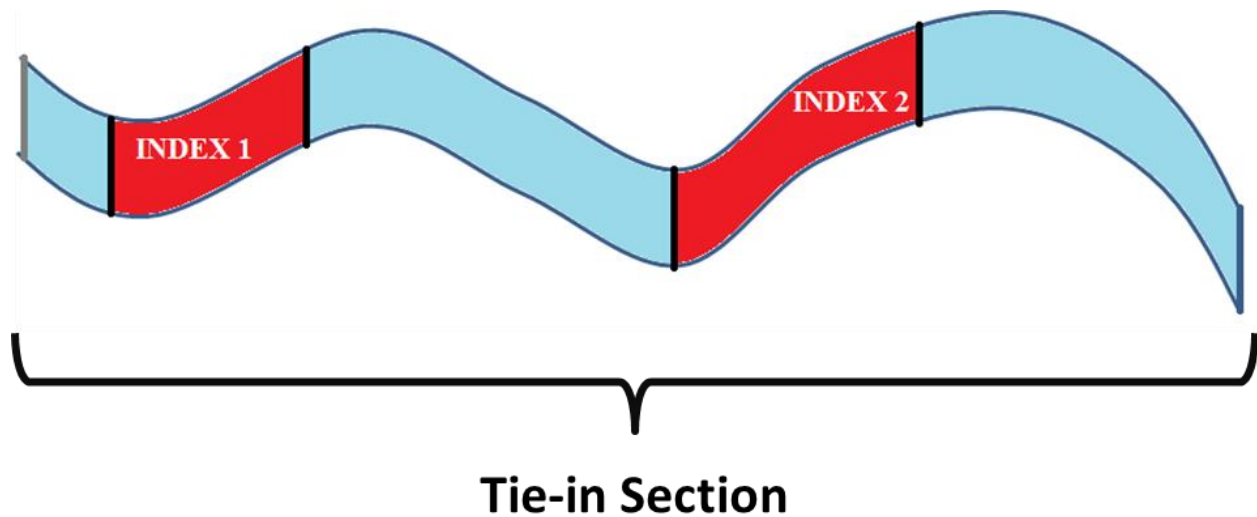


Figure 1. Graphic example of index (red) and tie-in (red + blue) effort count sections. Index and tie-in counts should be conducted simultaneously, instantaneous as possible, and consistent among surveys. Note: index reaches are surveyed on all creel survey days while tie-in surveys are performed on a sub-set of creel survey days.

The purpose of tie-in counts is to develop a relationship between angler effort that occurs in the standardized index reaches relative to angler effort throughout the entire river that is open to fishing. By developing this relationship, the daily angler effort counts that are conducted in (smaller) index reaches can be expanded, or rather tied into, angler effort across the entire spatial extent of the fishery. Typically, tie-counts are conducted from either a plane or boat so that the survey is relatively instantaneous and covers the entire fishery area. Sometimes there are logistical constraints whereby sections of the river are temporally or permanently unsurveyable even during a tie-in survey (e.g., high flow conditions for float tie-ins and heavy vegetation or canyons for flights). When this occurs the estimate of fishing pressure would not include any potential effort in the inaccessible area(s).

Unlike daily angler counts, which are usually conducted multiple times per sample day, tie-counts are done periodically throughout the entire survey period. The total number of tie-in counts needed for a particular river system and year will depend on many factors, including (1) budget/cost, (2) variability in tie-in results among surveys, and (3) desired precision of catch estimates.

Data Analysis

The data collected from a programmed creel survey allows for the estimation of many parameters of interest, including effort, catch per unit effort (CPUE), and catch. There are many different methods that can be used to make these estimates. Below is an example of how estimates of effort, CPUE, and catch can be made using method of moments calculations.

Estimate of Daily Effort

Angler counts, along with the day length, provide the necessary data to make estimates of total effort (i.e., hours fished) for a given day. Keep in mind that this is not the same number as is described in the angler interviews (contacts) when the creel technician is asking individuals how many hours they fished. Daily effort estimates describe how many total angling-hours are occurring based on the counts of anglers. The total daily effort for a given category of fishermen is equal to the day length multiplied by the average number of fishermen in that category. Each category of anglers (bank or boat) will have their own total daily effort for the day.

Example: A creel survey was conducted on March 2nd, which has a 12-hour day length (dawn to dusk), and bank angler effort was sampled three times using a systematic random count time selection.

Count Time	Bank Angler Count
9:00 am	2
1:00 pm	4
5:00 pm	1

Total bank anglers counted: $2 + 4 + 1 = 7$ anglers
 Average bank anglers per count: $7/3 = 2.33$
 Hours fished for the day* $2.33 * 12 = 27.96$ angler-hours

*Assuming anglers only fish between dawn and dusk (i.e., no night fishing).

Estimate of Effort for a Period

Daily estimates of hours fished are used to calculate hours fished for a specified period of time (i.e., stratum). Estimates can be aggregated many ways (weekly, bi-weekly, monthly), but are commonly grouped by weekday-type (weekends and weekdays) within a given month. To calculate the expanded effort for a defined period, daily estimates for each sample day are averaged, and multiplied by total number of days (i.e., sampled and non-sampled) in the period.

Example: Creel surveys were conducted on four weekend days in March, which consisted of a total of 10 weekend days (5 Saturdays and 5 Sundays).

Sample Day	Estimated Daily Effort (Angler-Hours)
March 2	27.96
March 15	60.0
March 23	327.96
March 29	327.96

Estimated Total Effort on Sampled Days: $27.96 + 60.00 + 327.96 + 327.96 = 743.88$

Total Estimated Effort for Weekends in March*: $(743.88 / 4) * 10 = 1859.70$ angler-hours

*Estimate is for all 10 weekend days in this stratum, even though only four were sampled.

Estimate of Daily Angler Catch Rates (CPUE)

Catch per unit effort (CPUE) is typically measured as the number of fish caught per hour based on information from interviews (contacts). CPUE is calculated one of two ways, either by (1) averaging the pooled total number of fish caught by the pooled total hours fished across all anglers for a given day and angler type (known as the “ratio of the means”), or (2) averaging the number of fish caught by total hours fished for each angler and then dividing by the total number of anglers interviewed for a given day and angler type (known as the “mean of the ratios”). This value is calculated for each species of fish within a specific stratum, and can also be broken down by fish origin (wild vs. hatchery) and fate (harvest vs. released). For simplicity in the following example, the ratio of the means calculation was used in a situation in which only one species and origin of fish (e.g., wild steelhead) were available, and all were caught and released.

Example: Four bank anglers were interviewed on March 2nd.

Angler/Group	Fish caught by angler/group	Hours fished by angler/group
1	2	3
2	5	1
3	3	4
4	10	8

Catch per hour would then be simply the total of fish caught divided by total of the hours fished by those anglers in that day.

Total fish caught = $2+5+3+10 = 20$ fish

Total hours fished = $3+1+4+8 = 16$ hours

Daily catch per hour = $20/16 = 1.25$ fish per hour

Estimate of Daily and Total Catch

Daily catch is estimated as the product of average daily effort and average daily catch rate (CPUE). Similar to expanded stratum specific estimates of angler effort, expanded total catch for a particular strata is estimated by multiplying the average daily catch by the total number of days within the strata.

Example: Total catch by bank anglers on March 2nd is the catch per hour multiplied by the total hours fished for that day.

$$\text{Daily Catch per hour} = 1.25$$

$$\text{Daily estimate of hours fished} = 27.96$$

$$\text{Total daily catch} = 1.25 \times 27.96 = 34.95, \text{ or } 35 \text{ fish.}$$

Example: Daily catch was estimated for the four weekend days that were creel in March, which again consisted of a total of 10 weekend days (5 Saturdays and 5 Sundays).

Sample Day	Estimated Daily Catch
March 2	35
March 15	45
March 23	213
March 29	312

$$\text{Total Estimated Catch on Sampled Days: } 35 + 45 + 213 + 312 = 605$$

$$\text{Total Estimated Catch for Weekends in March}^* : (605 / 4) * 10 = 1,512$$

Field Protocols

General Information

Creel survey schedules will be created for each river system before the survey period begins. This schedule will denote the dates to be sampled, survey type (i.e., creel vs. tie-in), a survey start time for each date, and start time(s) for angler or tie-in count(s). When applicable, the creel schedule will also denote the order in which index sections should be surveyed for a particular angler count. For creel surveys, the start time may not coincide with the first angler count. When this occurs, begin the day interviewing anglers until the first angler count time begins.

Procedure for Index Angler Counts

There are two key pieces of information needed to conduct angler counts. First, the creel technician should consult the creel schedule for a list of the pre-determined angler count start times for each survey date. Second, every river system that is monitored for recreational

steelhead catch also has a pre-determined selection of survey sections. A detailed description of survey sections used in the Lower Columbia River tributary fisheries from 2014 – 2017 is located in “Appendix A”. Typically, there will be at least two angler counts per day at the predetermined, randomly selected times. Do not deviate from this schedule. Surveyors should record the counts of anglers from the outlined survey sections as quickly as possible without sacrificing accuracy. Consistent collection of angler count data is of paramount importance!

During the angler count surveys, the observer will keep track of vehicles along the road and in parking lots and the number of anglers fishing in and along the river. Vehicle counts will be broken up into vehicles only and number of vehicles with a (fishing) boat trailer. If there is ambiguity as to if any particular trailers are being used for fishing versus other activities, use your best judgment. If ambiguity exists, be sure to make a note of this in the header comments and separate the count into fishing boat trailers and potentially “other” trailers using your best judgment.

Angler counts will be broken up into boat and bank anglers. Only people who appear to be actively fishing at the time of observation should be counted as anglers. For example, someone who is re-tying or wading across the river with a fishing rod in hand should be counted as an angler while someone rowing a boat may or may not be an angler. Use your best judgement and be consistent. Boat anglers are classified as any individual that is fishing from a boat, raft, or any other form of watercraft. Bank anglers are individuals that are not fishing from a boat, or rather anglers fishing from the shore or wading along the river bottom (even if they are fishing next to a boat that is beached). Note that the angler-type classification for effort counts is slightly different than the classification for angler interviews (see below).

Procedure for Angler Interviews

Anglers should be interviewed when angler counts are not being conducted. Get as many interviews as possible during this time. This may entail interviewing all fishermen if the total number of anglers is low. Generally, aim for contacting all fishermen, but on crowded days this likely will not be feasible. On high effort days, try to contact at least 20% of all fishermen counted. If you are not able to interview all the fishermen, try to get a representative sample from the entire fishery area sampled. You can do this by picking a route and interviewing every 2nd, 3rd, 4th, etc. party depending on how many anglers there are. It is also important to interview each type of angler (bank, boat) for each day. This means that if only one boat group is fishing on a particular day, try hard to get that interview without sacrificing the opportunity to interview bank anglers. Failure to do so will make the data for that day less useful. Remember that interviewing anglers that have not caught any fish is equally important as interviewing those that have caught fish.

Be polite when contacting fishermen. Identify yourself as you approach (“Hi, my name is _____ and I’m collecting information for the Washington Department of Fish and Wildlife”). After introduction, begin the survey. If they are reluctant to participate, give them an

opportunity to change their mind by explaining why we need their help (“Your information will really help us understand the fishing pressure and manage this fishery better”). If they still refuse, thank them for their time and move on to the next contact. However, in Washington, anglers are required to participate in creel surveys (Washington Administrative Code: 220-56-112 and 220-20-010). Therefore, if this does occur, make note of it on the datasheet, and discretely collect descriptions of angler, vehicle license plate, or boat to ID later.

Completed trip contacts are more valuable than contacts from anglers that are still fishing (i.e., an incomplete trip), since completed trip data include total fish caught and total time spent fishing. Put extra effort into contacting fishermen who have completed their fishing trip, but incomplete trip interviews are certainly better than none. If you have anglers who have just set up when you begin your interviews, wait until they have fished for some time or have completed their trip before interviewing them. Data from anglers who have fished for less than 30 minutes (and are continuing to do so) is not as useful. If an angler is interviewed before they are finished, ask them how much longer they plan on staying. When possible, try and contact that angler again later in the day once their fishing trip is complete, update their catch and time spent fishing information, and change their trip status from incomplete to complete. Anglers that are contacted more than once should never be entered as more than single interview. Therefore, if you have possibly interviewed an angler group once before but cannot identify the specific interview data on the field collection datasheet, do not collect any more data from that angler group.

Angler-type classification (boat vs. bank) during an interview is slightly different than for effort counts. Here an individual is considered a boat angler if they use some form of watercraft for conveyance down the river, even when the boat is beached and the anglers are wade fishing at the time of observation. If an interviewed angler is seen in or next to a boat, they should then be asked if they fished the majority of their day from the boat or from the shore. This additional question allows for the analysis of CPUE for bank anglers, boat anglers who primarily fished from the boat, and boat anglers who used the boat as a transportation method but primarily fished from shore.

Procedure for Tie-in Angler Count Surveys

Tie-in counts are to be conducted simultaneously with index angler counts. Therefore, coordination between technicians is vital to insure that surveys overlap in time as closely as possible. Surveys should be consistent and conducted as instantaneous as possible, meaning faster the better without sacrificing personal safety and quality data collection. Angler counts are to be broken up into boat and bank anglers by survey section following the same methods used for index angler counts. See “Appendix B” for descriptions of LCR tie-in survey sections.

Procedure for the Collection of Biological Data

SPECIES IDENTIFICATION

• **Useful Traits to Distinguish Between Salmonid Species**

- Coloration
- Spotting
- Shape of the Tail
- Shape of Snout
- Size
- Run Timing
- Hatchery Releases by Basin

Chinook salmon

- Chinook are called black mouth because gums at the base of their teeth are black
- Chinook have large irregular spots on their backs and both lobes of their tails and their tail rays are smooth
- Chinook have a “handle” on their caudal peduncle (easier to pick up by tail)
- Chinook are generally much larger than coho
- Spawning Chinook (especially large males) can be quite red. You can distinguish reddish Chinook from coho by their size and the absence of red on the opercle
- Chinook can often be distinguished by the white 'skunk-line' of fin rot on their backs

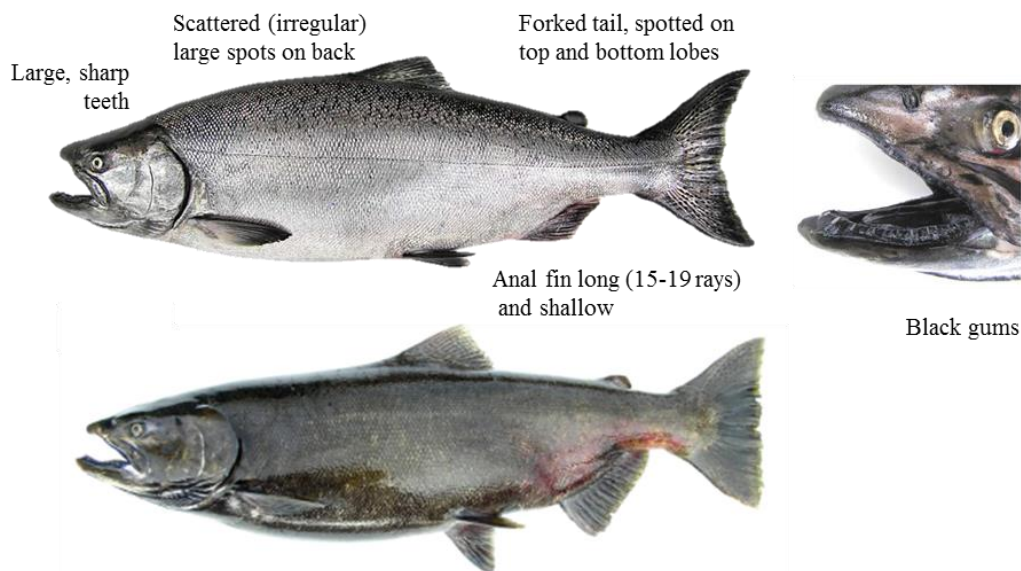


Figure 2. Description of Chinook salmon pre-spawning (top) and spawning (bottom) characteristics for visual identification.

Chum salmon

- Can be distinguished by the distinctive striated bars on their sides
- Lack of spotting on tail
- Lack spotting on body aside from small speckles on their backs
- Chum have a narrow caudal peduncle compared to other salmon
- Large pupils
- Chum typically don't show up in LCR streams until the last week of October

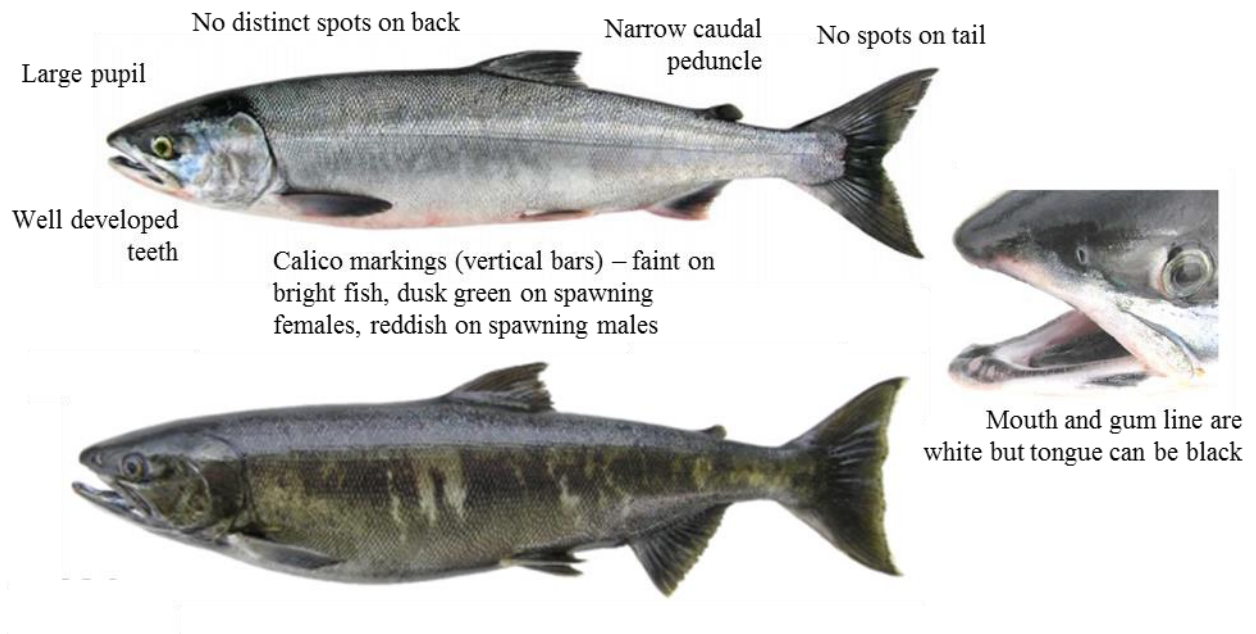


Figure 3. Description of chum salmon pre-spawning (top) and spawning (bottom) characteristics for visual identification.

Coho salmon

- The gums at the base of their teeth are white, but the rest of the jaw is dark
- They have small round spots on their backs and the upper lobe of their tails
- Coho tail rays are ribbed, not smooth like Chinook
- Coho do NOT have a “handle” on their caudal peduncle. They collapse or fold down like a fan when grabbed which leads to them not being a good handle
- Coho appear in streams later in the season than Tule-stock Chinook, generally beginning in October to early November. They tend to spawn in smaller streams and are generally a smaller fish
- Spawning coho are dull to bright red with greenish backs, and can often be distinguished by the white spot on the operculum behind their eyes

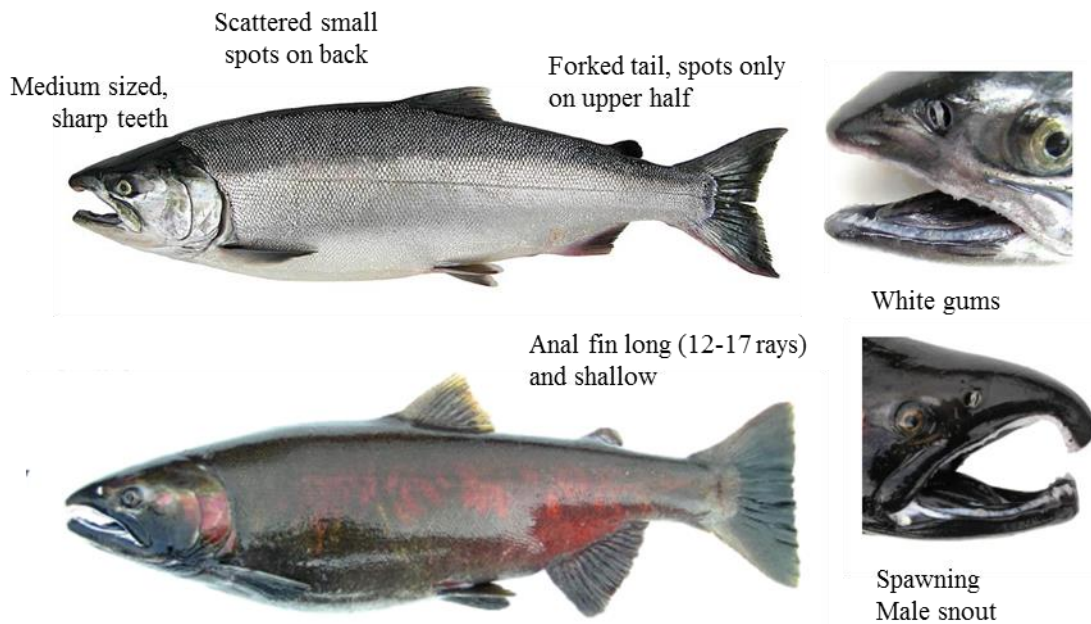


Figure 4. Description of coho salmon pre-spawning (top) and spawning (bottom) characteristics for visual identification.

Steelhead

- Greater than 20 inches in length
- Square tail (all five salmon species have forked tails)
- Completely white mouth
- Spotting on their dorsal fins and circular spots on their backs.
- Heavy spotting on both lobes of the tail
- Anal fin is short (8-12 rays) and deep while salmon fin is long (12 -19 rays) and narrow
- Bodies are torpedo shaped (salmon are more deep bodied)
- Steelhead appear in winter and early spring. Summer steelhead enter streams year-round and can be present during any month of the year. Peak densities can be specific but presence is year-round

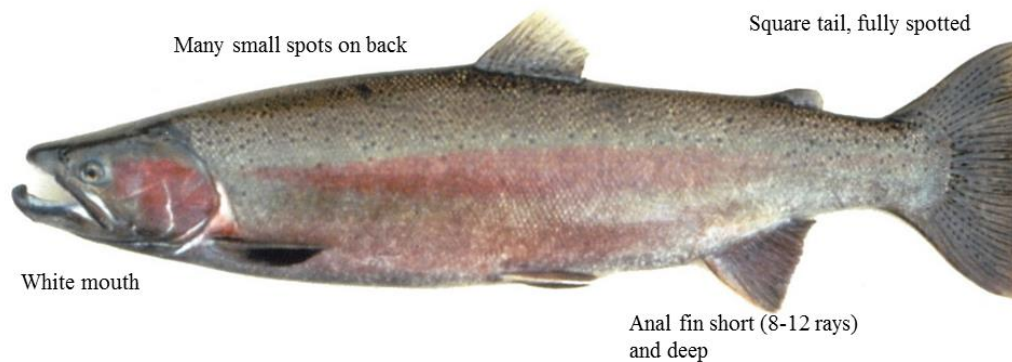


Figure 5. Description of steelhead characteristics for visual identification.

FORK LENGTH MEASUREMENT

First, lay the fish flat on the ground with the mouth closed and the tail fin spread out flat (i.e., fully fanned out). Measure the fork length (FL) of a fish in millimeters from the tip of the jaw or tip of the snout, whichever is greater, to center of the fork in the tail.

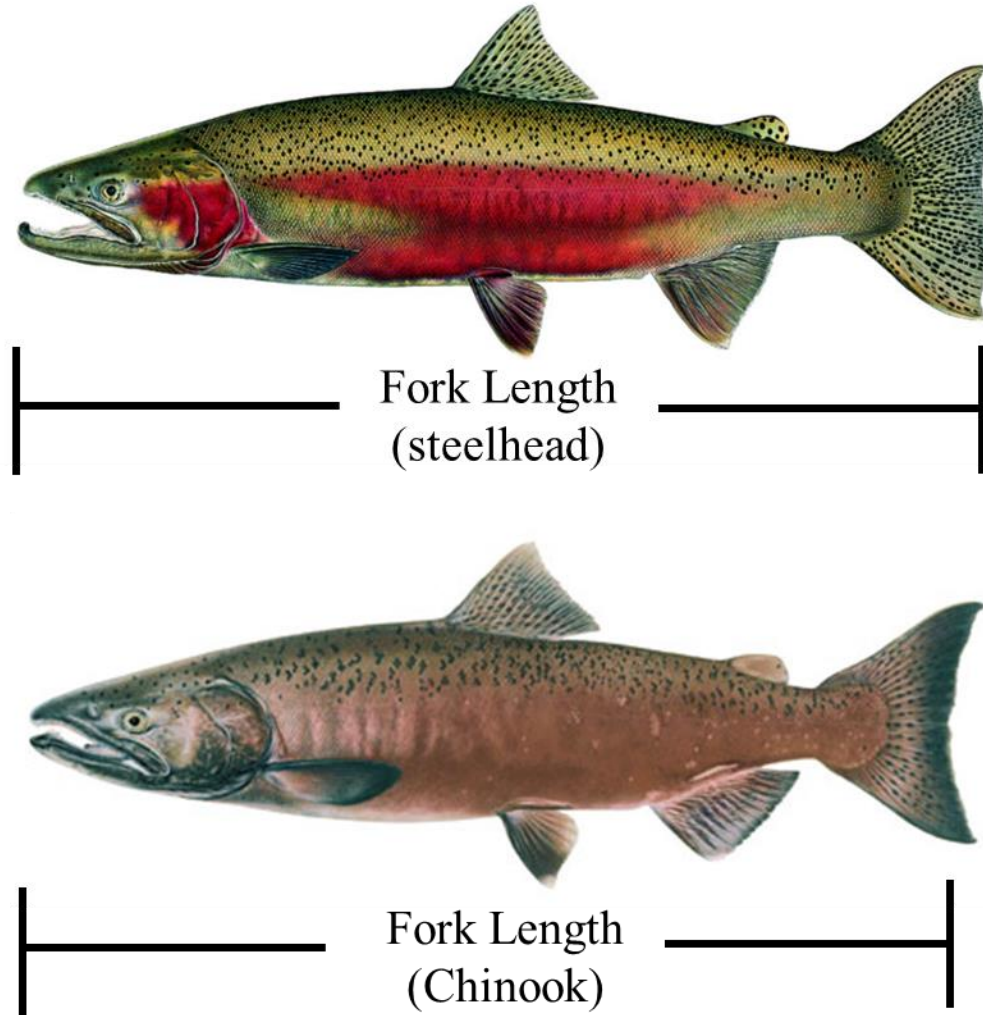


Photo credit: Idaho Fish & Game (top) and ODFW (bottom)

Figure 6. Proper measurement of a fish's fork length.

HATCHERY VS. WILD IDENTIFICATION

Salmon and steelhead in the LCR can be classified as hatchery or wild by anglers and creel technicians using the presence or absence of the adipose fin (Figure 7). The adipose fin is a small, fleshy fin that is naturally found on the back of wild fish between the dorsal and caudal fin, but is removed from hatchery fish prior to release as juveniles.

Ventral fin clips (right and left) may also be encountered and used to denote hatchery origin and allow for steelhead retention. These clips are typically used in conjunction with adipose clips. However, adipose presence/absence is the primary indicator of CWT presence/absence and therefore all adipose clipped fish must be checked for CWT presence/absence.

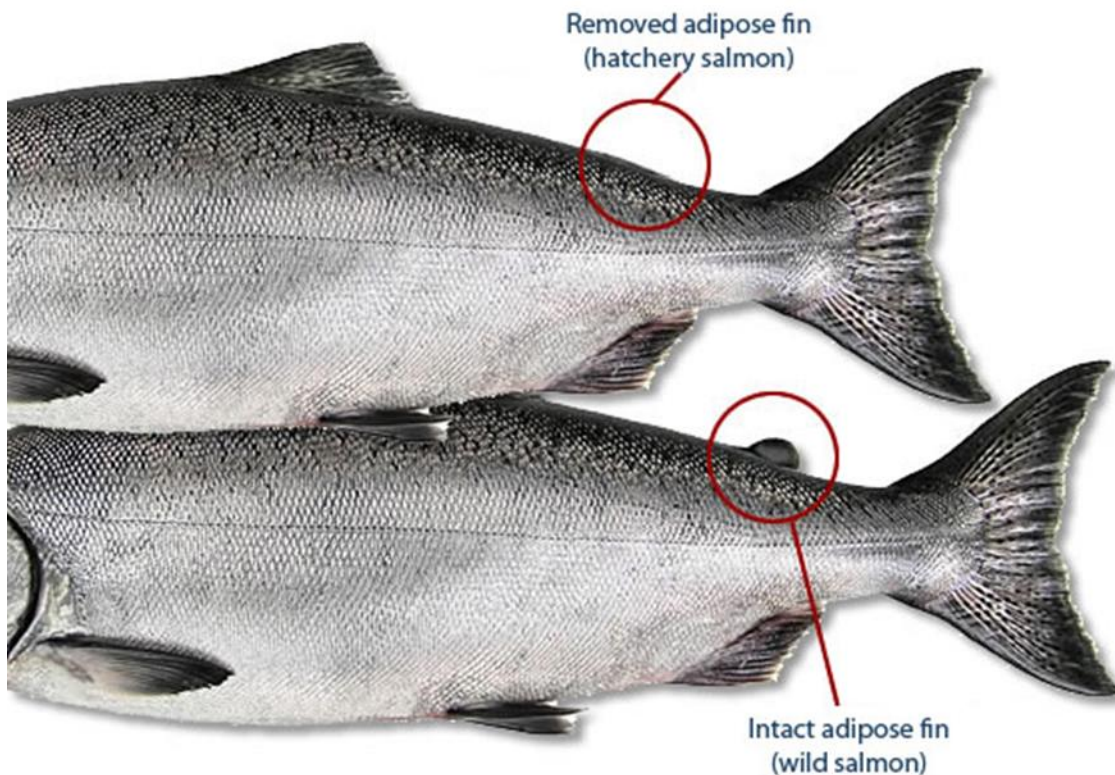


Figure 7. Identification of a hatchery vs. wild fish using the absence, or presence, of the adipose fin.

CODED-WIRE TAG (CWT) SAMPLING

Coded-wire tags (CWTs) are small (0.5 – 1.1 mm), magnetic pieces of metal that are inserted into juvenile fish (typically in the snout). These tags are encoded with information, such as brood year and hatchery rearing location. In the Lower Columbia River, a subset of hatchery fish are tagged with CWT for fisheries management purposes. While CWTs cannot be seen externally, most hatchery fish (and thus, most CWT fish) will have their adipose fin removed. Exceptions are Double Index Tag (DIT) groups, which are hatchery fish with CWTs but no adipose clip, used to evaluate mark-selective fisheries.

Handheld wands are used to detect the presence of CWT. There are several models of CWT handheld wands. Currently, we are using the both “blue wands” and the yellow “T” wands manufactured by Northwest Marine Technology, Inc. Unless told otherwise, all sampled steelhead and salmon that are missing their adipose fin should be wanded to detect for the presence of a CWT. If a CWT is detected the snout should be collected (see below for sampling methods).

Sampling a fish for CWTs using a handheld “blue” wand:

- Turn the CWT wand on and test that it is working by applying the wand’s sensor to a test tag or a piece of metal (zippers, metal buttons, knife, etc. work in place of a test tag).
 - NOTE: Use the side of the wand with the sensor indicators
- Remove watches and any magnetic jewelry before beginning. Also, take cell phones, keys, or other metal objects out of your pockets.
 - NOTE: Be careful not to wand too close to rocks, metal on your boots, or other metal objects that could give a false positive beep.
- Pick the fish up off of the ground and slowly wand back and forth across the tip of the nose up to the eyes and continue up over the top of the head to the other side, then check inside the mouth.
 - NOTE: Do not move too fast, as this can cause a false beep.
- Listen for a beep and look for the illumination of the indicator light.
- Wands are water resistant, not waterproof. Handle them with care.



Figure 8. Location a fish should be scanned for a CWT using a “blue” wand.

Sampling a fish for CWTs using a handheld yellow “T” wand:

- Turn the CWT wand on and test that it is working by applying the wand’s sensor to a test tag or a piece of metal (zippers, metal buttons, knife, etc. work in place of a test tag).
 - NOTE: Use the side of the wand with the sensor arrows
- Remove watches and any magnetic jewelry before beginning. Also, take cell phones, keys, or other metal objects out of your pockets.
 - NOTE: Be careful not to wand too close to rocks, metal on your boots, or other metal objects that could give a false positive beep.
- Pick the fish up off of the ground and ***quickly*** wand back and forth across the tip of the nose back to the eyes. You do not have to continue up over the top of the head to the other side or check inside the mouth.
- Listen for a beep and look for the illumination of the indicator light
- Wands are water resistant, not waterproof. Handle them with care.



Figure 9. Location a fish should be scanned for a CWT using a “T-wand”.

SNOUT COLLECTION

Snouts are taken from adipose fin clipped Chinook, coho and steelhead that wand positive (+) for a CWT, including jacks. Do not accept voluntary snouts. Under Washington State regulations, anglers are required to relinquish any part of a salmon containing coded-wire tags. Follow the following procedure for collecting a fish snout and filling out the necessary labels and data sheet information.

- **Notes for collecting a CWT+ snout:**
 - ALWAYS use a cut proof glove when taking a snout.
 - The easiest way to collect the snout is to put two fingers in the eye sockets of the fish and cut 1 inch posterior (behind) the eyes down to the jaw hinge being careful not to cut your fingers. You can double check the snout with the handheld wand once it is removed to verify the tag is still present.
 - Fill out a Snout ID (SNID) tag for each snout (see below)
 - Tie the string onto the maxillary of the snout and wrap the snout ID tag on the outside of the snout so you can still see the writing. Place the snout inside the snout bag and tie a knot in it.
- **Notes for filling out a snout label (see “Appendix E” for example):**
 - Use WDFW tributary sport snout labels
 - Record catch record card (CRC) area number and location (for example: 604 – Kalama Section 1)
 - Record the date fish was caught (mm-dd-yyyy)
 - Check type of sample. In sample=1:1 SC0. Out of sample=MS only SC1.
 - Record species, fork length, and fin clips.
 - Do not fill out the address part of the snout label. If the angler would like information regarding the origin of their fish, fill out the left half of the back of a CWT Recovery Postcard (see “Appendix E” for example) and have the angler put their name and address on the front. Put the WDFW snout label number in the Snout ID# space. The postcard will be mailed to the angler once we have the information from the recovered tag.
 - On SIDE B of the creel data form, denote that the fish was sampled (“Y”) in the “CWT?” column and **record the SNID number** in the “Comments” column!
 - Record the Snout ID on the scale card in the appropriate place (see “Appendix F” for example)

PIT TAG SAMPLING

PIT tags, or more formally known as passive integrated transponder tags, are small (8 – 32 mm), cylindrical shaped tags. Similar to CWTs, PIT tags are most commonly used as an internal marker, typically inserted in the peritoneal or dorsal sinus cavity. However, unlike CWTs, which are mostly used as a batch mark tag, PIT tags use an alpha-numeric code that allows for the unique identification of individual fish.

Handheld wands (readers) are used to detect the presence of PIT tags. There are several models of PIT tag handheld detectors. Consult with your immediate supervisor on which PIT tag wand is to be used. Due to potentially different detection efficiencies among handheld wands, be sure to record which reader was used. Unless told otherwise, all sampled steelhead and salmon should be scanned to detect the presence of a PIT tag (see below for sampling methods).

Sampling a fish for PIT tags using a handheld detector:

- Turn unit on and scan test tag to ensure reader is properly functioning
- Pick up the fish and slowly scan perpendicular to the lateral line, first, from head to tail below the lateral line and then from tail to head above the lateral line. This is known as the “Pass-Over” method (Figure 10).
 - NOTE: Make sure the scanner is touching the fish and not elevated
 - NOTE: Speed can affect the detection rate, so try to scan at a consistent medium speed (taking ~5 seconds to complete the oval)
- If the unit beeps with “reading”, a PIT tag has been detected and the code will appear on the screen
- Record the PIT tag number on the creel data sheet

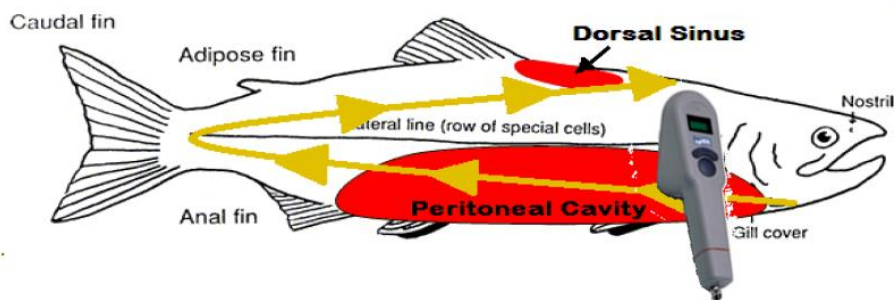


Figure 10. Correct application of the Pass-Over method for detection of PIT tags.

SCALE SAMPLING

Fish scales are collected to obtain age information. Scales go on the standard Region 5 scale cards. Unless told otherwise, scales should only be collected from Chinook salmon. Currently, scales are not collected from steelhead because (1) age data for hatchery fish can be inferred from CWT recoveries and scales collected at hatcheries and (2) wild fish cannot be harvested and thus scale collection from anglers should be extremely rare.

- **Notes for Taking Scales**

- Take 3 (Fall Chinook) or 6 (Spring Chinook) scales from an individual fish
- Scales should be collected just above the lateral line and below the posterior insertion of the dorsal fin (Figure 11).
- Scales should be placed on the top row of the scale card, not covering each other, and in the same position that they came off of the fish. Note: The upper side of a scale is rough and the underside is smooth. If you are unsure whether a scale is “right side up”, use your lead pencil to mark the scale. If you are able to easily mark it with lead, then they are placed with the correct side up. If you are not able to easily make a lead mark, then they need to be turned over.
- Do not put partial or regenerated scales on the scale card.
- Fill out necessary data fields on scale card (see “Appendix F” for example)
- Denote that scales were taken on SIDE B of the creel data sheet in column “Scales?” and **record the scale card number** in the “Comments” column!

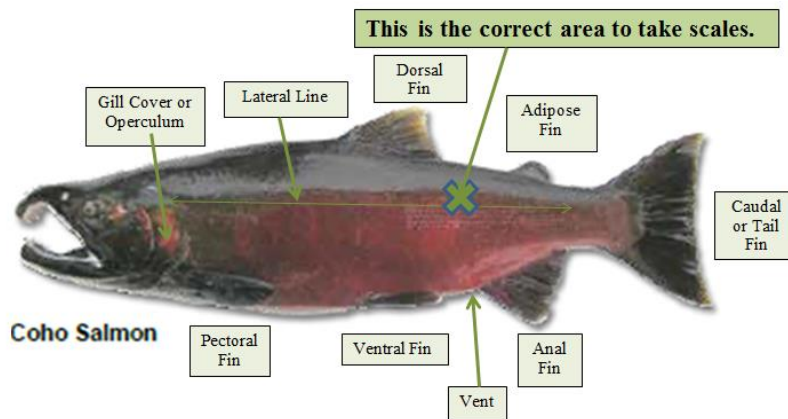


Figure 11. Location where scales should be collected.

Filling Out Datasheet

Below are specific instructions on how to fill out the datasheet that has been developed for lower Columbia River tributary creel surveys. An example datasheet can be found in “Appendix C” and a complete list of creel datasheet definitions can be found in “Appendix G”. Overall, it is important that ALL DATA COLUMNS BE COMPLETELY FILLED OUT for each individual row of data. Blank cells are not that same as zeros. Incomplete data collection may lead to data being discarded.

HEADER INFORMATION (SIDE A)

In the upper left corner of the data sheet, circle the “**Survey Type**” (Creel / Tie-in), record your name (“**Surveyor**”), the “**River name**”, “**Date**” (mm-dd-yyyy), the “**Start Time**” and “**End Time**” of the survey (i.e., time arriving to and leaving the river not the office or duty station). Time must be recorded in military time. For example, 8:00 AM is 0800 and 3:00 PM is 1500. Lastly, record any comments that may be useful when analyzing the data. For example, abnormal flow, weather conditions, or details regarding access to the river (road closures). In the upper right corner fill in the page number.

EFFORT COUNTS (SIDE A)

Record the survey section number along with the start and end time for each respective section. Enumerate the number of vehicles (no trailers), vehicles with trailers, boat anglers, and bank anglers for each corresponding survey section. During an effort count, anglers should be defined as a boat angler if they are fishing from inside a boat. Thus, an angler not fishing from a boat should be counted as a bank angler (even if they are standing next to a boat that is obviously theirs). **EXTREMELY IMPORTANT: Boat angler counts are the number of anglers in the boat that are actively fishing (see “Procedures for Angler Counts” section), NOT the number of boats in the river.** Count all anglers during each count period even though you may have counted them earlier in the day. Generally there should be a minimum of two separate angler counts per day.

GROUP INFORMATION (SIDE A)

Starting each day, record a “**Group #**” starting with #1, for each angler contact you make. On occasion you will contact a group of anglers that all have the same attributes and are fishing together. It is acceptable, and in most cases preferred, to make one contact entry for the whole party (group). If a contact refuses to be interviewed, assign them a number but note that there was no data collected. Record their “**Zip Code**”. If members of a group have different zip codes, record the most common one. Record their “**Angler Type**” as either boat or bank (see definition in “Procedure for Angler Interviews” above). If contact was a boat angler, record whether they primarily fished from the boat (“Y”) or used it for transportation and mostly fished

from shore (“N”) under the column “**Fish Boat?**” For each contact, record the “# of Anglers” in the group.

Record the contact’s “**Start Time**” in military time (e.g., 1330). The start time should only include the approximate time the anglers have their lines in the water. It does not include time spent driving to the river, preparing the boat for launching, etc. Make sure the anglers understand this when you ask them how long they’ve been fishing. Record the “**Interview Time**” as the time when the interview began and their “**Trip Status**” as either incomplete (“I”) or complete (“C”). The “**End Time**” column should be used to record the time when a completed trip group finished or when an incomplete trip group anticipates finishing.

Ask the angler or group, “What is your primary target species (e.g., steelhead, spring Chinook, etc.)?” and record this information under the “**Target Species**” column. Even if it is apparent what anglers are fishing for based on their gear choice, we should not rely on it. Let anglers answer the question and try to get them to identify their primary target species. If anglers indicate they are fishing for any species, record “ANY” in this column. Anglers may also indicate they are targeting multiple species, for example salmon and steelhead. It is acceptable to write down multiple target species, but again still try to get them to narrow their answer to their primary target species.

Record where the angler has been fishing under the “**Fishing Location**” column. Here, you can either enter a river-mile (RM), general name (e.g., Mt. Norway Bridge), abbreviation for the particular location (e.g., BA = bowling alley), or a section of river (e.g., Rolers to Boat ramp). Each unique fishing location, regardless of the entry type, needs to be added to the “Fishing Location Data Form” – see Appendix D). Only one fishing location datasheet is needed per river per creel technician.

Over the course of a census day, there is a chance that you may contact a fisherman that you have previously interviewed. It is extremely important that a second contact with angler not be recorded as a new interview. If this were to occur, estimates of catch and catch rates may be biased. To prevent this problem, if there is any chance that you have already contacted the fisherman, ask if you’ve already interviewed him/her. If you have interviewed them AND can remember which group # on your data sheet the angler or group corresponds to, go back to the original data entry for this fisherman and add in any new data (e.g., new fish caught, additional hours fished since last contact, change “I” to “C” if applicable). Updating an angler’s trip information is desirable as longer and completed trip are extremely valuable for data analysis. However, if you have interviewed them but are not certain which group # they correspond to on the datasheet, do not collect any additional information from that angler.

If, over the course of the survey day, you make more contacts than will fit on a single datasheet, begin a second datasheet, but continue in numerical sequence with the appropriate group #. Fill out the header section in the upper left corner (on SIDE A) and make sure to number the page. Do not fill out the “Effort Count” section again.

GEAR USE AND FISH INFORMATION (SIDE B)

Every contact should have a line entry on SIDE A and SIDE B of the creel data form! First, transfer the “**Group #**” from SIDE A to each row on SIDE B that corresponds to the same group. If an angler/group has caught one or fewer fish, there should only be one row of information on SIDE A and SIDE B that corresponds to a specific group #. If angler/group has caught multiple fish, the number of lines of information for a single group on SIDE B should match the number of fish that were caught (i.e., each individual fish gets its own line even if the fish were of the same origin and caught in the same manner).

Next, fill out all of the “gear use” columns for every group/contact regardless of whether any fish have been caught. If the group/contact has not caught any fish, fill out this information in a manner that describes their primary gear use (i.e., anglers can certainly use multiple methods and gear types, but record the gear use which made up the majority of their effort). If the group/contact has caught one or more fish, the gear use information should correspond to each uniquely captured fish.

Record their fishing “**Method**” as bobber (B), drift (D), back troll (BT), or plunking (P) using these definitions:

- bobber = gear suspended under float
- drift fishing = drifting/swinging gear without suspension,
- back troll = rowing or motoring against the current and typically using gear such as plugs or bait-divers
- plunking = bait or lures suspended above a stationary weight

Record the fishing “**Style**” the angler was using as either passive (P) or active (A) using following guidelines:

- Passive
 - Plunking (Moving Water) - the use of weight to hold a lure/bait in a stationary position.
 - Anchored Boat Fishing (Moving Water) - the use of the boat to hold a lure/bait in stationary position in the current. This can be achieved through plunking (described above) or by fishing a lure downstream of the boat without any weight (e.g. diving plug, pink lady, etc.).
 - Plunking (Still Water) - the use of a weight and/or float to hold a lure /bait in a relatively still position (commonly used in Drano Lake).
- Active
 - Floating, drifting, swinging, or retrieving a lure/bait in moving water, and/or casting & retrieving or trolling in slow water.
 - Fishing from a boat in moving water including side drifting, pulling plugs/diver & bait, and back bouncing.

Record “**Gear Type**” as either bait (B), lure (L), fly (F), jig (J), or bait and jig (BJ). While anglers can, and certainly do, use more than one gear type on a single day, we are framing this question as to which gear type they either used the most or specifically used to catch each fish. Gear types are defined as:

- bait = anything that attracts fish by *scent and/or flavors* (e.g., eggs, shrimp/prawns, worms, crayfish, baitfish, scent). Bait can also include devices made of feathers, hair, fiber, wood, metal, glass, cork, leather, rubber, or plastic if scent/flavor is used.
- lure = a manufactured article, complete with hooks, constructed of feathers, hair, fiber, wood, metal, glass, cork, leather, rubber, or plastic, which *does not* use scent and/or flavoring to attract fish (e.g., spinners, spoons, plugs, corkies, spin-n-glo). Lures can also be weighted or neutrally buoyant beads pegged above a hook.
- fly = a lure on which thread, feathers, hackle, or yarn cover a minimum of half of the shank of the hook. Metallic colored tape, tinsel, mylar, or bead eyes may be used as an integral part of the design of the fly pattern.
- jig = a lure that consists of a lead sinker with a hook molded into it and usually covered by a soft body to attract fish. Jigs are intended to create a jerky, vertical motion, as opposed to spinnerbaits which move through the water horizontally.
- bait and jig = combination of artificial jigs and bait material (real or artificial) or scent attractants.

Record the number of “**Hooks**” as the number of points on each individual hook with 1 = single, 2 = double, and 3 = treble. For example, a single hook with one point would be record as “1” while a plug with two trebles would be recorded as “3/3”. See Figure 12 for more examples. Next, indicate the “**Hook Size**” used for each hook (see “Appendix H”) and whether the hook(s) were barbed (Y) or not (N) under the “**Barb?**” column.







<u>Single Set-up</u>	<u>Notation</u>	<u>Multi Set-up</u>	<u>Notation</u>
	1		1/1
	2		1/3
	3		3/3

Figure 12. Notation for recording number of "Hooks" for a single or multiple hook set-up.

Next, if an angler or group has caught one or more fish, continue to the corresponding “Fish” column questions and fill out every column for that corresponding row. Record the “**Species**” using the specified WDFW abbreviations (e.g., SH = steelhead) located on bottom of SIDE A and in “Appendix I”, the “**Life Stage**” of the fish as either “A” for Adult (Chinook: >57 cm, Coho: >47 cm, Steelhead: >51 cm), “J” for Jack (Chinook: ≤57 cm, Coho: ≤47 cm), or “S” for Smolt (Steelhead: <20 cm). Life stage cut-offs are defined using fork lengths (FLs). Note: Resident (rainbow) trout are fish 20 – 50 cm. Record the “**Origin**” of the fish as either “H” (hatchery) or “W” (wild). Record the origin as “U” if unknown. Note: generally wild fish will have a small, fleshy adipose fin located on their back between the dorsal and caudal fins while hatchery fish will not. Hatchery fish may also have right or left ventral and pectoral clips. Record the “**Fate**” of the captured fish as “K” (kept) or “R” (released). Record the catch record card location (“**CRC Loc.**”) based on where the fish was caught (see most up-to-date “Sport Fishing Rules” pamphlet).

The “**Hooking Location**” column has two pieces of data that need collected. First, under the “**Report.**” sub-column, record the angler reported hooking location by asking the angler to point to location where their fish was hooked on the diagram shown in Figure 13. The hooking location should be recorded as either upper jaw (UJ), lower jaw (LJ), roof of mouth (ROM), floor of mouth (FOM), eye (E), gill (G), tongue (T), stomach/esophagus (S), or other (O; head, body, tail). Second, examine the fish for tissue damage to verify the angler reported an accurate hooking location. If the hooking location can be identified, which may or may not match the angler reported location, record this location under the “**Actual**” sub-column. If the fish is examined and the hooking location could not be identified (i.e., no obvious tissue damage) then record ‘CNC’ (checked but could not confirm) under the “Actual” column. If the fish was not examined, and thus the actual hooking location could not be verified, record ‘NC’ (not checked) under the “Actual” column. If the fish has multiple hooking locations upon examination, record the most critical location, where: stomach/gills > eye/tongue > jaw/mouth/other. Yes (Y) or No (N) are not appropriate responses for the “Actual” data column.

If the fish is available for sampling, several more pieces of information should be collected. First, measure the fork length (“**FL**”) of the fish to the nearest millimeter. Scan the fish for the presence of a coded-wire tag (“**CWT**”) and/or Passive Integrated Transponder (“**PIT**”) tag and externally examine the fish for the presence of a floy tag. Record whether each individual tag type was present (Y) or absent (N). If the fish was not scanned for a CWT or PIT tag, or not externally examined for floy tags, record not checked (NC) in the appropriate box indicating the fish was not sampled. Next, denote whether a “**DNA**” or “**Scale**” sample was collected by recording (Y = sampled) or (N = not sampled). Record snout CWT tag (SNID), PIT tag, and floy tag numbers (plus color of tag), and/or DNA and scale sample numbers in the “Comments” column when applicable. If necessary, use multiple lines to insure that data recorded in the comments column is legible and encompasses all necessary data.

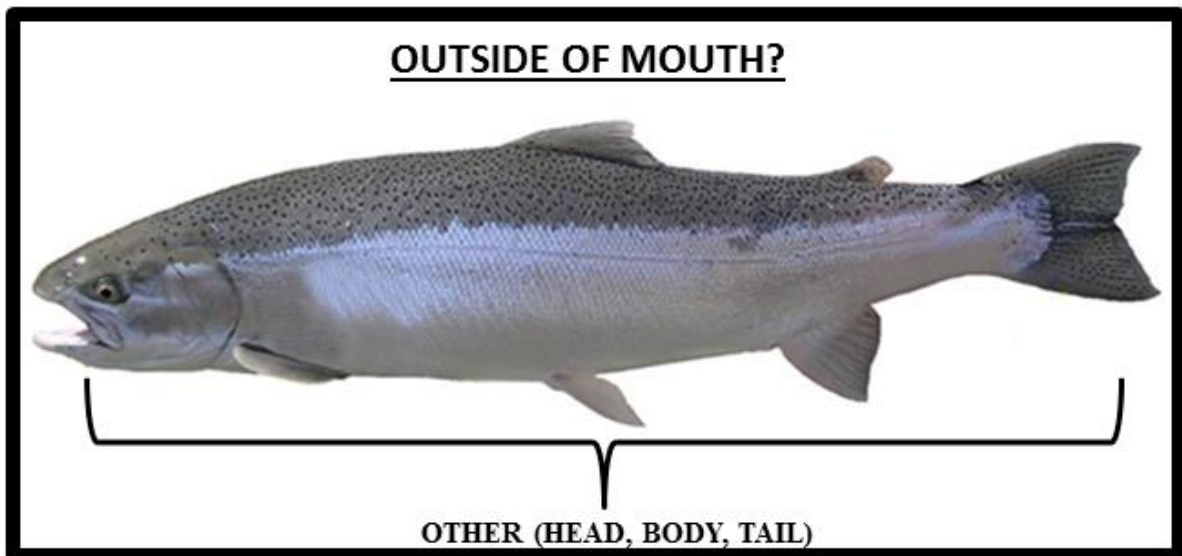
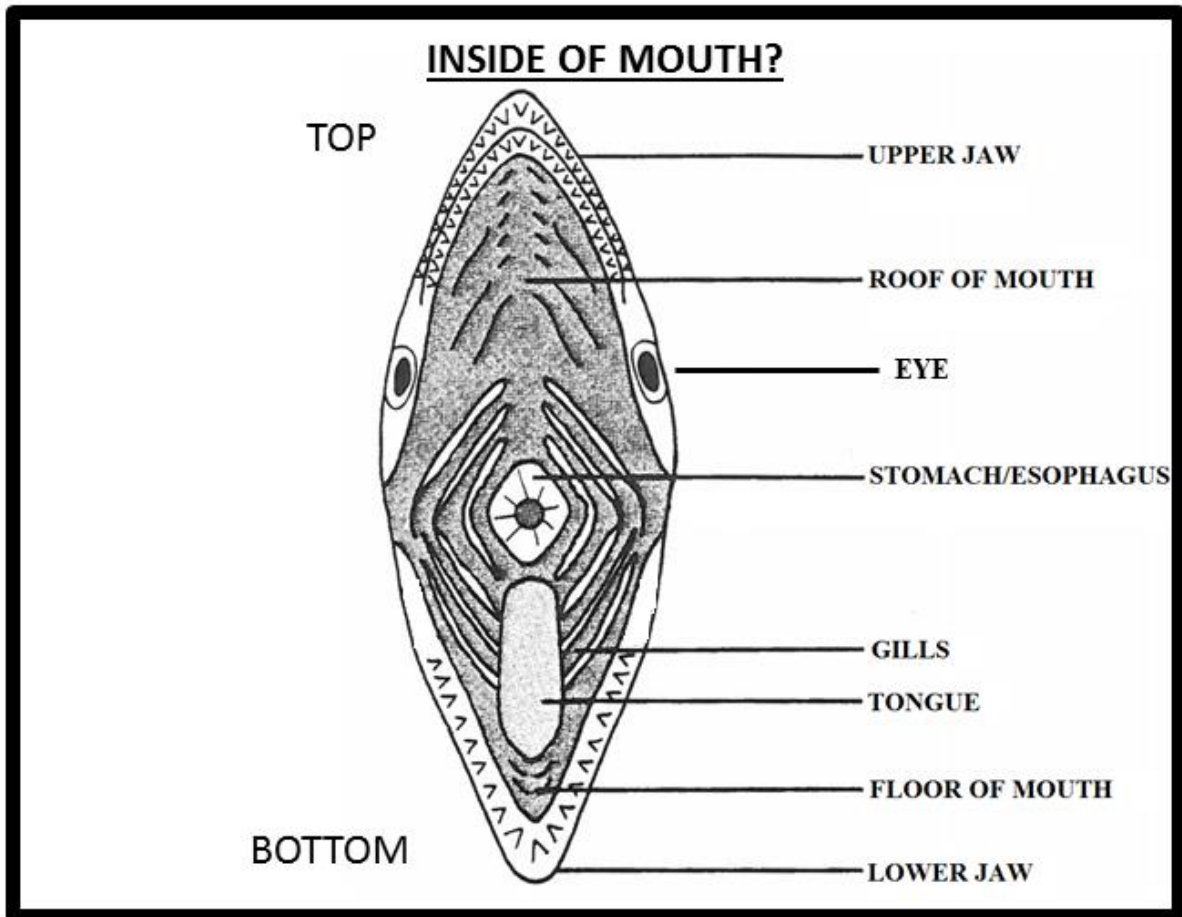


Figure 13. Hooking location diagram used to collect “reported” hooking location data from anglers.

Lastly, denote if the fish had any other external marks (e.g., ventral, pectoral or other fin clip) and write any pertinent “**Comments**”, such as sex, condition (e.g., bright, kelt), natural marks (seal bites), run-type (summer vs. winter), etc. This additional information can be extremely helpful, but only if the data are reliable. Therefore, only record comments on sex, condition, etc. if you are confident in the classification. Providing ambiguous information will result in erroneous data analyses.

Reporting a Violation

- **If your report deals with poaching in progress, dial 911 and ask to be put in contact with the nearest on-duty Fish and Wildlife Officer.** DO NOT confront the poacher or disturb the crime scene. Time is of the essence so use your cell phone if you have coverage.
- If your report deals with poaching that is not of an emergency nature, and you wish to leave a confidential message or receive a follow-up phone call, call the WDFW “Turn in a Poacher” (TIP) line at 1-877-933-9847.
- You may also report non-emergency poaching online at <http://wdfw.wa.gov/poaching/>, or via e-mail at REPORTPOACHING@DFW.WA.GOV. Please provide this information when you call or e-mail us:
 - Your name (as the reporting party)
 - Your phone number
 - The type of poaching (fish/deer/elk/etc.)
 - Date/time of incident
 - Location where poaching occurred
 - Activity that occurred (shooting, snagging, etc.)
 - Suspect vehicle involved (make, model, year, color, license number)
 - Suspect description (gender, age, ethnicity, clothing, etc.)
- If you TEXT YOUR TIP anonymously to WDFW:
 - Start a text message on your phone. On the first line of the message, type WDFWTIP. Then add a space and type in the tip information. Example: “WDFWTIP Two bull elk killed by one hunter in Dayton GMU, near Griffin Peak on USFS, right now, standing by.”
 - Then, from the phone’s menu, select “SEND TO:” and type in 847411 (TIP411). Then press “Send.”
 - The text message is sent to a special computer server that will mask your identity and assign an alias. WDFW has no way of determining the reporting party’s identity but can communicate through the TIP411 service, if necessary.

Under no circumstance should you engage the violator. Walk to a safe distance. Be a good witness. Try to get a description of the person including sex, general age, hair color, physical build. If you can get a description of the vehicle including license plate, make, and

model, color, year and general condition (does it have a canopy? Is it a 4x4?). Record a good description of your location on the river. Do not expect the Officer to know the special names of each of the popular river holes.

Behavior and Expectations of Creel Technicians

Creel technicians are representatives of the Washington Department of Fish and Wildlife. Therefore, polite and professional conduct is expected while working. Creel technicians are asked many questions about fishing, fish, stocking plans and procedures, hunting, other lakes and streams, wildlife, park regulations, etc. Answer these questions to the best of your ability, but do not attempt to answer questions for which you do not know the answer; rather, refer these questions to the WDFW Vancouver Office.

In addition to questions you will likely also receive complaints about various issues involving WDFW regulations or policies. In many cases you may be the only WDFW representative that these anglers have encountered and they may unload many of their concerns and opinions on you. In these cases, it is usually best to be a good listener and then to let them know that you are not the one making those decisions, but are just there to do your job. Avoid getting into arguments or debates with anglers. If you have relevant information, you can share it with them, but, again, do not attempt to answer or address issues that you don't know the answer to. Only give out your supervisor's phone number or business card in situations where the angler has a specific complaint about the creel surveys or with you. You may also refer them to the WDFW Vancouver office. Do not give out enforcement officers' direct phone numbers, instead provide them with the contact information for reporting violations/poaching.

Always have a supply of WDFW Fishing Regulations. Give these to anyone who wants them, and use them to answer questions. Additionally, you should carry a supply of the CRSSE program informational pamphlets and offer one to each new angler you contact. It is your job to let anglers know that the CRSSE program is funding the steelhead creel surveys being conducted.

Use your time efficiently to achieve the goals of the project. Try not to miss making contacts because you are talking to a fisherman about fishing, weather, etc.; your job is to contact fishermen to determine fish caught and time spent fishing not socialize with them. Some conversation may be advantageous (e.g. information on fishing conditions, river conditions, etc.). Make margin notes on this type of information. You should always identify yourself and give some indication of why we are collecting the data. Staying on the water is important, even if no one is there. We don't know there is no one there unless you're there to confirm it! While you are waiting to perform counts or contacts – be aware. The public is watching you, so behave accordingly.

Staff should look professional at all times. Uniform items including hats and shirts have been provided to you by your Supervisor. If any of these items get worn please ask for replacements.

Vehicles

Being issued a State vehicle is a privilege of the job and it is expected that the vehicle is taken care of as outlined by your supervisor. A vehicle identifies you as a WDFW representative everywhere – on the road, where you park, and at the water. As a WDFW employee, you should be familiar with WDFW policies regarding vehicle use (*Policy 7001 - Assigning, Using and Managing WDFW-Owned Motor Vehicles* and *Policy 7010 - Operating State Owned/Leased or Privately Owned Vehicles While Conducting Official State Business*) State-owned vehicles are to be used only to conduct official state business and in accordance with WDFW policies regarding vehicle use, weapons, alcohol, and tobacco. Drivers are expected to drive defensively, be courteous, and follow all traffic laws .

You are solely responsible for any traffic violations you may incur. If you are involved in an accident, there are set procedures to follow. Look in the vehicle binder for an outline of what to do. Contact your supervisor as soon as possible.

Equipment List

FIELD EQUIPMENT

<i>Data Collection</i>	<i>Information</i>	<i>Uniform/Safety</i>
Data sheets	Creel survey protocol	Personal Flotation Device (PFD)
Clipboard	Fishing Regulations	Flashlight/Headlight
Pencils	CRSSE Pamphlets	Agency Uniforms
Watch	Supervisor Business Cards	Hi-Viz safety vest
Binoculars		
Measuring board/tape		
Hemostats (scale collection)		
Knife (snout collection)		
Snout bags and labels		
CWT wand		
PIT wand (if applicable)		

VEHICLE EQUIPMENT:

Creel survey schedule	Gas charge cards	CB Radio
First-aid kit	Fire Extinguisher	

Appendix A - Angler Index Effort Count Section Descriptions

Kalama River

Effort count sections during the 2014-15 study period consisted of five survey sections: Section 1 – Mouth to Modrow Bridge, Section 2 – Modrow Bridge to Indian Creek, Section 3 – Indian Creek to Kalama Falls Hatchery (KFH), Section 4 – KFH to Summers Creek, and Section 5 – Summers Creek to 6420 Rd. (Figure A1-01).

Following the 2014-15 study period, effort data were analyzed and based on effort count times and the number of anglers seen in each section, effort sections 1, 4, and 5 were dropped during 2015-16 and 2016-17. Additionally, section 3 was divided into ‘a’ and ‘b’ starting in 2015-16. While only sections 2, 3a and 3b are surveyed as index areas for angler effort, all sections are surveyed for angler interviews and tie-in counts continued for the entire area.

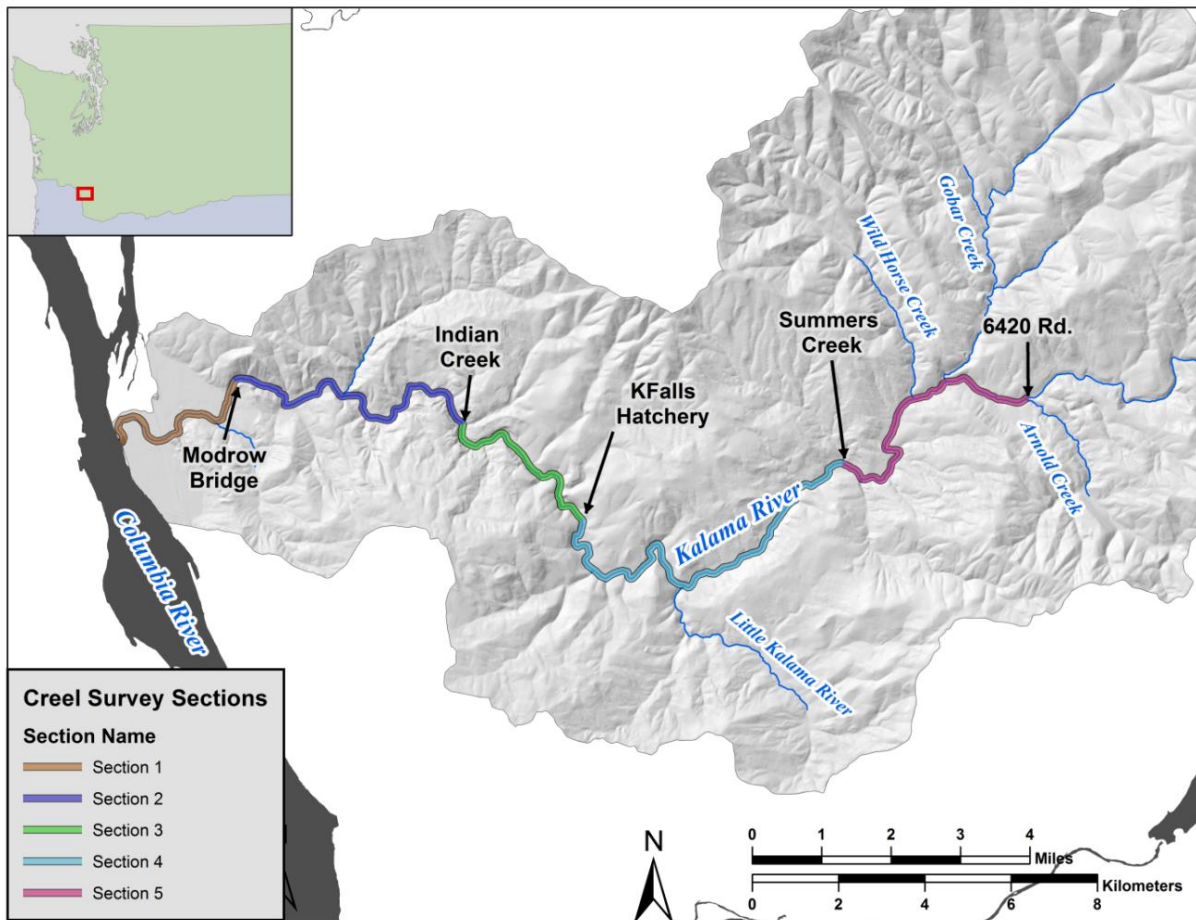


Figure A1-01 Map delineating Kalama River creel survey sections.

SECTION 1 – MOUTH TO MODROW BRIDGE. (FIGURES A1-02 TO A1-03)

Drive north on I-5 to Exit 32. At the end of the ramp turn west on Kalama River Rd. (KRR) toward the Columbia River and turn left on Hendrickson Drive North. After crossing the bridge take the first right and follow the road behind the buildings to the fishing access pull out.

- 1-1 Drive to the fishing access kick-outs and walk along the path glassing (i.e., scanning with binoculars) upstream towards the Kalama Sportsmen’s Club.
- 1-2 Drive down the Dike Access Rd. and park near the recycling buildings. Walk to the trail and glass up and down the river.
- 1-3 Drive back across the bridge at the Port entrance and go to the Fisherman’s Loop Access site. Count trailers and anglers fishing near launch.
- 1-4 Turn right onto KRR heading east, and turn right on to Meeker Drive. Drive across the bridge – glass downstream and upstream. Most of this area can be seen by driving slowly across the bridge, if necessary, park in the pullout and carefully walk onto bridge. Turn around.
- 1-5 Drive into Camp Kalama. Count boat trailers on the right near launch, and drive to northern most end of park to search for boat and bank anglers. Exit park and return to KRR.
- 1-6 Continue up KRR east and turn right into Haydu Park.
2014/2015: Park along the fence and walk the trail through the field to the river bank. Glass upstream and downstream.
2015/2016: Haydu Park was completed. When the gates are unlocked park in the lot closest to the river and glass upstream and downstream. If the gates are locked, park outside of the fence and walk to the river bank. Glass upstream and downstream.
- 1-7 Proceed back onto the KRR toward Modrow Bridge. Cross the bridge and stop at the pullout at the top of the entrance to the WDFW Access Area. Carefully walk onto the bridge and glass downstream.
- 1-8 Continue on Modrow Rd. and proceed to the parking lot at the YMCA/Rainbow Park Camp. Walk in along the trail to the river and glass upstream/downstream.

SECTION 2 – MODROW BRIDGE TO INDIAN CREEK (FIGURES A1-03 TO A1-06)

- 2-1 From the parking lot at the YMCA/Rainbow Park Camp, proceed back onto Modrow Rd. and head east approximately one mile to Bates Rd. Turn left on Bates Rd. and continue until you reach the area of the river across from Mahaffey’s – there is a turn-around on the right before the road turns to gravel. Park at the turn around and glass upstream and downstream. Be aware of the

- steep edge.
- 2-2 Proceed back on Bates Rd. to Modrow Rd. and enter the WDFW Access Area parking lot. Park in the upper area and carefully walk onto the bridge and glass upstream. At the east end of the parking lot there is a trail down to the river that will allow easy viewing access upstream. Proceed back on KRR upstream counting as you go. There are very few pullouts in this section and once the the vegetation begins growing on the trees and bushes in the spring, view of the river can be limited.
 - 2-3 Proceed to Mahaffey's and glass upstream and downstream. Count boat trailers.
 - 2-4 Proceed back on KRR toward the WDFW Access Area at Beginner's Hole.
 - 2-5 At the Beginner's Hole parking lot walk to the river and glass downstream and upstream. There are good vantage areas for all of this area.
 - 2-6 Proceed on KRR upstream to the pullout across from the Fallert Creek Hatchery. Park and walk the trail towards the downstream end of the area. Glass downstream to Beginner's Hole. Walk the trail to the upper end of the parking area. Glass upstream.
 - 2-7 Proceed on KRR to the WDFW Access Area boat launch (Slab Hole/Launch). Pull into the Access Area to count vehicles, trailers, and anglers.
 - 2-8 Proceed on KRR to the Fallert Rd. Bridge. Drive over the bridge and carefully count downstream and upstream. There is a pullout to park and walk on the bridge if needed.
- Note: Between section 2-7 and 2-8 there is a large section along Laverne Drive that cannot be seen. This area will be surveyed and counted in the tie in surveys.*
- 2-9 Proceed on KRR to Pritchard's. Most of this section is viewable from the road.
 - 2-10 Proceed on KRR to the Indian Creek/Red Barn pullout. Park and walk down the guard rail and glass downstream from the vantage points.

SECTION 3A/3B – INDIAN CREEK/RED BARN TO THE KALAMA FALLS HATCHERY (FIGURES A1-06 TO A1-08)

- 3-1 At the Indian Creek/Red Barn pullout walk along the guard rail and glass upstream from the vantage points. **This is the start of section 3A.**
- 3-2 Proceed on KRR to the first pullout above Woolford Rd. Park and walk along the guard rail glassing downstream and upstream. Some areas are more visible than others due to the private residences.
- 3-3 Proceed on KRR to the next pullout. This is a long pullout along a high bank. Walk along the guard rail and glass downstream and upstream from the vantage points.
- 3-4 Proceed on KRR to the next pullout. Park and walk along the guard rail and glass downstream and upstream from the vantage points.
- 3-5 Proceed on KRR to the pullout at the Pole Launch/utility box. This is an

unimproved boat launch slide. The telephone pole is heavily marked with rope burns and the guard rail is dinged up (known as “Burnt Pole”). There are few vantage points. There is a trail to the right of the slide that descends close enough to glass downstream and upstream. **This is the start of section 3B.**

- 3-6 Proceed from the start of Italian Creek Rd. upstream on KRR. Stop and park at the “Rope Hole” pullout. There are several short trails to the edge of the cliff that lead to vantage points. Glass downstream and upstream.
- 3-7 Proceed on KRR to the next pullout known as “Painted Rock”. Park and walk along the guard rail and glass upstream and downstream from the vantage points.
- 3-8 Proceed on KRR to the next large pullout known as “Saddle Rock”. Park and walk along the guard rail and glass upstream and downstream from the vantage points.
- 3-9 Proceed on KRR to the last large pullout prior to the Kalama Falls Hatchery (KFH). Take the trail down to the river and glass downstream. The trail will take you to the fishing deadline which is marked with a “1000” sign painted on a rock across the river.
- 3-10 The area above “deadline” sign is closed waters.

SECTION 4 – KFH TO SUMMER’S CREEK (FIGURES A1-09 TO A1-12)

After the first Saturday in June, the upper river opens from Summer’s Creek to Kalama Falls. The open waters are 1,000 ft. above KFH to the 6420 Rd. Bridge deadline as described in the WDFW Sport Fishing Pamphlet. Most of section 4 consists of private property and thus little access and visibility of the river. There are a limited number of pullouts that exist right off of the road. If a vehicle is present, it’s generally easy to spot the angler from the road.

- 4-1 Starting at KFH, proceed on KRR upstream and stop at the pullouts.
- 4-2 Proceed up the KRR and stop at the pullouts.
- 4-3 Proceed along the KRR and stop at the pullouts.
- 4-4 Proceed along the KRR and stop at pullouts. A lot of this area is not visible.

SECTION 5 – SUMMER’S CREEK TO THE 6420 RD. AKA FISHING DEADLINE (FIGURES A1-12 TO A1-14)

- 5-1 Start at the 8100 Bridge at Summer’s Creek and proceed along the KRR and stop at the available pullouts. There are very few.
- 5-2 Proceed along the KRR to the pullout at Gobar.
- 5-3 Proceed along the KRR and stop at the pullout at the gate and glass downstream and upstream. Do not go past the gate.

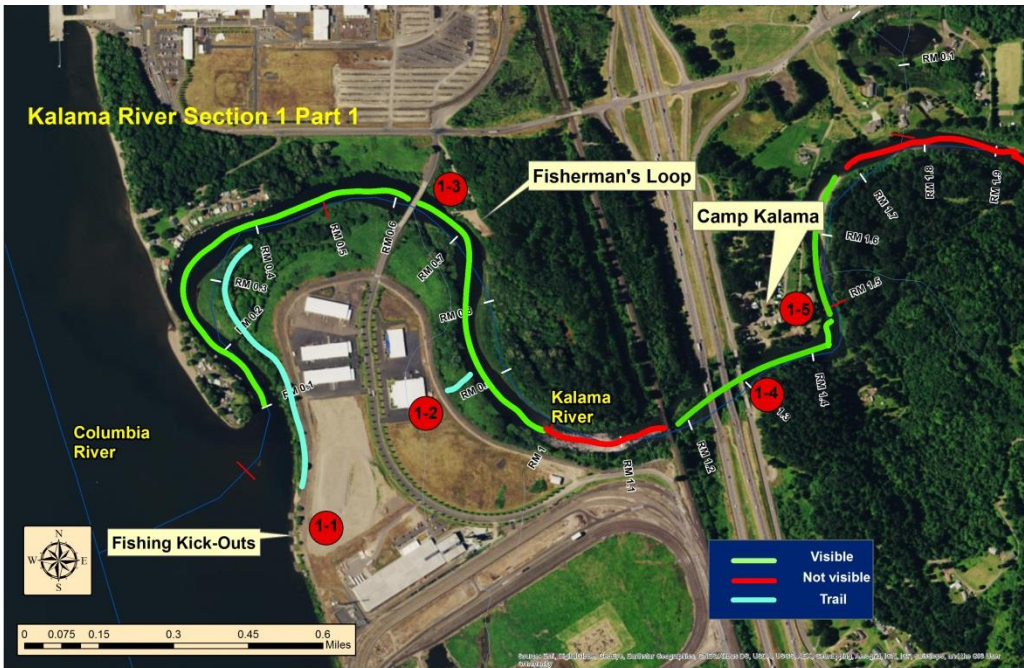


Figure A1-02. Map of Kalama River creel survey Section 1 (Part 1 of 2).

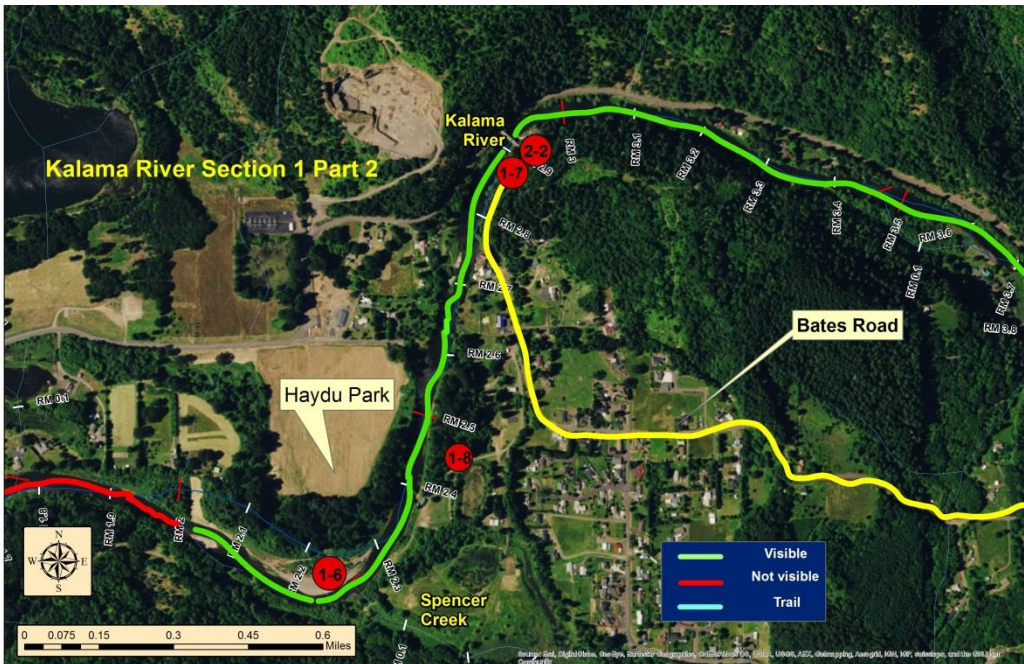


Figure A1-03. Map of Kalama River creel survey Section 1 (Part 2 of 2).

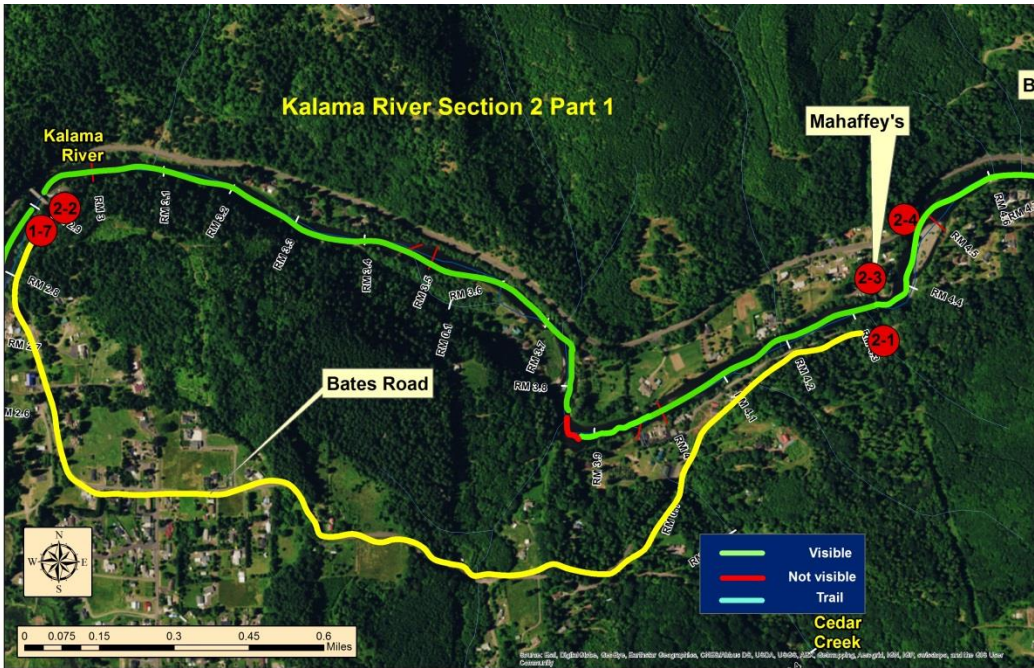


Figure A1-04. Map of Kalama River creel survey Section 2 (Part 1 of 3).

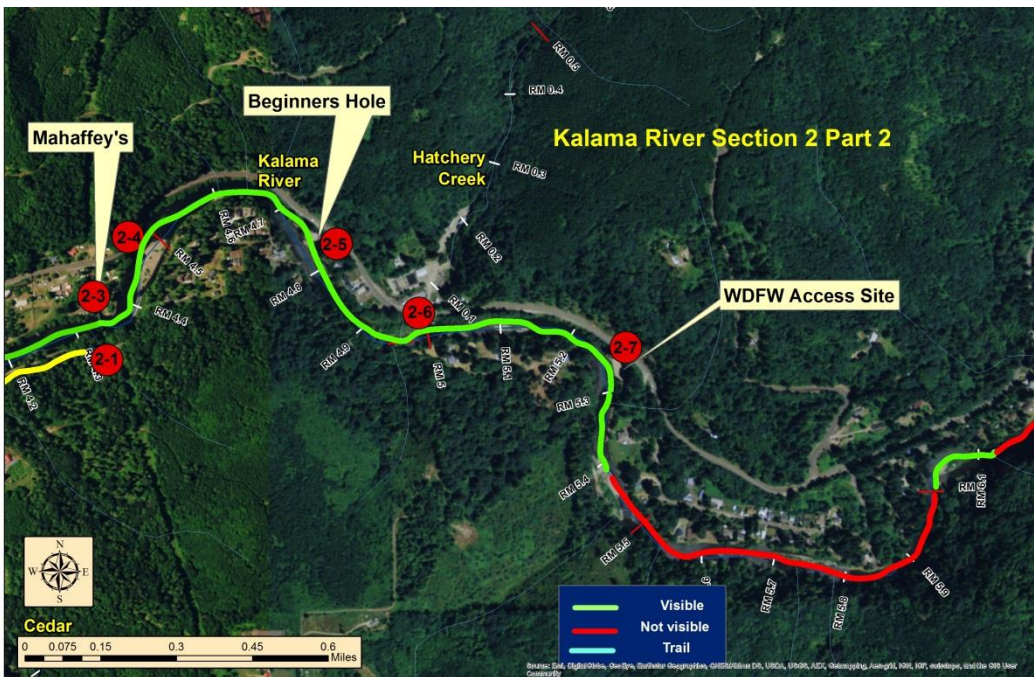


Figure A1-05. Map of Kalama River creel survey Section 2 (Part 2 of 3).

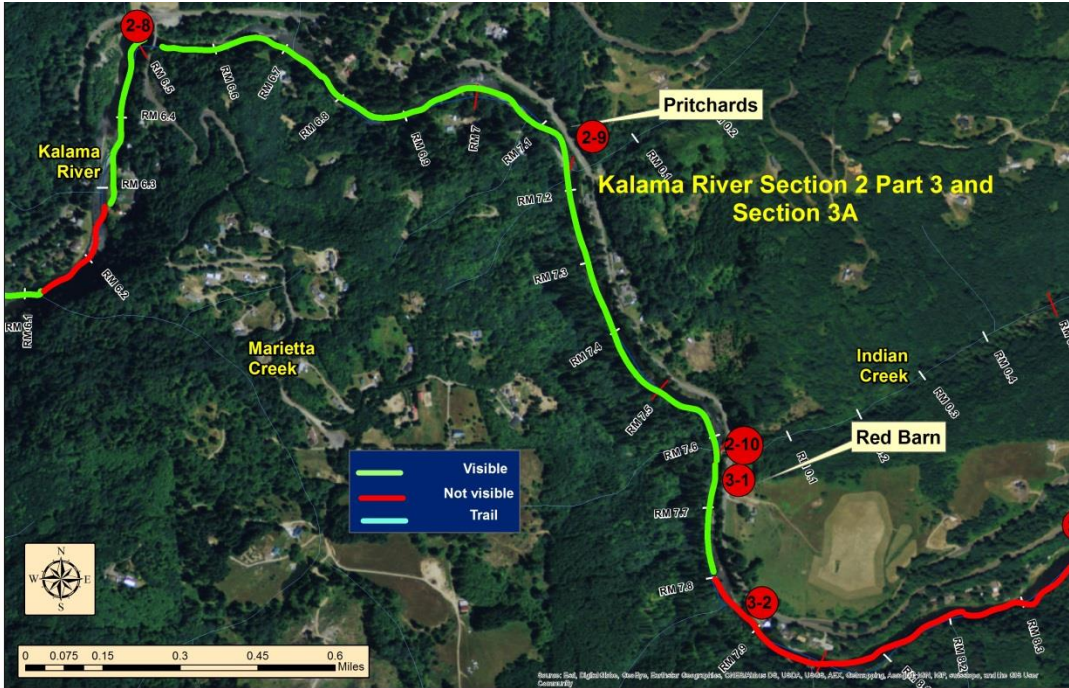


Figure A1-06. Map of Kalama River creel survey Section 2 (Part 3 of 3) and Section 3A.

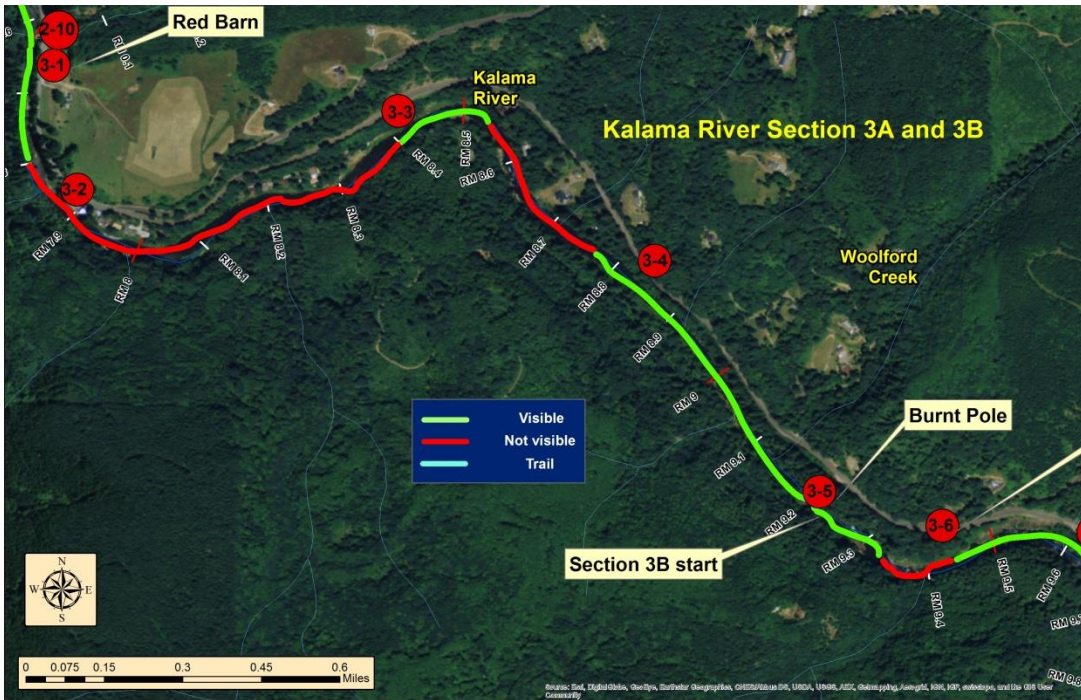


Figure A1-07. Map of Kalama River creel survey Section 3A and 3B.

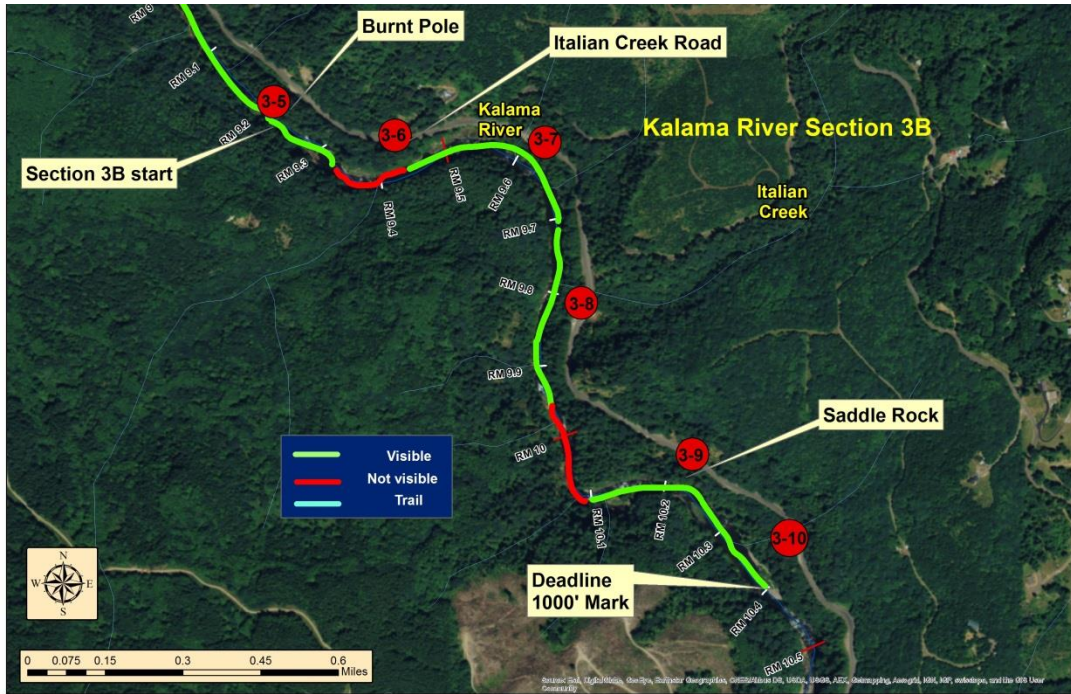


Figure A1-08. Map of Kalama River creel survey Section 3B.

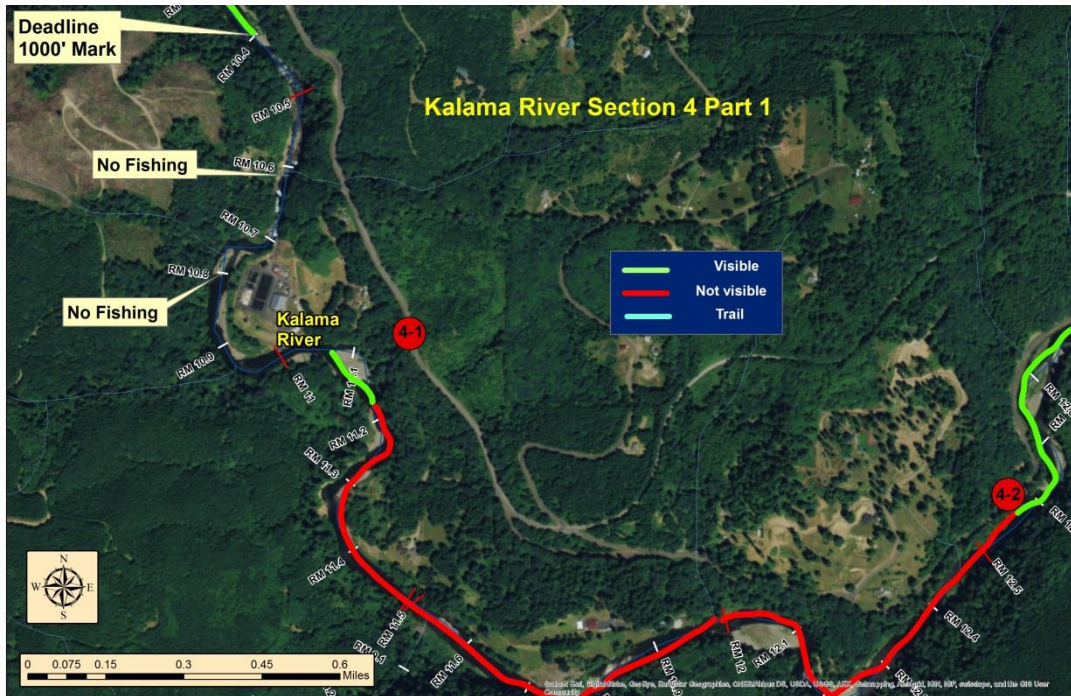


Figure A1-09. Map of Kalama River creel survey Section 4 (Part 1 of 4).

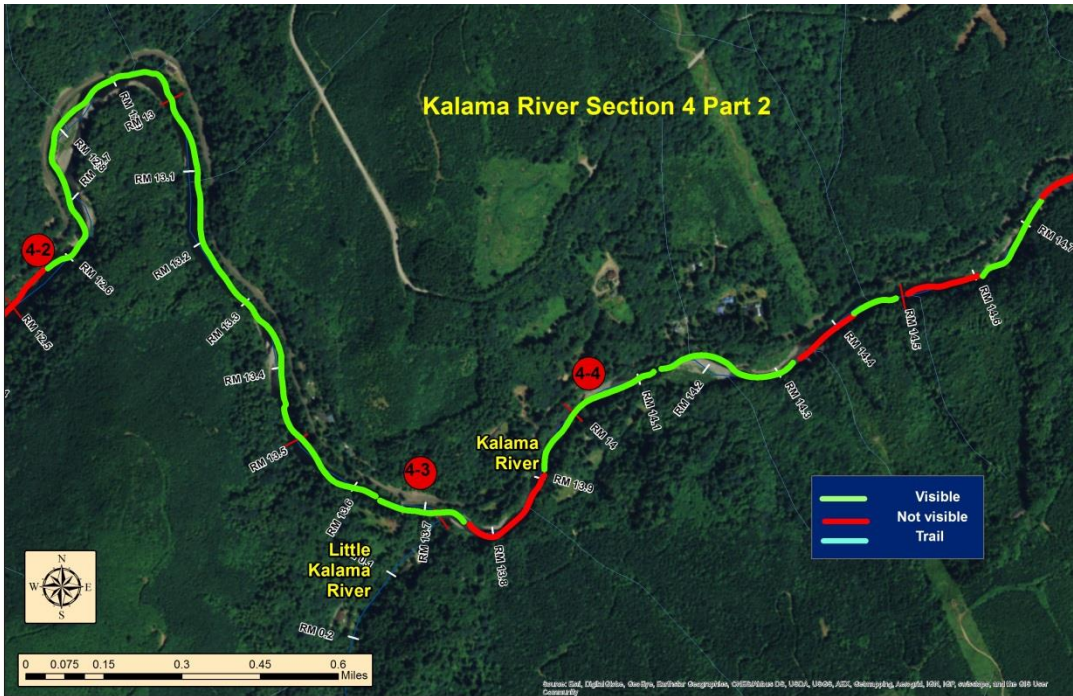


Figure A1-10. Map of Kalama River creel survey Section 4 (Part 2 of 4).

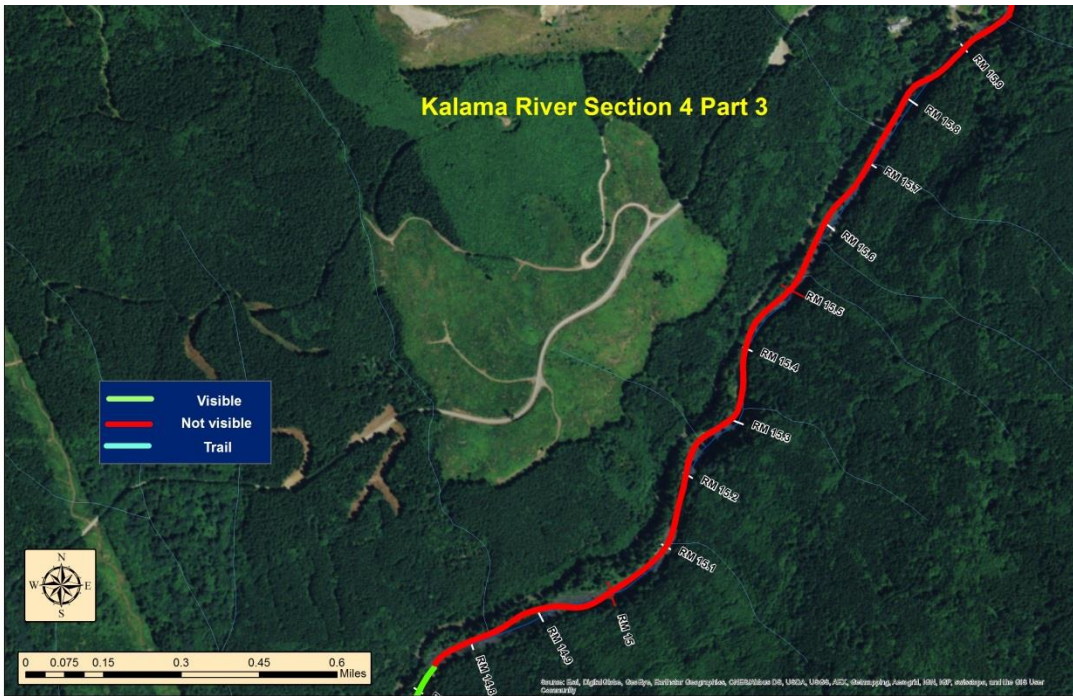


Figure A1-11. Map of Kalama River creel survey Section 4 (Part 3 of 4).

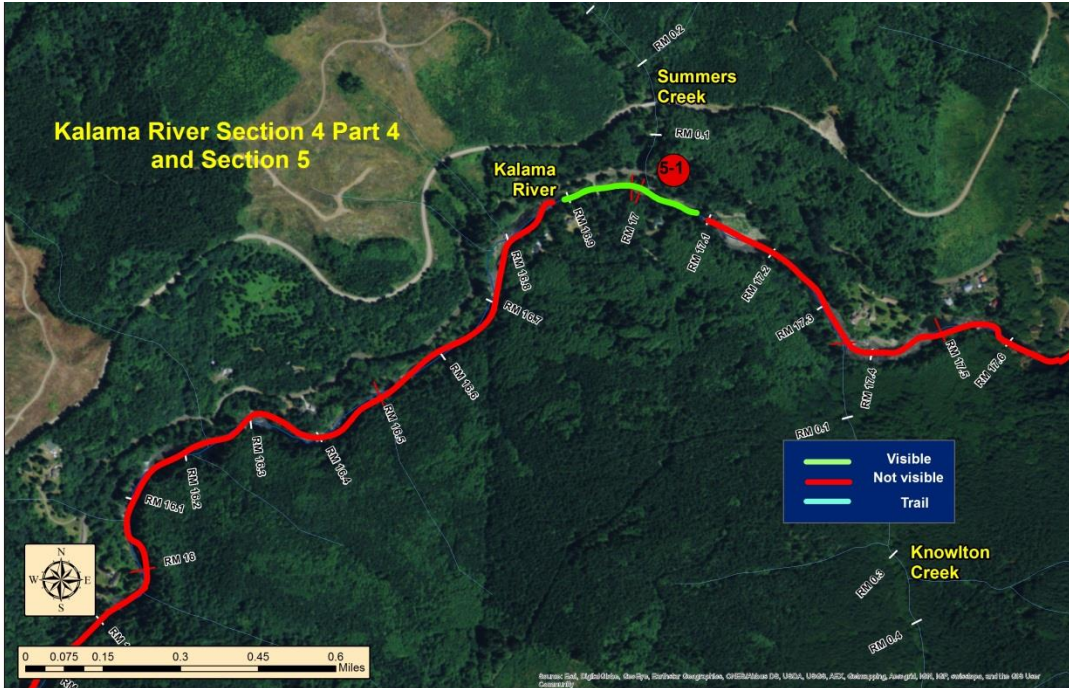


Figure A1-12. Map of Kalama River creel survey Section 4 (Part 4 of 4) and Section 5.

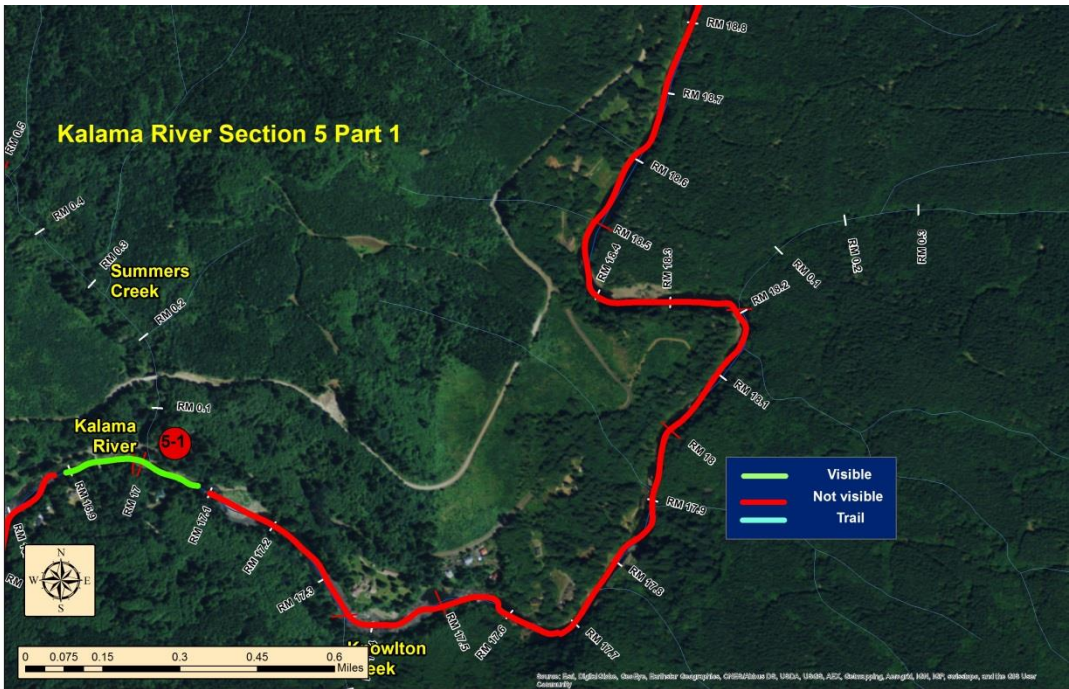


Figure A1-13. Map of Kalama River creel survey Section 5 (Part 1 of 2).

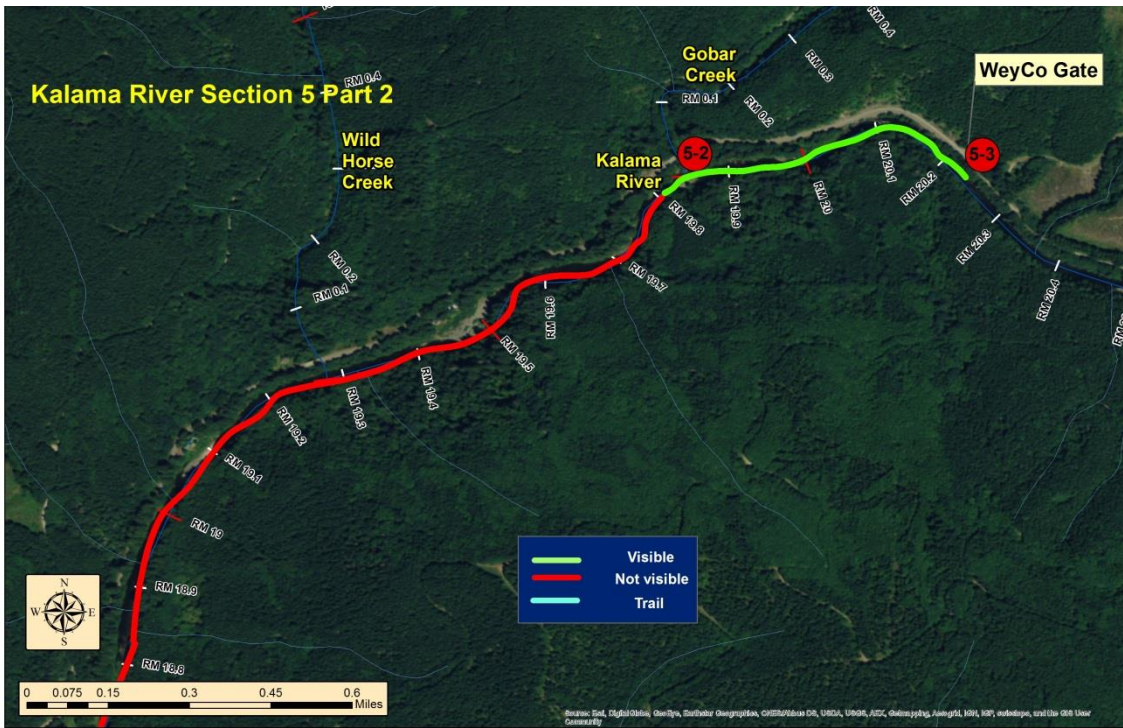


Figure A1-14. Map of Kalama River creel survey Section 5 (Part 2 of 2).

East Fork Lewis River

Effort count sections during the 2014-15 study period consisted of five survey sections: Section 1 – County Park at Storedahl’s, Section 2 – County Maintenance Shop, Section 3 – Daybreak Park; Section 4 – Lewisville Park, and Section 5 – Heisson Bridge to Horseshoe Falls (Figure A2-01). Following the 2014-15 study period, effort data were analyzed and based on effort count times and the number of anglers seen in each section, effort sections 1, 2, and 4 were dropped during 2015-16 and 2016-17. Additionally section 3 was divided into ‘a’ and ‘b’ starting in 2015-16 and the Moulton Falls trail section was dropped from section 5 in 2016-17. While only section 3a, 3b and 5 are surveyed as index areas for angler effort, all sections are surveyed for angler interviews, and tie-in counts continued for the entire area.

Prior to the first Saturday in June, the open fishing area extends from Lewisville Park boat ramp to the mouth. Most of the angling activity occurs around the County Maintenance Shop, County Park at Storedahls, Daybreak Park and Lewisville Park. After the first Saturday in June, the open fishing area extends to Horseshoe Falls.

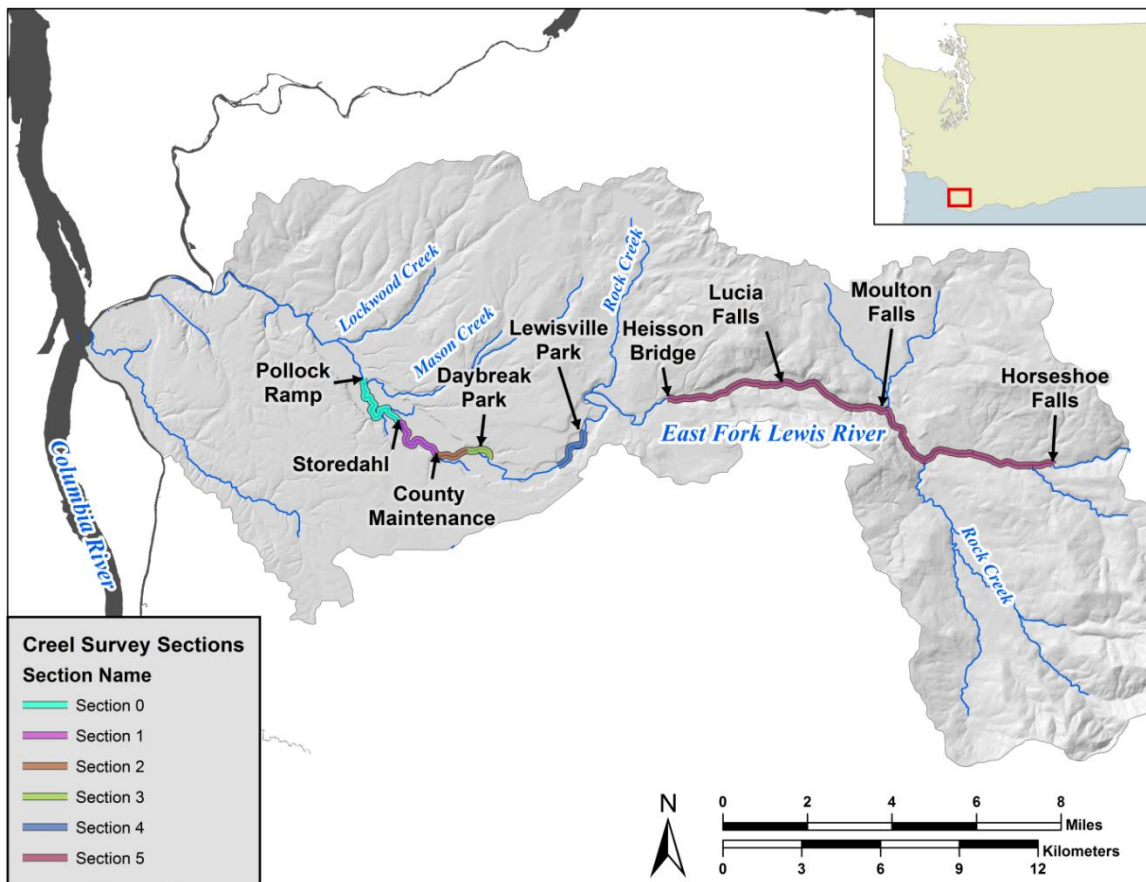


Figure A2-01. Map delineating East Fork Lewis River creel survey sections.

SECTION 0 – POLLOCK BOAT RAMP (FIGURE A2-02)

Drive north on I-5 and take Exit 16. Turn NW Lcenter Rd. and travel 1.8 miles and turn right onto NW Timmen Rd. and left onto Pollock Rd. which will leads down to the Pollock boat ramp.

- 0 Count vehicles and boat trailers in parking area on south side of river as well as parking area on north side of river (just downstream of La Center Rd. Bridge). Glassing for any bank or boat anglers upstream of La Center Rd. Bridge.

SECTION 1 – COUNTY PARK AT STOREDAHL’S (FIGURE A2-02)

Turn back onto Lcenter Rd. towards La Center and after crossing the bridge turn right onto E. 4th St. which becomes NE Lockwood Creek Rd. Turn right onto NE 40th Ave. which becomes NE Charity Rd. Make a slight right onto JA Moore Rd. Approximately 0.5 miles after crossing a bridge over Mason Creek pull into the small parking area on the south side of the road, which is located on the corner of Storedahl Pit Rd.

- 1 Count vehicles at the parking area. Walk the trail to the river bank. Walk upstream and downstream glassing for anglers (see map for section delinations).

SECTION 2 – COUNTY MAINTENANCE SHOP (FIGURE A2-02)

Drive back down NE Bennett Rd. to the corner where it turns into NE 269th St. Park at the small parking area.

- 2 Count vehicles at the parking area. Walk the trail to the river bank. Walk up and down the river bank glassing downstream and upstream. Section 2 begins at large bend (downstream) and ends at mouth of Manley Creek (upstream).

SECTION 3A – DAYBREAK PARK (FIGURE A2-02)

Drive back down NE 269th St and bear right onto Daybreak Rd. Turn right into the west parking lot.

- 3A Count vehicles and boat trailers. Start counting anglers fishing downstream of Daybreak Bridge. West of the parking lot there is a trail that follows the river. Walk the trail to the bend in the river (the most upstream area visible in Section 2). Count any anglers fishing upstream from the mouth of Manley Creek.

SECTION 3B – DAYBREAK PARK (FIGURES A2-02 TO A2-03)

Drive across Daybreak Rd. and park in the east parking lot.

- 3B Count angler vehicles in parking lot and start counting anglers fishing upstream of Daybreak bridge. Most likely there shouldn’t be any trailers in 3B parking lot, since the boat launch is in 3A. East of the parking lot there is a gravel path that

follows the river. Look towards the river while walking the path and count anglers. The gravel path will end abruptly at the river's edge - be cautious of the eroding bank. Glass upstream. The section upriver of this area is private property and not accessible by foot.

SECTION 4 – LEWISVILLE PARK (FIGURES A2-03 TO A2-05)

Leave Daybreak Park and turn right onto NE Daybreak Rd. Turn right onto NE Hyatt Rd. which will turn into NE 82nd Ave. Turn right onto NE 279th St. then turn right again on NE Charter Oak Rd. This road turns into NE 117th, then into NE 274th and finally into NE 122nd. Bear left onto NE 269th then right onto Lewisville Highway. After 0.5 miles the entrance to the park will be on the left.

- 4 Count anglers through the entire park by driving/walking to all access points in the park. There are several parking areas where the river is not easily visible. Walk the river bank glassing upstream and downstream. During the summer the park will get crowded. Specific points of interest to check include the boat launch at the northeast end of the park (check for trailers) as well as the “swimming hole” east of the parking area at the south end of the baseball diamond.

SECTION 5 – HEISSON BRIDGE TO HORSESHOE FALLS (FIGURES A2-05 TO A2-10)

Leave Lewisville Park and turn right onto Lewisville Highway for 3.6 miles. Turn right onto NE Rock Creek Rd. which will turn into NE 152nd Ave. and then into NE Lucia Falls Rd. Heisson Bridge is the start of Section 5.

- 5 Park at the bridge and glass upstream and downstream (the downstream count will be added to Section 4). Proceed back on NE Lucia Falls Rd. toward Lucia Falls Park. Approximately 1.4 miles upriver from Heisson there will be a pullout near the USGS station. When vehicles are present, pull over and count bank anglers. This access was marked as private property in December 2015, making access to the pullout limited.

Continue on Lucia Falls Rd. and turn right into Lucia Falls Park. Walk the trail loop starting at the northwest end of the parking lot down to the creek bridge, and then upstream to the viewing platform and back to the parking lot. The river is closed from the tailout of the “Big Eddy” hole (the hole that is upstream of the hole that the viewing platform overlooks) to 100’ upstream of the falls, and it is not uncommon to see anglers fishing out-of-bounds in this section. From Lucia Falls Park, turn right onto Lucia Falls Rd. heading towards Moulton Falls.

Take a right turn onto Hantwick Rd., crossing the bridge and counting any anglers fishing the upper end of Lucia Falls Park. Turn around and continue up Lucia Falls Rd. Look for vehicles and bank anglers, pulling over when needed. There is a popular pull out for anglers near the rail road bridge approximately 2 miles upstream from Lucia Falls Park. There are 3 pull outs used by anglers between the railroad bridge and Moulton Falls.

Moulton Falls Park –During study periods 2014-15 and 2015-16, creel surveyors walked the trail upstream of Moulton Falls to the footbridge to look for anglers, but due to time constraints and lack of angler counts in this area the walk was removed in 20-16-17. This trail can be walked from two locations – starting at the lower Moulton Falls parking lot or the upper parking lot (closed in the winter). Follow the trail upstream that parallels the river to the footbridge, glassing up and downstream for anglers. The river is closed 400feet above and below Moulton Falls, and it is not uncommon to see anglers fishing out-of-bounds in this area. From Moulton Falls, turn right onto Sunset Falls Rd. and proceed approximately 2 miles to Dole Valley Rd. Bridge, crossing the bridge and looking for anglers fishing upstream or downstream. Turn around and continue east on Sunset Falls Rd. Most of the access from Dole Valley Rd. Bridge to 1.5 miles upstream is private property, and the river is not visible in this area.

Continue upstream toward Horseshoe Falls, looking for parked vehicles and anglers. Five well-used pull outs will become visible approximately 1.5 miles upstream of Dole Valley Rd. Bridge, and will continue up to the mouth of King Creek and further upstream towards Horseshoe Falls. The area around Horseshoe Falls is only accessible via private property, and cannot be easily seen. The river is closed to all fishing from 400 feet below Horseshoe Falls upstream. This is the upper end of fishing activity.

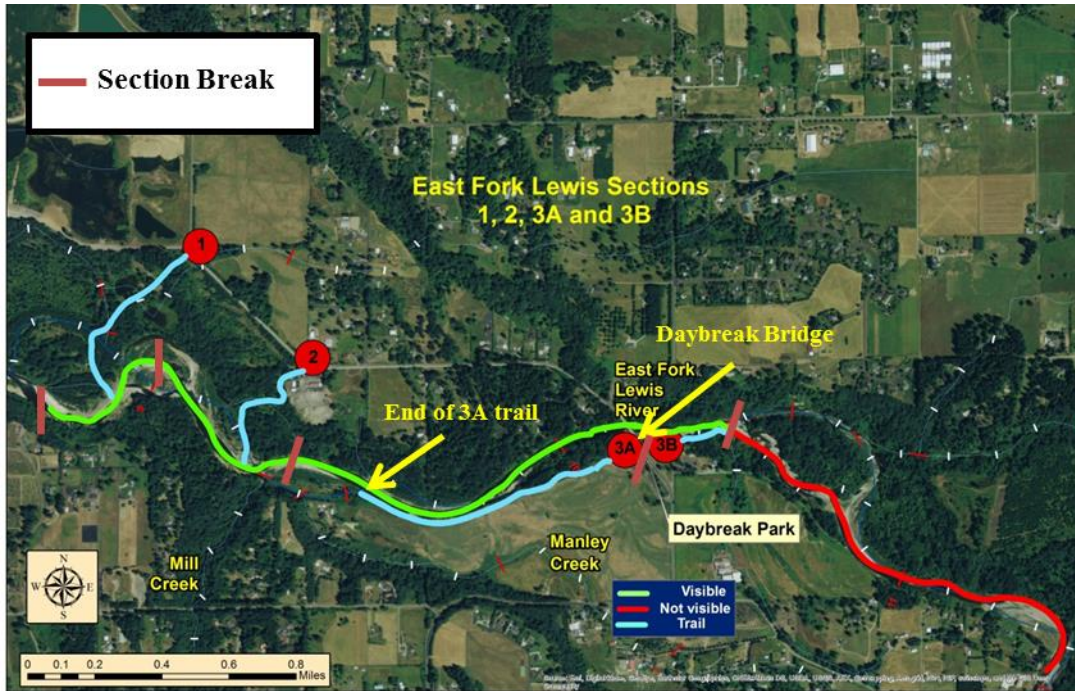


Figure A2-02. Map of East Fork Lewis River creel survey Sections 1, 2, 3A and 3B (Part 1 of 2).

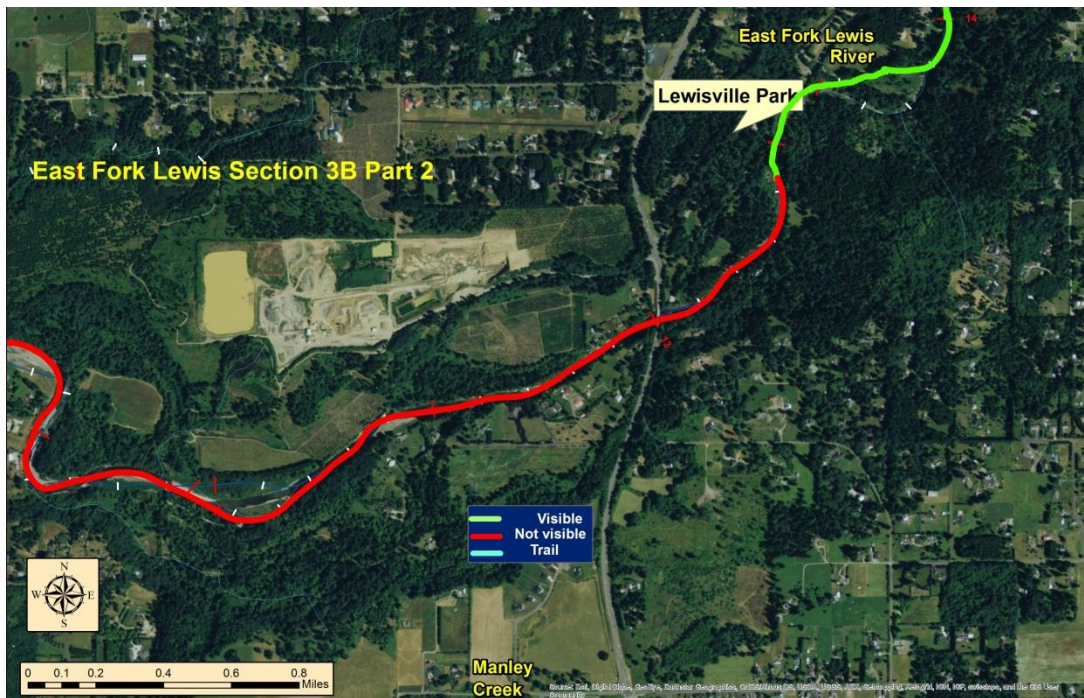


Figure A2-03. Map of East Fork Lewis River creel survey Section 3B (Part 2 of 2).

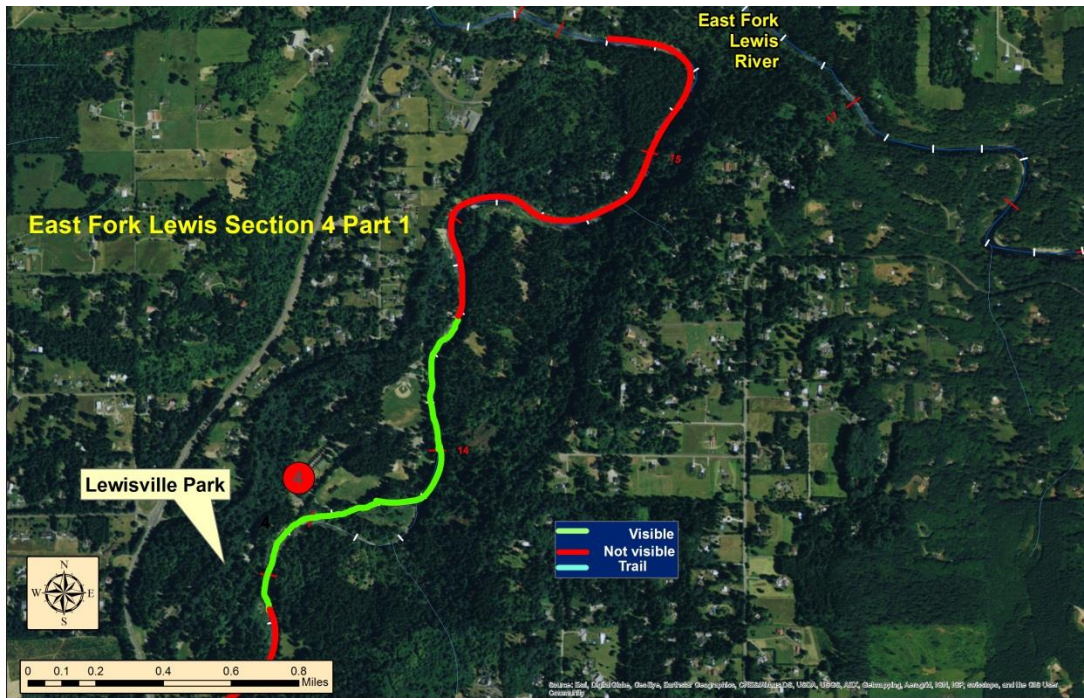


Figure A2-04. Map of East Fork Lewis River creel survey Section 4 (Part 1 of 2).

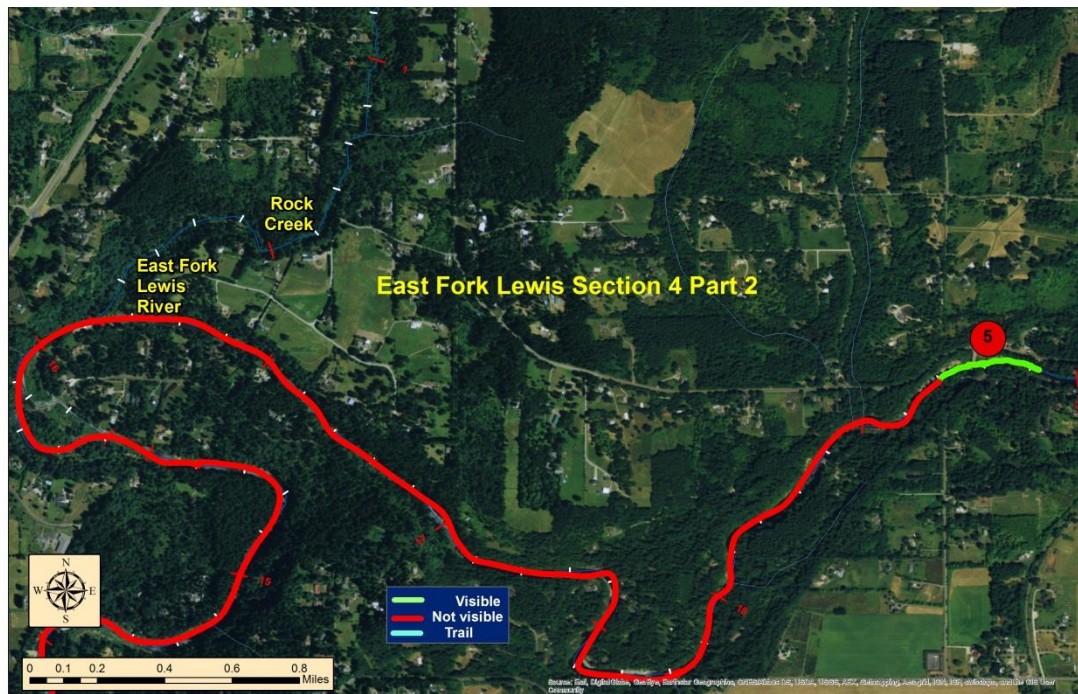


Figure A2-05. Map of East Fork Lewis River creel survey Section 4 (Part 2 of 2).

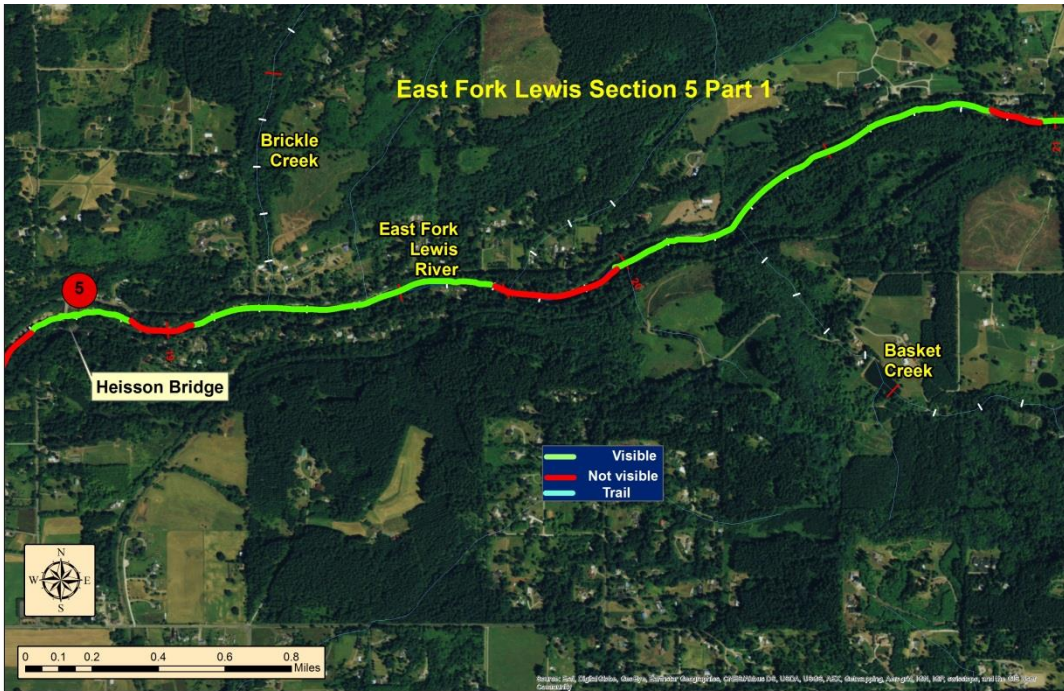


Figure A2-06. Map of East Fork Lewis River creel survey Section 5 (Part 1 of 5).

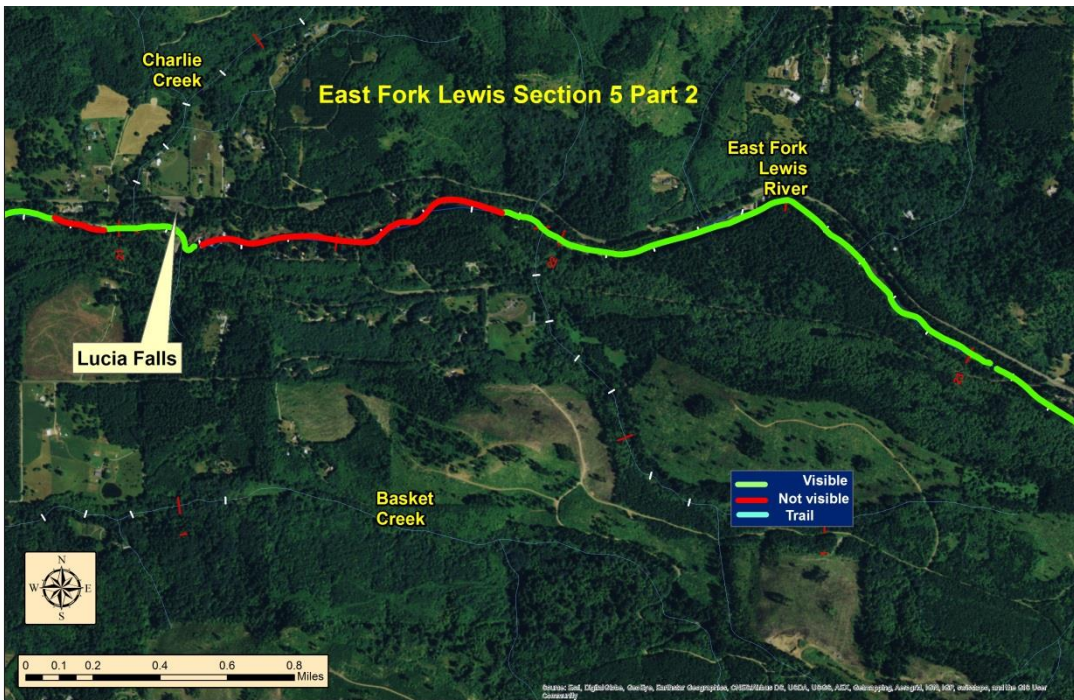


Figure A2-07. Map of East Fork Lewis River creel survey Section 5 (Part 2 of 5)..

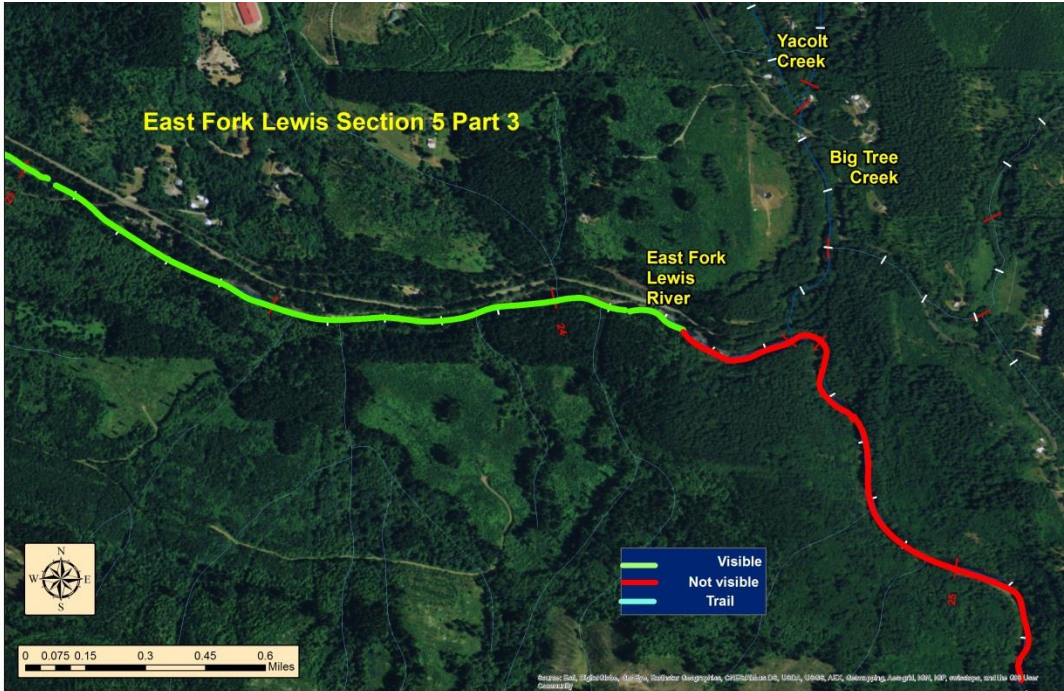


Figure A2-08. Map of East Fork Lewis River creel survey Section 5 (Part 3 of 5).

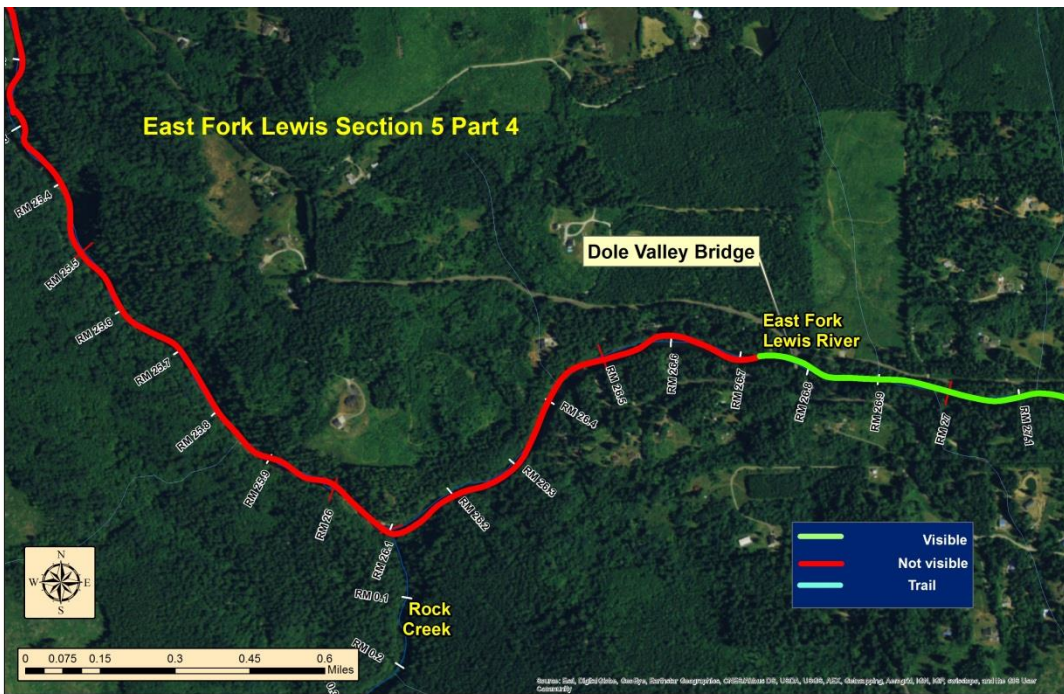


Figure A2-09. Map of East Fork Lewis River creel survey Section 5 (Part 4 of 5).

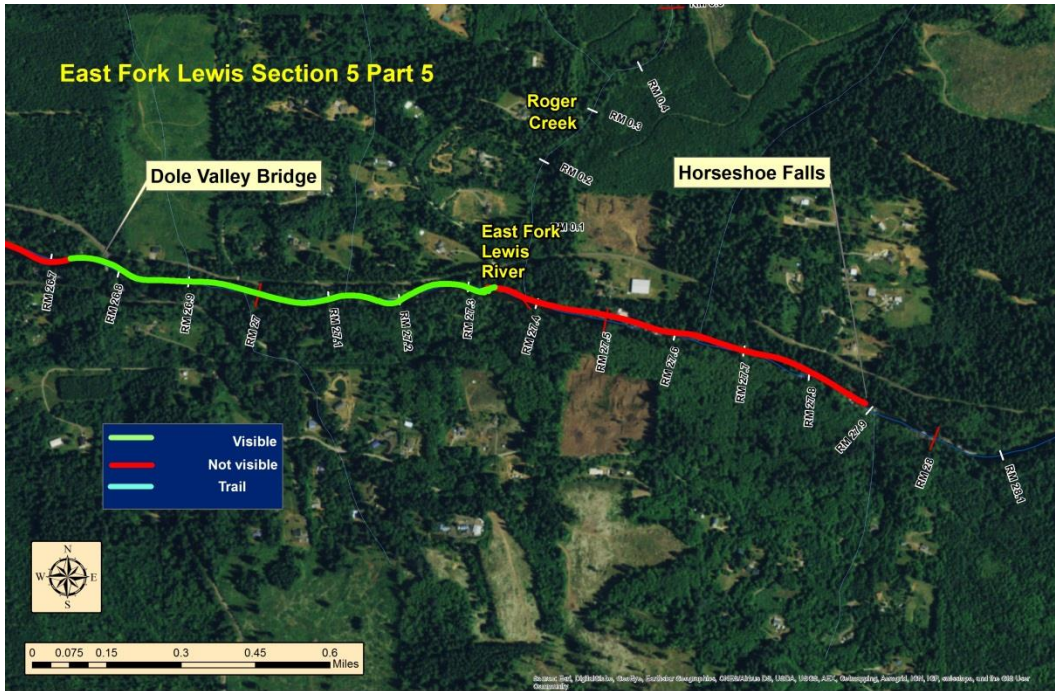


Figure A2-10. Map of East Fork Lewis River creel survey Section 5 (Part 5 of 5).

Washougal River

Effort count sections prior to the 2014-2015 creel survey period consisted of two survey sections: Section 1 – Mouth to Mt. Norway Bridge (at Vernon Rd.) and Section 2 – Mt. Norway Bridge to Salmon Falls. In spring 2014, the two sections were amended and beginning in 2015-2016 the new sections were: Section 1 – Mouth to Mt. Norway Bridge (at Vernon Rd.), Section 2 – Mt. Norway Bridge to Public Fishing Rd., Section 3 – Public Fishing Rd. to Salmon Falls, and Section 4 – the Hatchery at the West Fork Washougal (Figure A3-01).

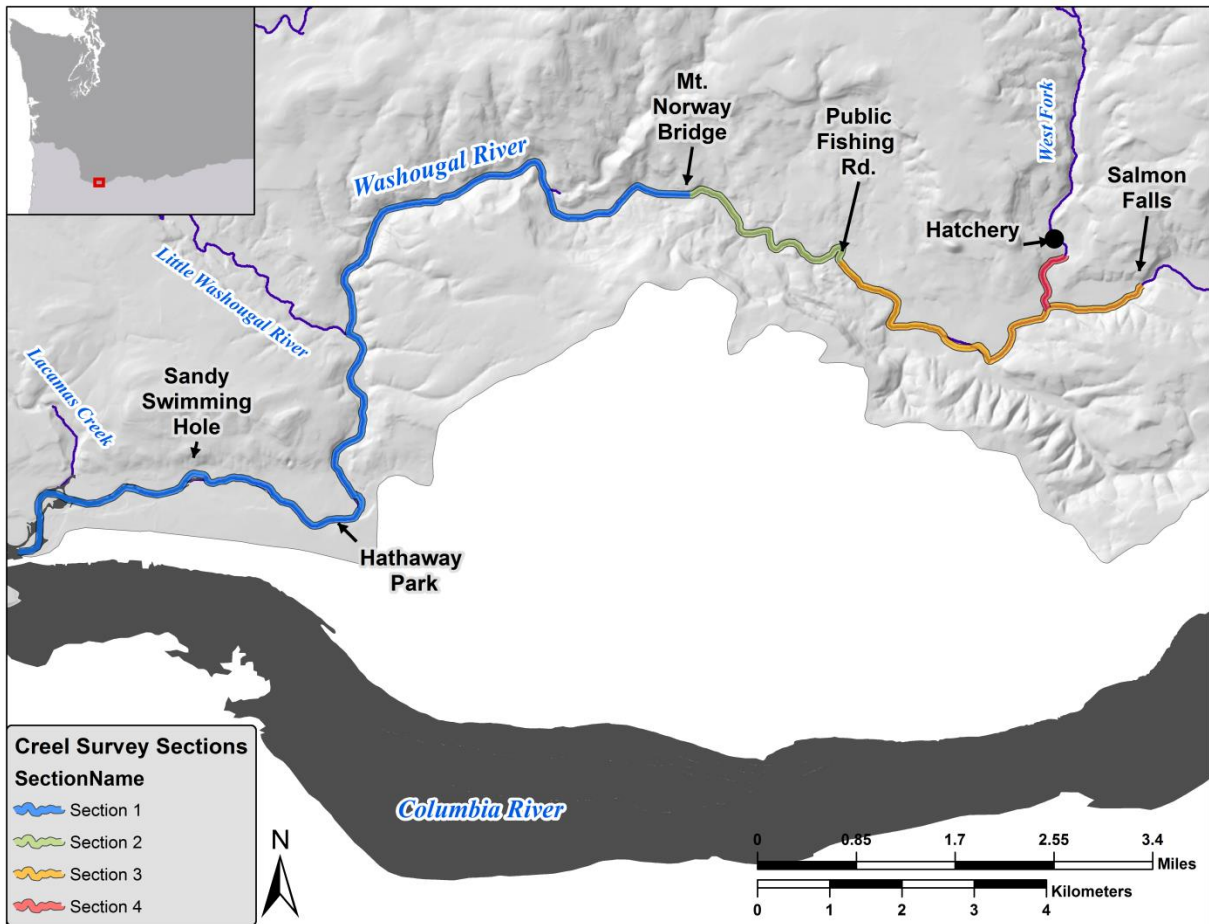


Figure A3-01. Map delineating Washougal River creel survey sections.

SECTION 1 – MOUTH TO MT. NORWAY BRIDGE (FIGURES A3-02 TO A3-03)

Drive east on Highway 14 towards Washougal. Take Exit 14 to the roundabout and turn right onto SE Union St. and bear left onto SE 6th Ave. to the bridge. For the lower section there are a variety of roads that will take you to the fishing areas. Check a map to find best routes.

- 1 Oak Park is located at the mouth of the Washougal River. Continue on to the areas known as the Cop Shop and Iron Guard. There will be trails accessing the river. Another fishing area is on NE 3rd Ave. called the Bowling Alley site. Continue on to N. Shepherd Rd. to the Sandy Hole. On the north end of 28th St., Hathaway Park can be accessed. The Greens is located upstream.

There is some fishing activity at the confluence of the Little Washougal River. Check pullouts along the Washougal River Rd.

SECTION 2 – MT. NORWAY BRIDGE TO PUBLIC FISHING RD. AKA FORD’S (FIGURES A3-03 TO A3-04)

Drive along Washougal River Rd.

- 2 Stop at pullouts along this section.

SECTION 3 – PUBLIC FISHING RD. AKA FORD’S TO SALMON FALLS –DEADLINE (FIGURE A3-04)

Drive along Washougal River Rd.

- 3 Stop at pullouts along this section. This area has a lot of private property that is not visible.

SECTION 4 – THE HATCHERY AT WEST FORK WASHOUGAL (FIGURE A3-04)

- 4 Drive to the Hatchery parking area and count vehicles. If vehicles are present walk to the intake hole and count anglers.



Figure A3-02. Map of Washougal River creel survey Section 1 (Part 1 of 2).



Figure A3-03. Map of Washougal River creel survey Section 1 (Part 2 of 2) and Section 2.

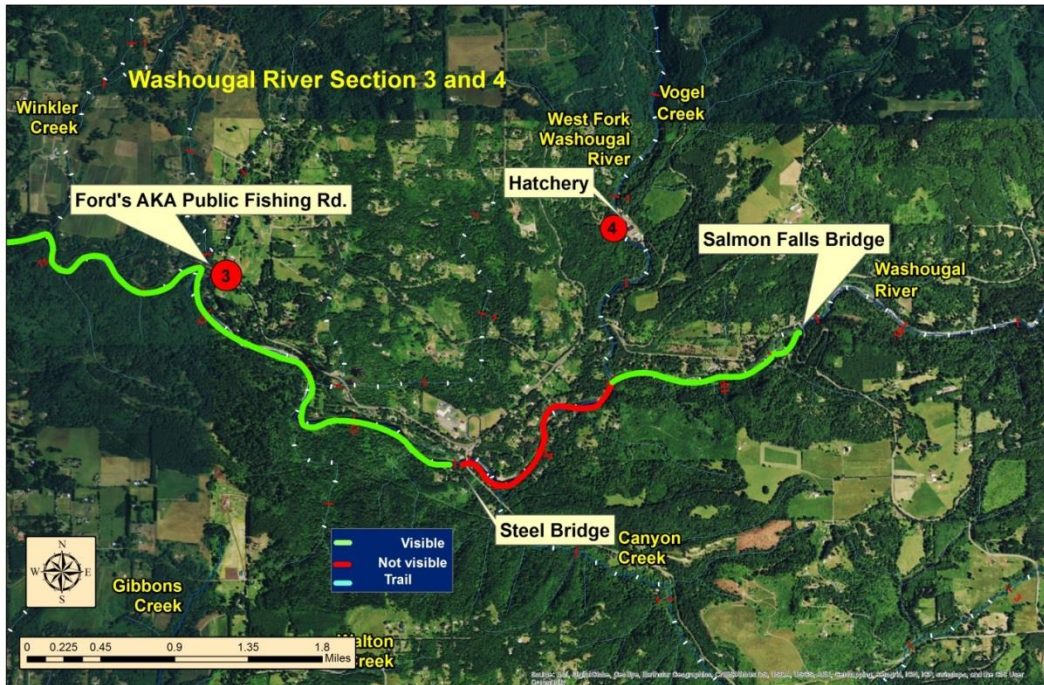


Figure A3-04. Map of Washougal River creel survey Section 3 and 4.

Coweeman River

Effort count sections during the 2014-2015 creel survey period consisted of two survey sections: Section 1 – Tree Farm to Painted Rock and Section 2 – Painted Rock to Deadline. In 2015-2016, survey sections were amended and consisted of: Section 1 – Allen St., Section 2A – Below Libby Lane Bridge (Jeep Bridge), Section 2B – Above Libby Lane Bridge (Jeep Bridge), Section 3A – Below Schoolhouse Rd. Bridge, 3B – Above Schoolhouse Rd. Bridge, Section 4A – Painted Rock to Mullholland Creek, Section 4B – Mullholland Creek to river-mile (RM) 24, and Section 4C – RM 24 to Baird Creek (Deadline). Survey sections during the 2016-17 study period were the same as in 2015-16.

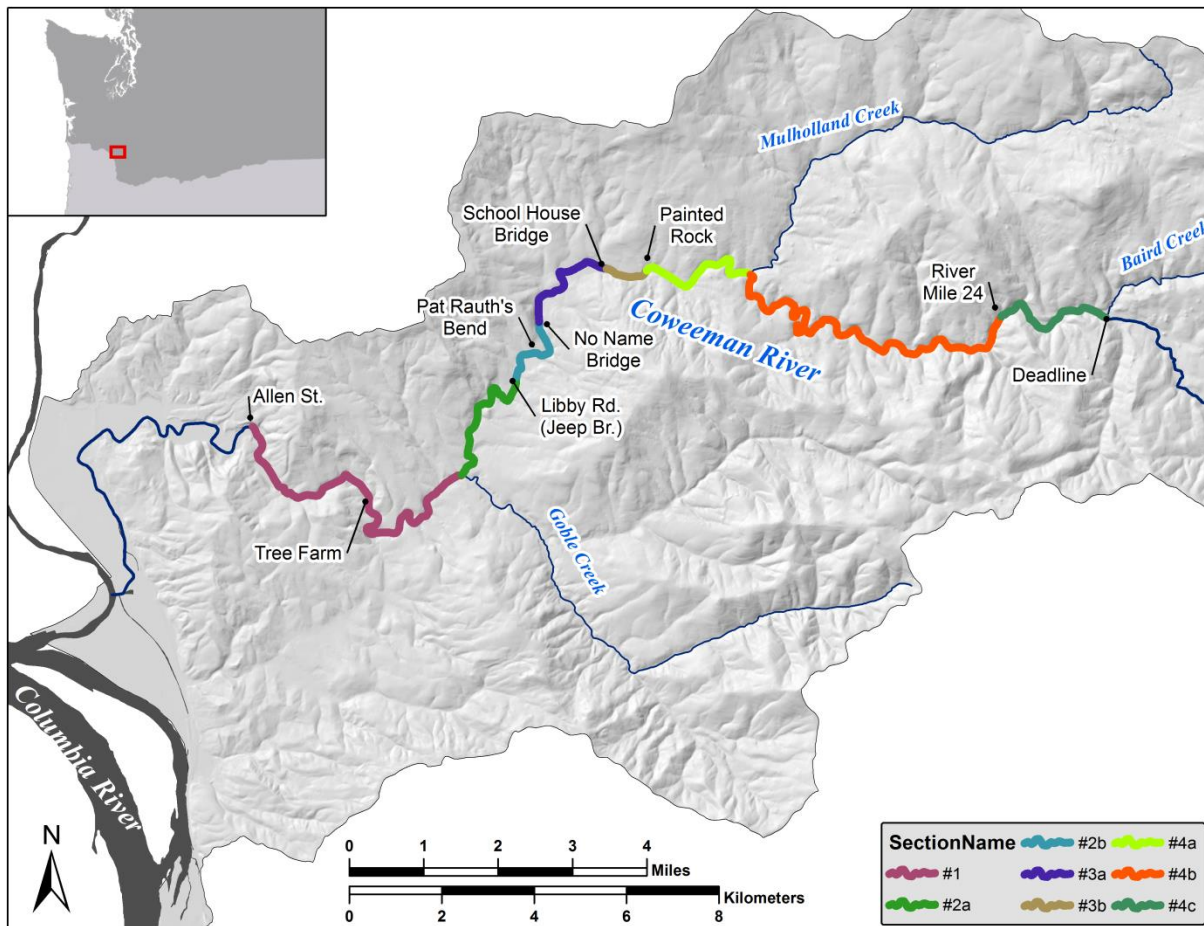


Figure A4-01. Map delineating Coweeman River creel survey sections.

SECTION 1 – ALLEN ST. (FIGURES A4-02 TO A4-03)

Drive to Kelso, Washington, and take Allen Rd. to RM 5.9.

- 1 Proceed from RM 5.9 to the gravel pit on the left side of the road. Count vehicles and anglers. Anglers fishing this area will need private property access and will usually park near the brown house on the right just before the gravel pit.

SECTION 2A – BELOW LIBBY LANE BRIDGE (AKA JEEP BRIDGE) (FIGURE A4-03)

Proceed back on Allen St. toward I-5. Prior to the overpass, turn left on Pacific Highway South. Turn left on Rose Valley Rd. and drive 7.3 miles to Libby Lane Bridge.

- 2A On bridge, glass downstream. Anglers will often park in the pullouts on the east side of the bridge and walk downstream to fish.

SECTION 2B – ABOVE LIBBY LANE BRIDGE (FIGURES A4-03 TO A4-04)

- 2B On bridge, glass upstream. Pat Rauth's property is a popular spot for anglers, and is located on the left bank looking upstream from the jeep bridge, where the river splits.

SECTION 3A – BELOW SCHOOLHOUSE RD. BRIDGE (FIGURE A4-05)

Continue on Rose Valley Rd. to Schoolhouse Rd. Bridge.

- 3A On bridge, glass for anglers fishing downstream of the bridge. Cross bridge and turn left on Schoolhouse Rd. There are multiple pullouts along Schoolhouse Rd., and the river can be mostly seen from the road. Follow the river counting anglers and vehicles until the road ends at a blue Weyerhaeuser gate, ending section 3A. Turn around and return to Rose Valley Rd.

SECTION 3B – ABOVE SCHOOLHOUSE RD. BRIDGE (FIGURES A4-05 TO A4-06)

- 3B Turn left, continuing onto Rose Valley Rd. This starts Section 3B. Follow Rose Valley Rd. east, looking for vehicles parked in pullouts along the road. The road follows the river closely in the first half of this section, and although there are several pullouts, most of the access is private property. One of the popular pullouts is on the left side of the road near a blue Weyerhaeuser gate approximately 0.6 miles upstream of Schoolhouse Rd. Continue up Rose Valley Rd. until you reach the yellow "Channel 8" sign (aka Painted Rock).

SECTION 4A – PAINTED ROCK TO MULLHOLLAND CREEK (FIGURES A4-06 TO A4-07)

Proceed from the yellow "Channel 8" sign (starting Section 4A) heading upstream on Rose Valley Rd. (RVR), which will turn into a one-lane road with occasional pullouts. Turn CB radio on Channel 8 for this stretch of the road and actively call out positioning every ½ mile.

Extra caution is necessary when travelling this section, as logging truck traffic can range from minimal to heavy. Most local landowners also use CB radios to communicate going in and out of this area. Drive slow and keep CB radio on at all times in Sections 4A, 4B, and 4C.

- 4A Proceed upriver, counting anglers and vehicles as you drive and pulling over to count anglers as needed. Past the yellow sign, there is a popular pullout across the street from the green barn and house (called the Slab Hole, also Mile 0) just before the road turns into single-lane. At the 1.0 mile mark, there is another popular pullout on the right next to a blue gate (called the 4th of July Hole). Continue up RVR until you reach Mulholland Creek Bridge (at approximately Mile 1.2), ending Section 4A.

SECTION 4B –MULLHOLLAND CREEK RM 24 (FIGURES A4-06 TO A4-10)

From Mulholland Creek Bridge to Mile 7.5 (Old Bridge).

- 4B Proceed upriver from Mulholland Creek Bridge (beginning Section 4B), looking for anglers and vehicles along the way and pulling over as needed. This section is much longer than 4A, going from Mile 1.2 up to 7.5, and has many pullouts. Extreme caution should be taken going from Mile 1.5 to 2.5, as the road narrows significantly and pull outs are limited. Popular pullouts in this section occur at Mile 1.5, 3.0, 4.0, 4.5, 5.0, and throughout up to the section break at Mile 7.5. Section 4B ends at Mile 7.5, at the old bridge.

SECTION 4C – RIVER-MILE (RM) 24 TO BAIRD CREEK (DEADLINE) (FIGURE A4-10)

From Mile 7.5 (Old Bridge) to 8.2 (Yellow Weyerhaeuser Gate).

- 4C Proceed upriver from Mile 7.5 to the yellow Weyerhaeuser Gate. This section is very short (0.7 Miles) and the road mostly follows the river. This section has a few pullouts, including right before the gate itself. The fishing deadline at Baird Creek is just beyond the yellow gate. This ends Section 4C and the upper reach of fishing activity.

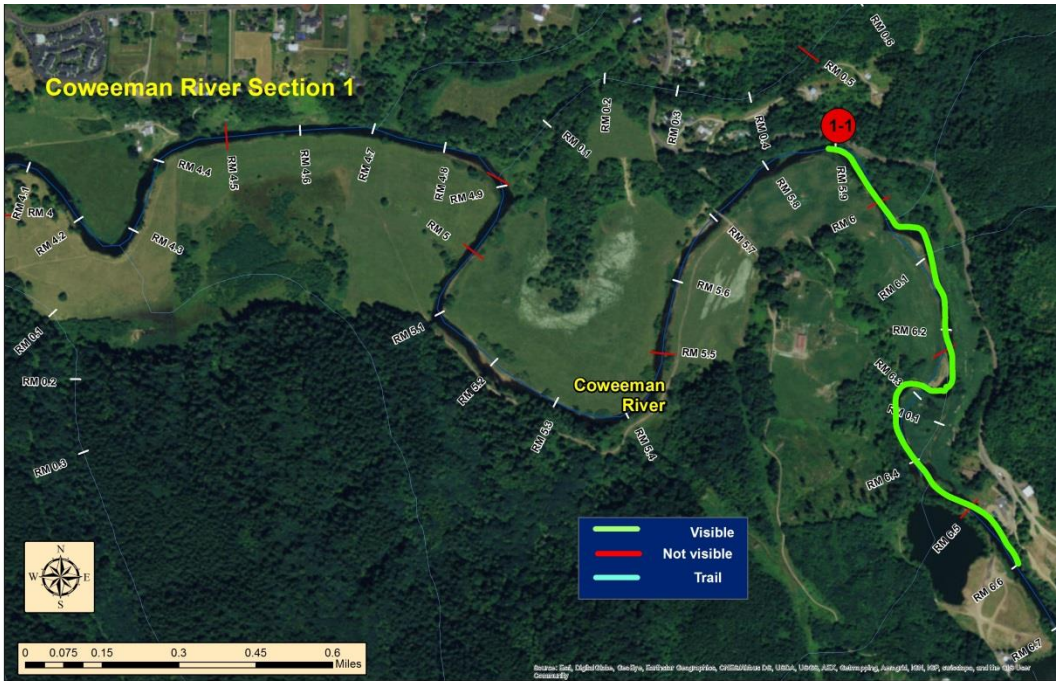


Figure A4-02. Map of Coweeman River creel survey Section 1.

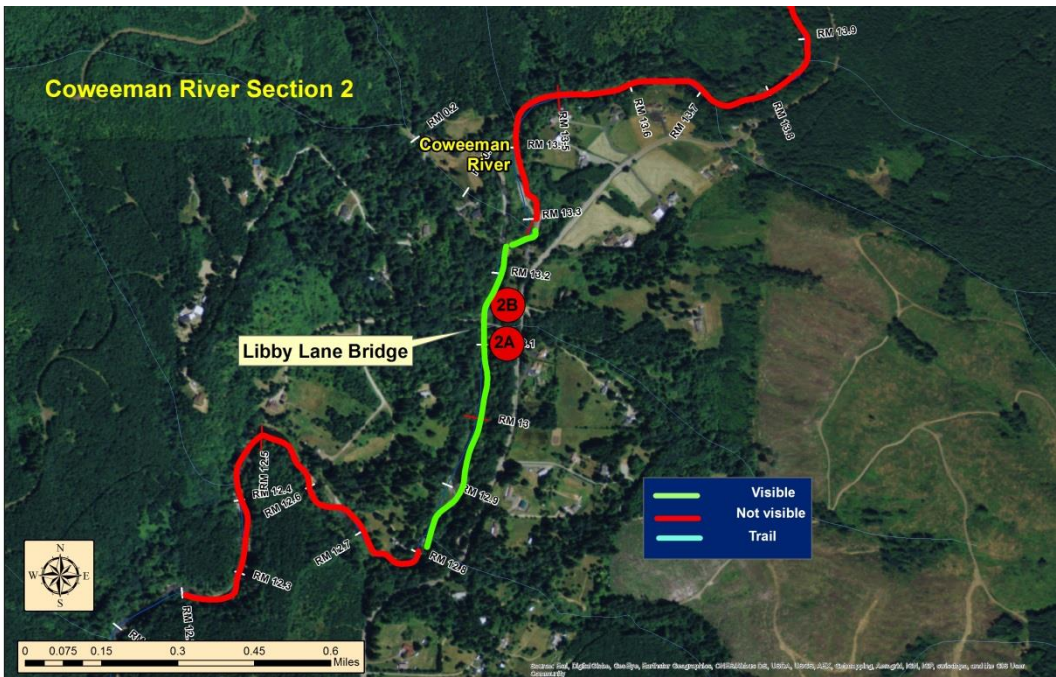


Figure A4-03. Map of Coweeman River creel survey Section 2A and 2B.

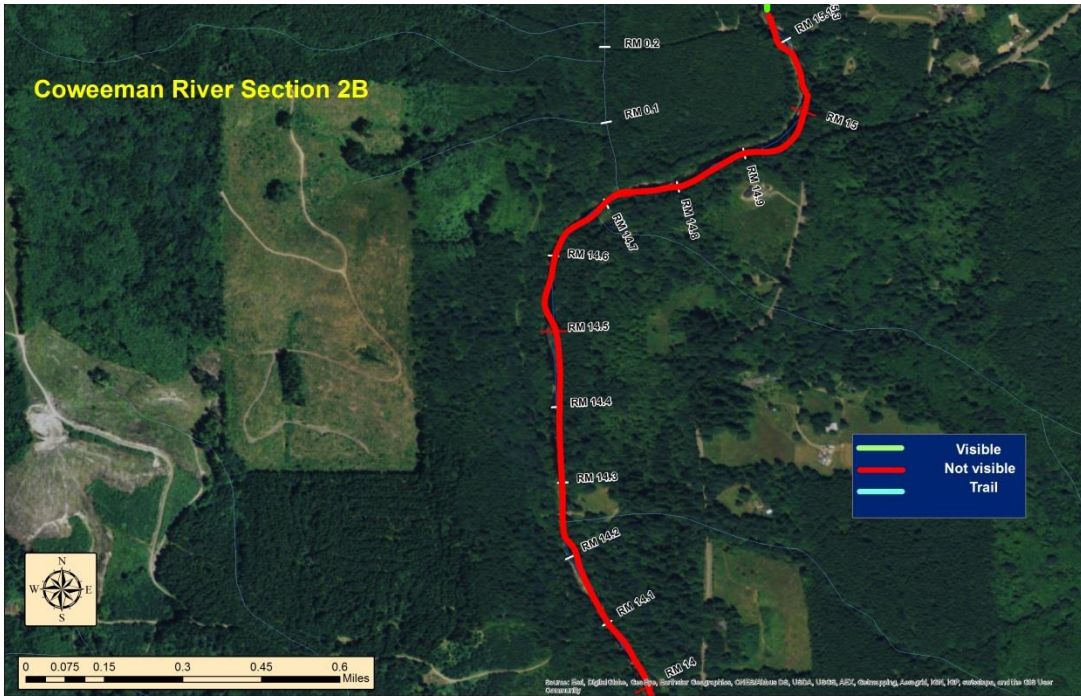


Figure A4-04. Map of Coweeman River creel survey section 2B.

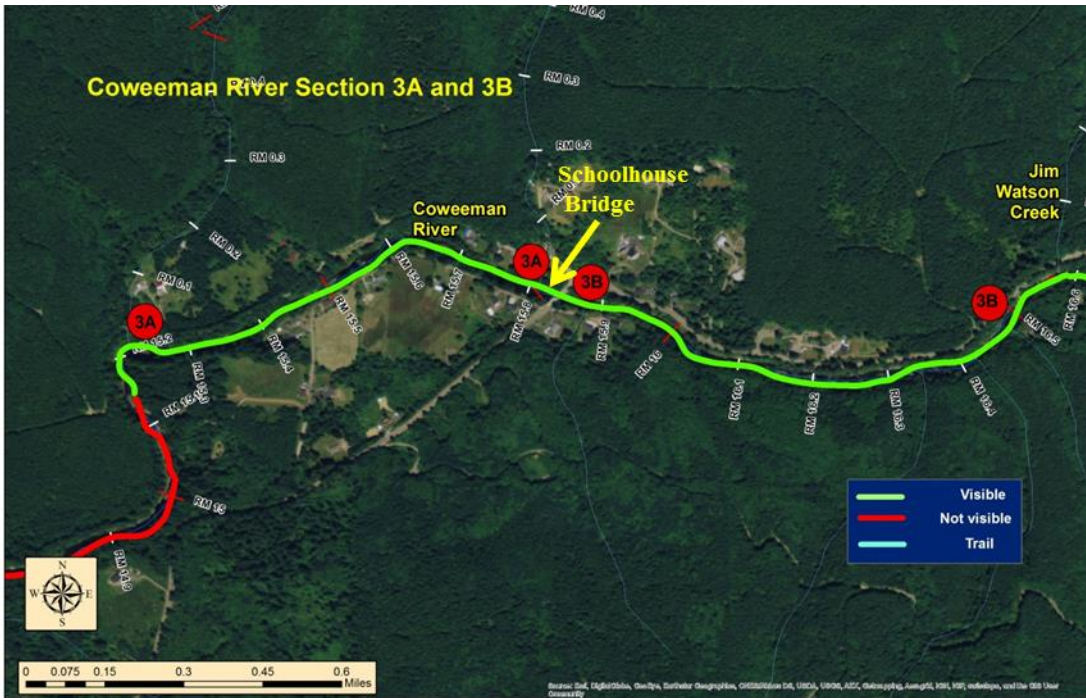


Figure A4-05. Map of Coweeman River creel survey section 3A and 3B.



Figure A4-06. Map of Coweeman River creel survey section 3B and 4A.



Figure A4-07. Map of Coweeman River creel survey section 4B (Part 1 of 4).

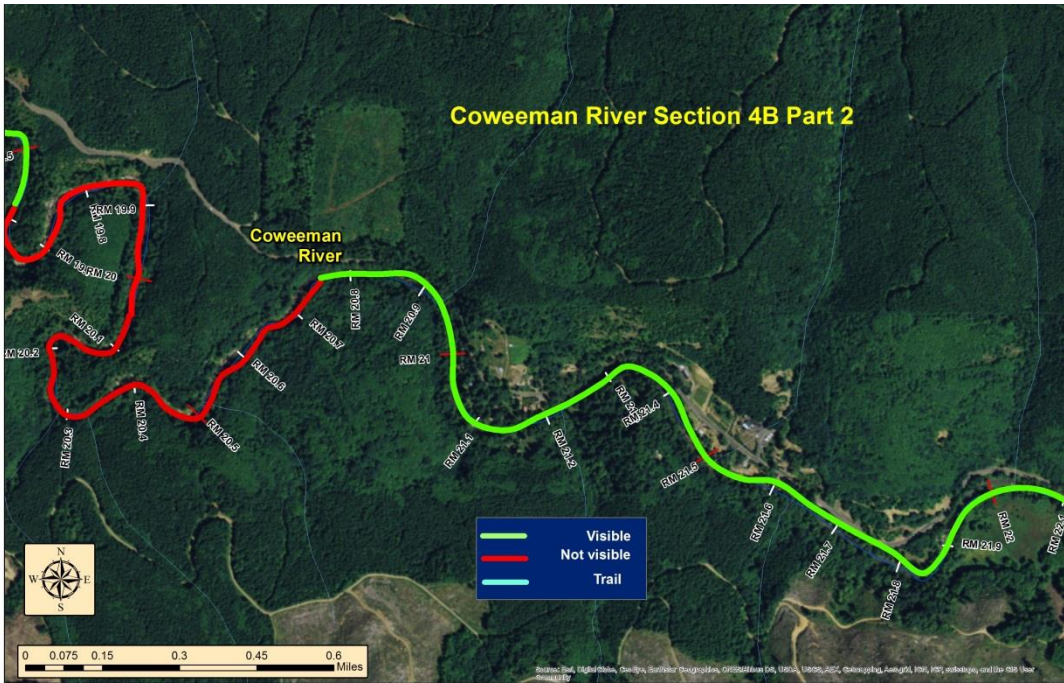


Figure A4-08. Map of Coweeman River creel survey Section 4B (Part 2 of 4).

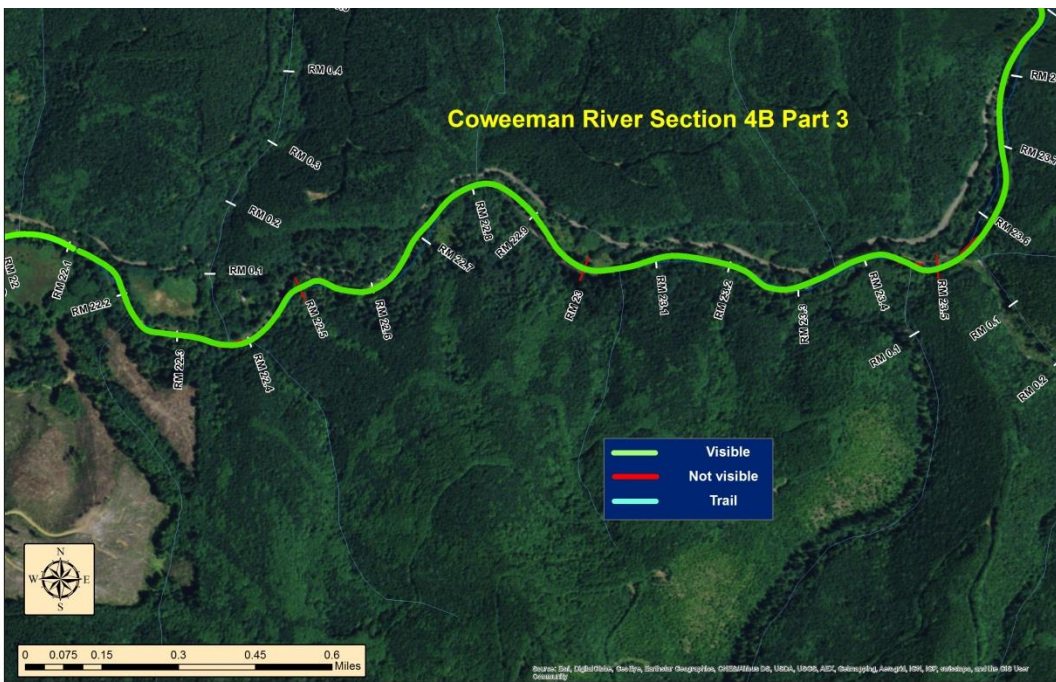


Figure A4-09. Map of Coweeman River creel survey Section 4B (Part 3 of 4).

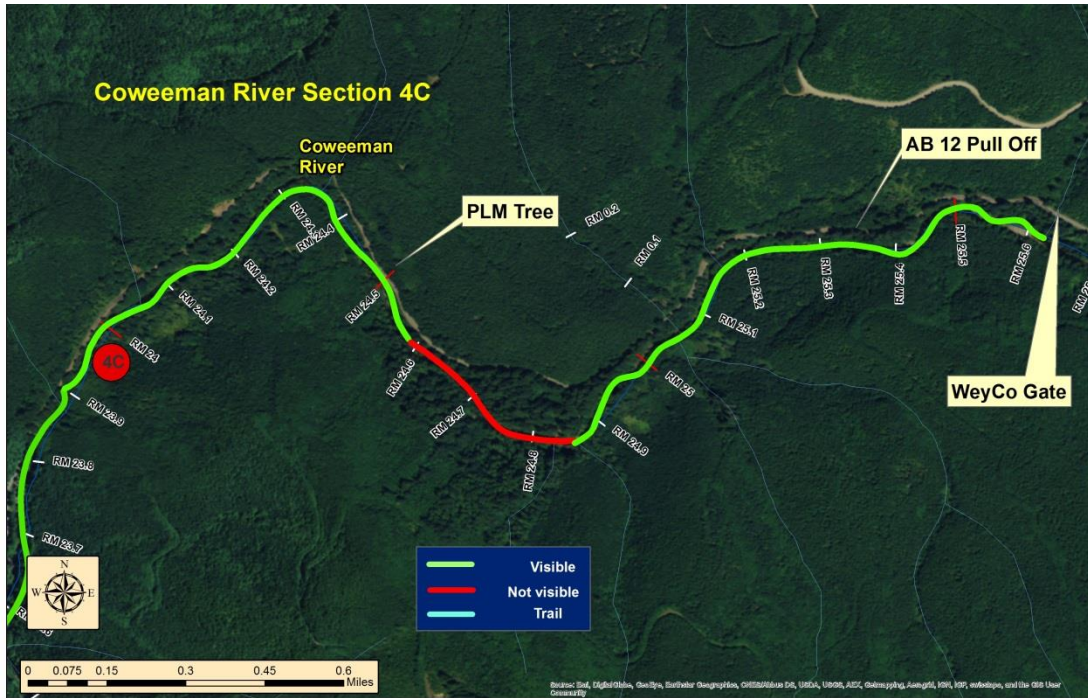


Figure A4-10. Map of Coweeman River creel survey Section 4B (Part 4 of 4) and Section 4C.

White Salmon River

Four effort count areas (1 – 4) were delineated in 2014: Section 1 – Mouth to Powerhouse Rd. Bridge, Section 2 – Powerhouse Bridge to Northwestern Lake Rd. Bridge, Section 3 – NW Lake Rd. Bridge to Husom Falls, and Section 4 - Husom Falls to Big Brother Falls. After review of angler effort data, sections 2 and 4 were dropped for the 2015 and 2016 surveys. Additionally, section 1 has been split into sections 1a and 1b (Figure A5-01). Tie-in counts, which were not conducted in 2014, will be conducted in 2015 and 2016 to get an effort index expansion estimate. While angler effort counts won't be conducted in sections 2 and 4, angler contacts and interviews will be pursued on all creel days whenever time permits and anglers are present.

SECTION 1 - MOUTH AREA/FIRST RIFFLE TO POWERHOUSE RD. BRIDGE (“BURNT BRIDGE”)

- **Section 1a** includes the area between the SR 14 bridge and railroad bridge and the slackwater area immediately upstream (100 meters) of the SR 14 bridge that is generally fished from the east bank. Access by parking at the bottom of SR 141. Do not count boaters or bank fishermen downstream of the railroad bridge.
- **Section 1b** is the remainder of the area beginning 200 meters upstream of SR 14 up to the “Burnt Bridge” and is more complex and time consuming to conduct an effort count.
 - Portions of both the west and east banks have to be surveyed in order to complete the count in section 1b:
 - On the west side of the river, drive up Cook-Underwood Rd. After about ½ mile turn right onto Powerhouse Rd. There is a locked gate blocking the road near the residences and anglers often park here and walk in, as do other folks simply walking. If nobody is parked at the gate then it is not necessary to walk in for the effort count. Park out of the way and follow the road which will follow the canyon and eventually bring you to the old bridge (burnt bridge-end of section 1). The only trail accessing the river in this section is near the bridge, but anglers can walk about ¼ mile downstream along the bank from this trail. Anglers doing so may be visible from the road as you walk in.
 - Proceed north on the SR141 Rd. Look for a series of pull outs on the river side of the road. Trails lead down to fishing spots on the lower river. Anglers may be visible from the road at the lower end. The most popular fishing spot is known as the “Riffle Hole” and has a large turnout on the west side of the road after it begins to climb away from the river. If cars are parked at this turnout then the surveyor must walk down the trail to count anglers.
 - Below the junction with SR 141 there is a left turn (Arnett Rd.) with a gated, gravel spur road on the immediate left. This steep spur road leads to rearing

ponds on the east bank of the river and access to several good fishing holes (often this area is referred to as the “raceways”).

SECTION 2 - BURNT BRIDGE TO NORTHWESTERN LAKE RD. BRIDGE

- Angler access is sparse and seldom used from a couple of turnouts along Powerhouse road (off of SR 141) and Northwestern Lake Road.
- These include the area around “Steelhead Falls (downstream of the old site of Condit Dam), near the old powerhouse, and immediately upstream of the Burnt Bridge.

SECTION 3 - NORTHWESTERN LAKE RD. TO HUSOM FALLS

- Most angler foot access is immediately below Husom Falls or by boating the section (launching at Rattlesnake Creek and floating to Northwestern Lake Rd.) . Begin here surveying the area above and below the bridges.
- A couple of obscure bank access points exist off of Fordyce Rd. (via private land or an unmarked US Forest Service access point). Check these after completing the effort count near Husom Falls.

SECTION 4 - HUSOM FALLS TO BIG BROTHER FALLS

- This section is shortened in reality and is only surveyed up to BZ Falls, which is accessed at the BZ Corners launch site. Park at the launch site and walk down the trail. Pursue angler interviews when available in the area above and below BZ Falls.
- The section from BZ Falls to Husom Falls is bordered by private farmland and is not accessible by foot.

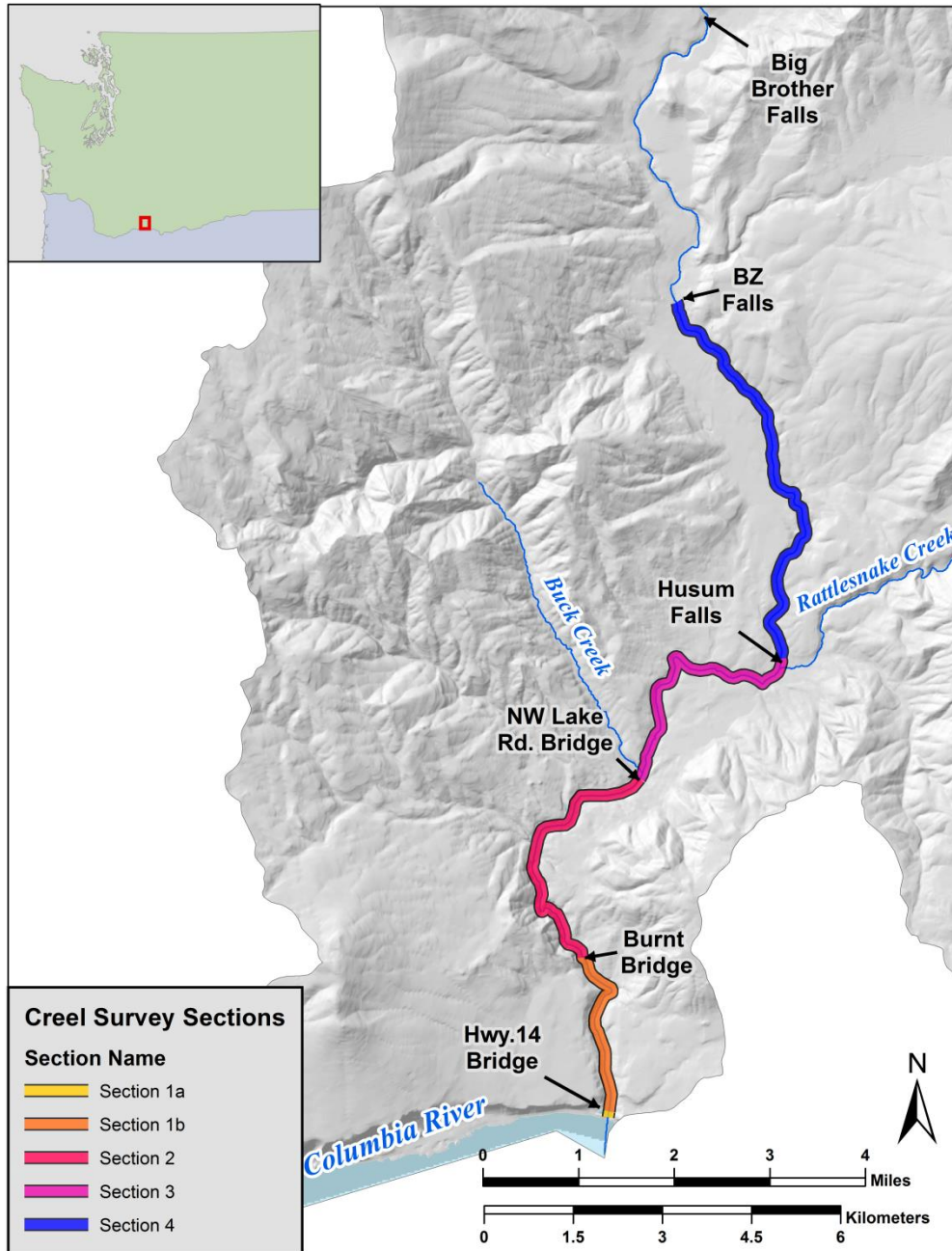


Figure A5-01. Map of the delineated White Salmon River creel survey sections.

Wind River

There are two sections and two seasons on the Wind River (Figure A6-01):

- Fall season above Shipherd Falls is a catch and release fishery, with special gear rules, targeting wild steelhead.
- Winter season below Shipherd Falls which is a mixed steelhead fishery with some anglers targeting wild steelhead for catch and release but also with allowable harvest of hatchery steelhead strays.

The Fall season runs from September 16 through November 30. The surveyed section extends from the “High Bridge” access site on Old Detour Rd. to the Moore Bridge on Forest Rd. 30 north of Carson National Fish Hatchery (CNFH). Most of the fishing takes place above Stabler after the first fall rains increase the flow, and at well-established access points upstream of Stabler. Some anglers may venture into the canyon below Stabler, as far down as the High Bridge however, particularly in the time between the September 16 opening and the first big flow increase. The effort count begins at the High Bridge and should take approximately 45 minutes or less on most days, since the surveyor only has to leave the vehicle at sites where cars are parked, the distance is short from the parking areas to the stream, and the holes fished most frequently are directly accessed by the trails.

Common access points in which parked vehicles usually indicate angling are:

- High Bridge: Anglers occasionally park at the public parking area at the end of Old Detour Rd. and walk upstream or downstream to fishing holes. This is practically impossible to do except at low summer flow, and other public users (rafters, others) often park here. Only survey the area immediately above and below the parking area.
- Mile 7 public parking access: Anglers may park at the County parking site near milepost 7.0 on Wind River Rd. It’s very uncommon during steelhead season, but not out of the question.
- “S” curves/Stabler Guard Rail: Anglers park at the small turnout on the “S” curves or the slightly larger turnout at the end of the guard rail just south of Stabler. Again this is very uncommon but the presence of vehicles at either of these sites probably indicates that anglers are using the trail.
- Old Blaisdell Rd.: Drive down this road to the dead end/turn-around. Vehicles parked here warrant hiking ¼ mile upstream to the “29 Hole” which is a ~100meter long glide often fished during higher water in the fall.
- Pacific Crest Trail: Vehicles parked here indicate that anglers are likely fishing downstream of the PCT bridge. They may be walking from here down to the “29 Hole” (~1/4-1/2 mile downstream) or straight through to the end of Old Blaisdell Rd.
- “Stabler Bend”: This is the turnout just upstream of the PCT crossing which has a sign board on the short, decommissioned road leading toward the river. Vehicles parked here indicate anglers could be fishing upstream from the road (long, open,

- gradual bend in the river) or at the holes just down the road from the highway. Check both directions.
- Beaver Campground area: Anglers park at the campground gate or at a couple of blocked spur roads just to the south of there. Any vehicle parking indicates the need to walk to the river and survey the area upstream and downstream.
 - Gretel Hole: This is the large turnout area just upstream of Beaver Campground. Any parking here indicates anglers are upstream of their vehicle, likely at the head of the Gretel Hole (100+ meter glide beginning just upstream of the parking spot). They may continue upstream of the Gretel hole from this spot though...keep looking.
 - Salmon Boundary: A vehicle here indicates anglers fishing at or upstream of the salmon boundary markers. They may walk upstream from this site as far as the hatchery.
 - Hatchery Hole: Anglers may park just upstream of CNFH, as far up as the Government Mineral Springs (GMS) Rd. bridge, and walk to the large hole along the hatchery dike.
 - Moore Bridge: Continue north past CNFH, bear right to stay on Forest Rd. 30 (Wind River Rd.), and drive to the Moore Bridge approximately $\frac{3}{4}$ of a mile north. Any parking would indicate the presence of anglers, though none have been encountered in this section in the past.
 - Trapper Creek/Dry Creek mouths: Drive up the road past the GMS bridge to Forest Rd. 5401 (Little Soda Springs Rd.) and turn right onto it. Continue down the gravel road across the bridge over Trapper Creek to the gated campground on the right (Camp Howe). Park here and walk out to the river and upstream to the mouth of Dry Creek, then check downstream to and beyond the mouth of Trapper Creek (to the point where you can see the GMS bridge) if any vehicles are present.
 - Drive back to and across GMS Rd. and continue to the south/southwest on Forest Rd. 5401. Follow this road all the way through to where it merges with Szydlo Rd., continuing south back to the junction with Hemlock Rd. and back to the Wind River Rd. Any vehicle parking along the gravel portion of the road could indicate the presence of anglers accessing some of the water in between the better known holes accessed from the main road.

The Winter Season on the Wind River consists of generally light fishing pressure below Shepherd Falls. The objectives for this fishery are to assess whether Chambers Creek origin, winter steelhead from Rock Creek are straying into the Wind River. The surveyor will access the river via Indian Cabin Rd. in Home Valley (east bank). This effort count and survey will take approximately five minutes if vehicles are not present, or up to an hour if they are. Vehicles may park in the small turnouts along the road before the river, or down the US Army Corps of Engineers (USACE) road that accesses the tribal in lieu site. They may also access the river on the west bank from the Carson Hot Springs access road.

To complete the survey simply drive down Indian Cabin Rd., looking for vehicles along the way. Look up and down the west bank from the vantage point of the road as it descends to the river. If anglers are seen on that side of the river then the next step will be to drive to that side after completing the survey on the east bank. If vehicles are parked on the east bank then the surveyor will need to park and walk the river to count effort and conduct interviews. Most fishing takes place downstream toward the in lieu site so check that direction first, parking at the small spur on the USACE access road, walking to and then down the river bank to just above the tribal fishing platforms. If vehicles are parked but no anglers are encountered in this area then park in the turnaround near the private gate and walk upstream toward Shipherd Falls. The walk toward the fishing boundary below Shipherd could take up to 40 minutes round trip.



Figure A6-01. Map of the delineated Wind River creel survey sections.

Rock Creek

The fishable section on Rock Creek extends from the railroad bridge at the mouth up to a 50-60 foot waterfall approximately ½ mile upstream (Figure A7-01). Anglers fishing near the mouth usually park on the County grounds on either bank of the creek. The section from the County road (Rock Creek Dr.) bridge to the mouth can be quickly surveyed and counted from the bank near the foot bridge. Work upstream from there. The pool just upstream of Rock Creek Drive is fished frequently. In lower flows it is possible to walk upstream on the creek approximately ¼ mile but not all the way to the falls.

After surveying upstream as far as can be done safely, return to the vehicle and drive to the access point just below the big waterfall. To reach this site continue west on Rock Creek Drive, bear right onto Ryan-Allen Rd., then right onto Iman Cemetery Rd. Stay on this to just before the dead end and turn right onto 1st Falls View Rd. Park at the end of the road (without blocking the private driveway). The trail is easy to find but only necessary if vehicles are parked here.

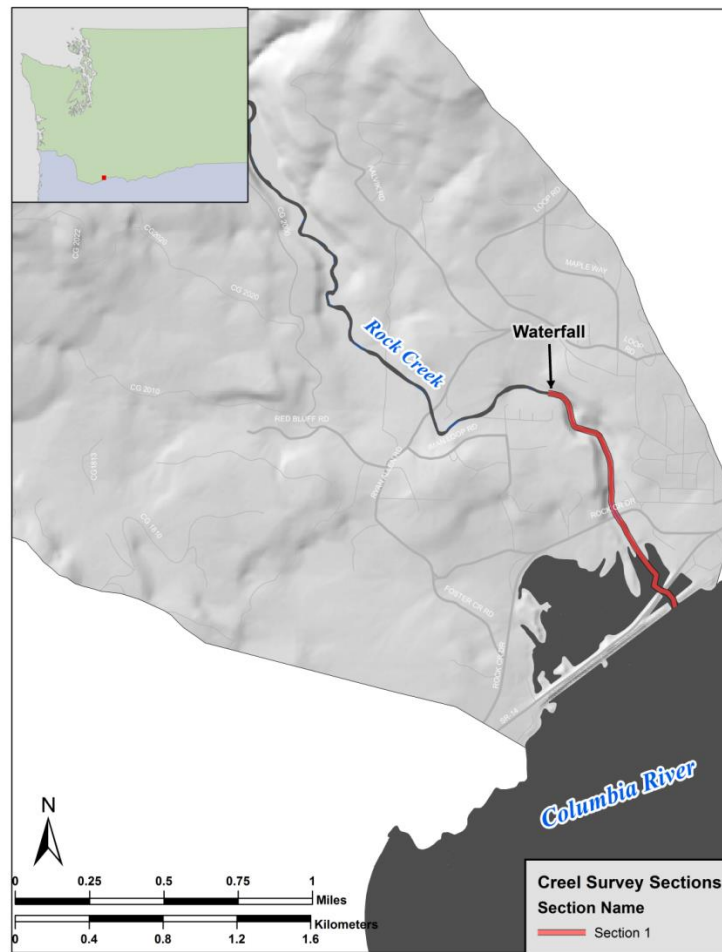


Figure A7-01. Map of the delineated Rock Creek (Upper Gorge) creel survey sections.

Appendix B – “Tie-in” Angler Count Section Descriptions

Kalama River

Due to the length of time required to cover the entire river, the Kalama River tie-in survey is broken into two surveys conducted on separate days: Tie-in #1 (Section 1, 2, and 3A) and Tie-in #2 (Section 3B, 4, and 5).

TIE-IN #1 – TOP OF SECTION 3A (BURNT POLE) TO BOTTOM OF SECTION 1 (MOUTH)

- Tie-in #1 will be surveyed by raft
- Rafter will be dropped off at the Burnt Pole. Attach the raft to the pole and carefully lower the raft to the river. Rafter will walk the trail with the rest of the equipment to the river.
- Break-up angler counts into the following sections:
 - Section 3A - Burnt Pole to Red Barn
 - Section 2 - Red Barn to Modrow Bridge
 - Section 1 – Modrow Bridge to mouth of Kalama R. (at Columbia R.)

TIE-IN #2 – SECTION 3B (KALAMA FALLS HATCHERY DEADLINE HOLE TO BURNT POLE), SECTION 4, AND SECTION 5

- Tie-in #2 will be surveyed by walking (Section 3B) and driving (Sections 4 and 5)
- Technician will begin at the top of Section 3B (Deadline marker ~1000’ below Kalama Falls Hatchery) and proceed walking to Burnt Pole.
- After section 3b has been surveyed, the technician will head back to their truck and survey sections 4 and 5 as described in “Appendix A”.
- Break-up angler counts into the following sections
 - Section 3B – Kalama Falls Hatchery (KFH) Deadline to Burnt Pole
 - Section 4 – KFM to Summers Creek
 - Section 5 – Summers Creek to Deadline at Rd. 6420

East Fork Lewis River

Due to the length of time required to cover the entire river, the East Fork Lewis River tie-in survey is broken into two surveys conducted on separate days: Tie-in #1 (Section 1, 2, and 3A) and Tie-in #2 (Section 3B, 4, and 5).

TIE-IN #1 – TOP OF SECTION 3A (DAYBREAK PARK BRIDGE) TO BOTTOM OF SECTION 0 (POLLACK RAMP) (SEE FIGURE A2-01)

- Tie-in #1 will be surveyed by raft
- Rafter will put in at Daybreak Park bridge and proceed downstream to Pollack Ramps, which are located on the north and south bank where NW La Center Rd. crosses the EF Lewis River approximately 4.5 miles below Storedahls
- Break-up angler counts into the following sections:
 - Section 3A – Daybreak Bridge to mouth of Manley Creek (~1/2 mile)
 - Section 2 – Manley Creek to County Maintenance
 - Section 1 – County Maintenance to Storedahls
 - Section 0 – Storedahls to Pollock

TIE-IN #2 – SECTION 4 (LEWISVILLE PARK BRIDGE) TO BOTTOM OF SECTION 3B (DAYBREAK PARK BRIDGE) AND SECTION 5

- Tie-in #2 will be surveyed by raft (Section 4 - Section 3B) and by driving (Section 5)
- Rafter will put in at Lewisville Park boat ramp and float downstream to Daybreak Park Bridge
 - DO NOT count anglers below Daybreak bridge – this area is part of Tie-in #1
- After the float section has been surveyed, the technician will head back to their truck and survey section 5 as described in “Appendix A” plus walk to Moulton Trail
- Break-up angler counts into the following sections:
 - Section 4 – Lewisville Park Boat Ramp to top of Daybreak Park
 - Section 3b – Top of Daybreak Park to Daybreak Park Bridge
 - Section 5 – Heisson Bridge to Horseshoe Falls

Washougal River

Due to the length of time required to cover the entire river, the Washougal River tie-in survey is broken into two surveys conducted on separate days: Tie-in #1 (Section 1, 2) and Tie-in #2 (Section 3). Note: effort count section #4 is on the West (North) Fork of the Washougal and is not included as part of the tie-in surveys.

TIE-IN #1 – TOP OF SECTION 1 (MT. NORWAY BRIDGE) TO BOTTOM OF SECTION 1 (MOUTH AT OAK PARK)

- Tie-in #1 will be surveyed by raft
- Rafter will put in at Mt. Norway Bridge (AKA Vernon Rd. Bridge). There is a small greenway spot just across the river on the south side of the bridge. Float will end at Oak Park, which is located near the mouth of the Washougal River.
- Break-up angler counts into the following sections:
 - Section 1 - Mt. Norway Bridge to Oak Park

TIE-IN #2 – TOP OF SECTION 3 (SALMON FALLS) TO TOP OF BIG EDDY POOL IN SECTION 2

- Tie-in #2 will be conducted by raft
- Rafter will be dropped off at the Salmon Falls Bridge, the pull off on the south side of the bridge can hold many trucks and is used for deployment of the rafts.
- There is a class III –IV rapid below the Big Eddy Pool and should NOT BE RUN FOR ANY REASON. Therefore, the stretch of river between Big Eddy Pool and Mt. Norway Bridge should not surveyed (and thus any effort in this section will not be included)
- Break-up angler counts into the following sections:
 - Section 3 – Salmon Falls to Public Fishing Rd.
 - Section 2 - Public Fishing Rd. to Big Eddy Pool

Coweeman River

Due to the length of time required to cover the entire river, the Coweeman River tie-in survey is broken into two surveys conducted on separate days: Tie-in #1 (Section 2A, 1) and Tie-in #2 (Section 3A, 2B). We will attempt to incorporate a third tie-in survey section that will be from the top of Section 4C (Baird Ck) to the bottom of Section 3B (Schoolhouse Bridge) and will be conducted in collaboration with the coho spawning ground survey crews. See Figure A4-01 (in “Appendix A”) for reference.


TIE-IN #1 – TOP OF SECTION 2A (LIBBY LANE BRIDGE) TO BOTTOM OF SECTION 1 (ALLEN ST.)

- Tie-in #1 will be conducted by raft
- Rafter will be dropped off at Libby Lane Bridge (aka Jeep Club Bridge) and will float down to Allen St. The take-out spot is located near the WDFW screw trap access location.
- Break-up angler counts into the following sections:
 - Section 2A – Libby Lane Bridge to Gobble Creek
 - Section 1 - Gobble Creek to Allen St.

TIE-IN #2 – TOP OF SECTION 3A (SCHOOLHOUSE BRIDGE) TO BOTTOM OF SECTION 2B (LIBBY RD.)

- Tie-in #2 will be conducted by raft
- Rafter will be dropped off at the Schoolhouse Rd. Bridge and will float down to Libby Rd. (Jeep Club Bridge)
- Break-up angler counts into the following sections:
 - Section 3A – Schoolhouse Rd. Bridge to “No Name” Bridge
 - Section 2B - “No Name” Bridge to Libby Rd. Bridge

Appendix C – Example Steelhead Creel Survey Datasheet

WDFW LOWER COLUMBIA RIVER STEELHEAD CREEL SURVEY DATA FORM - SIDE A										
Survey Type: <u>Creel</u> Tie-in	EFFORT COUNTS								Page <u>1</u> of <u>1</u>	
Surveyor: <u>Kate Bentley</u>	Section	Time (24h)		# of Vehicles		# of Anglers				
River name: <u>Kalama</u>		Start	End	Vehicles Only	w/ Trailers	Boat	Bank			
Date (mm-dd-yyyy): <u>04-19-2016</u>	2	0730	0801	26	11	30	21			
Start Time: <u>0600</u>	3A	0801	0806	3	2	3	3			
End Time: <u>1305</u>	3B	0806	0854	16	0	0	22			
Weather/Flow/Comments: <u>4' vis</u>	3B	1045	1149	11	0	0	14			
<u>Tie-in survey day</u>	2	1202	1233	19	2	9	13			
<u>(dropped Dave off at</u>	3A	1233	1238	1	3	0	0			
<u>Burnt Pile @ 1030)</u>										
GROUP INFORMATION										
Group #	Zip Code	Angler Type (S/B)	From Boat? (Y/N)	# of Anglers	Start Time	Interview Time	End Time	I/C	Target species	Fishing Location
1	98632	S	N	1	0630	0703	1100	I	ANY	beginning (2)
2	98625	S	N	2	0638	0709	0930	I	ANY	beginning (2)
3	98625	S	N	1	0638	0720	1000	I	ANY	Madron (2)
4	98625	B	Y	1	0630	0902	1000	I	SH	Deadly (3)
5	98604	S	N	2	0900	1016	1016	C	CK	Maath (1)
6	98604	B	N	1	0615	1022	1022	C	CK	Fallout Brd. (2)
7	98621	B	Y	3	0645	1030	1300	I	SH	Painted (2) - Madron (2)
8	98632	S	S	1	0700	1035	1400	T	ANY	Madron (2)
Angler Type: - S = bank/shore; B = boat		Fishing Location: - river-mile or abbreviation (add unique entries to Fishing Location data form)			Species Abbreviations: - SH = steelhead - CO = coho - CK = Chinook - RB = rainbow trout - CT = cutthroat - TR = trout - WF = whitefish - SK = sucker - SMOLT SH = steelhead smolt - SMOLT UNK = smolt but unknown species - SMOLT OTHER = non-steelhead smolt (but known species - e.g., CT, CK, CO) - TMK = tiger musky - PMO = peamouth - NPM = pikeminnow					

WDFW LOWER COLUMBIA RIVER STEELHEAD CREEL SURVEY DATA FORM - SIDE B

GEAR USE AND FISH INFORMATION																		
Group #	Gear Use						Fish										Comments Tag numbers (SNID, PIT, Floy), Tag Color, DNA & Scale Numbers, Sex, Marks, Kelt?, Run Type, etc.	
	Method	Style	Gear Type	Hooks	Hook Size	Barb?	Species	Origin	Fate	Hook Loc. (Report./Actual)	FL (mm)	CWT?	PIT?	Floy?	DNA?	Scale?		
1	B	A	B	1	2	N	---	---	---	---	---	---	---	---	---	---	---	
2	B	A	B	1	1	N	---	---	---	---	---	---	---	---	---	---	---	
3	P	P	B	1	3/0	N	---	---	---	---	---	---	---	---	---	---	---	
4	BT	A	L	1	2	N	SH	H	K	J	J	450	N	N	N	N	Winter kelt	
4	BT	A	B	1	1/0	N	CK	W	R	J	T	---	---	---	---	---	male	
4	BT	A	B	1	1/0	N	CK	W	R	J	NC	---	---	---	---	---	---	
5	D	A	J	2	1	N	---	---	---	---	---	---	---	---	---	---	---	
6	B	A	F	2	14	N	---	---	---	---	---	---	---	---	---	---	---	
7	B	A	BJ	3/3	2/2	N	SH	W	R	LJ	NC	---	---	---	---	---	---	
8	B	A	L	1	2	N	CK	H	K	UJ	CNC	840	N	N	N	N	Y	30177 - position #1, male
8	D	A	J	1	2	N	CK	H	K	J	S	900	Y	N	N	N	Y	30177 - position #2, SNID# 33720, female

Method:
 - B = Bobber
 - D = Drift
 - BT = Back Troll
 - P = Plunking

Style:
 - P = Passive
 - A = Active

Gear Type:
 - B = Bait
 - J = Jig
 - BJ = Bait & Jig
 - L = Lure
 - F = Fly

Hooks:
 - 1 = single
 - 2 = double
 - 3 = treble

Barb?:
 Was hook barbed (Y/N)

Origin:
 - H = hatchery
 - W = wild
 - U = unk.

Fate:
 - K = kept
 - R = released

Hook Location:
 - UJ = Up. Jaw
 - LJ = Low. Jaw
 - ROM = Roof of Mouth
 - FOM = Floor of Mouth
 - T = Tongue
 - G = Gill
 - S = Stomach/Esophagus
 - E = Eye

Actual:
 - Hook loc checked
 - NC = not checked
 - CNC = checked but could not confirm

CWT? & PIT?:
 If Fish Scanned:
 - Y = present
 - N = absent
 If Not Scanned:
 - NC = not checked

Floy?:
 - Y = present
 - N = absent

DNA? and Scale?:
 - Y = sampled
 - N = not sampled

Comments:
 - Record any CWT # (SNID), PIT tag #, Floy Tag #s (plus color of Floy tag), or DNA/Scale sample # and if known sex, run-type, kelt,

Appendix E – Snout Label and Angler Mail Card Example

Snout Label

<u>Front</u>	<u>Back</u>
--------------	-------------

PENCIL ONLY! 33720

Sport catch record card area: 604

Location fish caught: Kalama section 1

Date fish caught: 4/19/16

Type of sample:
 In sample Out of sample

For CWT information ONLY, print name, address, and zip code below.
 Return entire label

Phone _____

DO NOT DETACH 33720

Name _____

Street _____

City _____ State _____ Zip _____

Species spg CK

Length 90 cm Sex F

Sampling Location Section 1

Interview # _____


Name/Sample # _____

Ad clip: Yes No UD.

Other _____


Angler Mail Card

<u>Front</u>	<u>Back</u>
--------------	-------------



ANGLER NAME

ANGLER ADDRESS



Thank you for allowing Department personnel to remove the snout from your fish. The success of these tagging studies depends on everyone's cooperation. Thank you again for your participation!

Information on your tagged fish is listed below:

Species: Chinook Coho
 Steelhead Sockeye Agency _____

Date Caught 4-19-16 Hatchery _____

Area Caught 604 Release Site _____

Length 90 cm cm Age _____

Snout ID# 33720 Tag Code _____

Biologist Signature Felix T. Bont

Appendix F – Example Scale Card

Front

SCALE CARD NUMBER 30177	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>																
POSITION NUMBER	1		2																	
AGE																				
HATCHERY/WILD																				
FORK LENGTH (CM)	84		90																	
SEX (M/F/J)	M		F																	
MARK (CLIPS)	AD		AD																	
CWT / PIT SAMPLE CATEGORY			0																	
SMOUT I.D. #	—		33720																	
SPAWN SUCCESS / SURVEY SECTION																				
CWT I.D. / PIT TAG I.D. #																				
CARCASS CONDITION/COLOR OR SKIN COLOR																				
CARCASS TAG #S OR CARCASS CATEGORY #																				
LINE TAG COLOR AND # / OR BOLE PUNCHES/SHAPES																				

Back

CARD NO. **30177** DATE: 4/19/16 SAMPLERS: Kale Bentley CARD 1 OF 1

SAMPLE TYPE: (FISHERY, HATCHERY, STREAM SURVEY, TRAP/WEIR)

SAMPLE LOCATION: Kalama

Stream Reach ID: Section 1

SPECIES: Spg. CK.

SAMPLE TYPE: CWT ONLY X CWT AND PIT _____

CWT SAMPLE SIZE: 2

PIT TAG SAMPLE SIZE: N/A

FINAL PLUS COUNT: 0

COMMENTS:

RM _____ TO RM _____

DEADS N/A OR LIVES N/A

BIOLOGICAL 1 IN 1

NUMBER OF CWTS 1

NUMBER OF PIT TAGS N/A

Appendix G - Steelhead Creel Data Form Definitions

Surveyor, River, Date & General Comments (SIDE A)

Surveyor: Name of creel technician collecting data

River name: Name of river system surveyed

Date: Date of survey (mm-dd-yyyy)

Start Time: Time (24h) when survey creel started (i.e., arrival time to the river NOT the time heading out from the office)

End Time: Time (24h) when survey creel end (i.e., departure time from the river NOT the time arriving back at the office) .

Weather/Flow/Comments: description of pertinent flow, water visibility, weather, etc.

Effort Counts (SIDE A)

Section: Section number where effort/angler count data were collected (see “Appendix A”)

Start: The time (24h) the effort count started for the corresponding section number

End: The time (24h) the effort count end for the corresponding section number

Vehicles only: Record the # of vehicles without trailers in the corresponding section number

w/ Trailers: Record the # of vehicles with boat trailers in the corresponding section number

Boat: Record the # of boat anglers (not boats!) in the corresponding section number

Bank: Record the # of bank anglers in the corresponding section number

Group Information (SIDE A)

Group #: Starting each day, record a group number starting with #1, for each unique angler contact

Zip Code: Record the zip code for the group/contact. If multiple anglers, report most common

Angler Type (S/B): Record the angler type as either “S” = bank/shore or “B” = boat

Fish Boat?: If contact was a boat angler, record whether they primarily fished from the boat (“Y”) or used it for transportation and mostly fished from shore (“N”)

of Anglers: Record the number of anglers in the contact

Start Time: Record the time (24h) the contact started fishing (not when they arrived to the river)

Interview Time: Record the time (24h) you started interviewing the angler

End Time: Record the time (24h) the group stopped fishing (for completed trips) or the time the group anticipates fishing till (for incomplete trips)

Trip Status: Record whether the fishing trip was either “C” = complete or “I” = incomplete

Target Species: Record the species of fish the group is primarily fishing for

Fishing Location: General location(s) that the angler fished. This can be entered as either a river-mile, abbreviation (e.g., BA), name of a fishing hole or land mark (e.g., Hathaway Park), or a description of point A to point B (e.g., Ford’s to Bowling alley). Be sure to record each unique location on the “Fishing Location Data Form”.

Gear Use and Fish Information (SIDE B)

Group #: This corresponds to the group # under “Group Information” on SIDE A of the data form. Each contact/group should be reported here regardless of catch. This number should be repeated for each fish caught for a particular group. Multiple fish should only be reported on one line if the gear use and fish information are identical for each fish (see “Qty”).

Method: Record the primary fishing method used by the angler(s). If fish were captured, this classification should correspond to each uniquely captured fish using the definitions:

- bobber (B) = gear suspended under float
- drift fishing (D) = drifting/swinging gear without suspension,
- back troll (BT) = rowing or motoring against the current and typically using gear such as plugs or bait-divers
- plunking (P) = bait or lures fished suspended above a stationary weight.

Style: Record whether anglers were passively or actively fishing using following guidelines:

- Passive (P):
 - Plunking (Moving Water) - the use weight to hold a lure/bait in a stationary position.
 - Anchored Boat Fishing (Moving Water) - the use of the boat to hold a lure/bait in stationary position in the current. This can be achieved through plunking (described above) or by fishing a lure downstream of the boat without any weight (e.g. diving plug, pink lady, etc.).
 - Plunking (Still Water) - the use of a weigh and/or float to hold a lure /bait in a relatively still position (e.g. Drano Lake).
- Active (A):
 - Floating, drifting, swinging, or retrieving a lure/bait in moving water, and/or casting & retrieving or trolling in slow water.
 - Fishing from a boat in moving water including side drifting, pulling plugs/diver & bait, and back bouncing.

Gear Type: Record the primary fishing gear type used by the angler(s). If fish were captured, this classification should correspond to each uniquely captured fish using the definitions:

- bait (B) = anything that attracts fish by *scent and/or flavors* (e.g., eggs, shrimp/prawns, worms, crayfish, baitfish, scent). Bait can also include devices made of feathers, hair, fiber, wood, metal, glass, cork, leather, rubber, or plastic (if scent/flavor is used)
- lure (L) = a manufactured article, complete with hooks, constructed of feathers, hair, fiber, wood, metal, glass, cork, leather, rubber, or plastic, which *does not* use scent and/or flavoring to attract fish (e.g., spinners, spoons, plugs, corkies, spin-n-glo).

- fly (F) = a lure on which thread, feathers, hackle, or yarn cover a minimum of half of the shank of the hook. Metallic colored tape, tinsel, mylar, or bead eyes may be used as an integral part of the design of the fly pattern.
- jig (J) = a lure that consists of a lead sinker with a hook molded into it and usually covered by a soft body to attract fish. Jigs are intended to create a jerky, vertical motion, as opposed to spinnerbaits which move through the water horizontally
- bait and jig (BJ) = combination of artificial jigs and bait material (real or artificial) or scent attractants.

Hooks (1, 2, 3): Indicate if hook(s) used were single (1), double (2), or a treble (3). If more than one hook was used, list both (e.g., plug with two trebles = 3/3).

Hook size: Record hook size(s) used (see “Appendix H”)

Barb? (Y/N): Indicate if hook(s) used were barbed (Y) or not (N)

Species: Record species of fish caught using abbreviation codes (“Appendix I”)

Life Stage (A, J, S): Record the life stage of the fish as either “A” = adult (Chinook: >57 cm, Coho: >47 cm, Steelhead: >51 cm), “J” = jack (Chinook: ≤57 cm, Coho: ≤47 cm), or “S” = smolt (<20 cm). Note: resident (rainbow) trout are 20 – 50 cm.

Origin (H/W): Indicate the origin of captured fish as either “H” = hatchery or “W” = wild using presence (wild) or absence (hatchery) of adipose fin. If unknown, record “U”

Fate (K/R): Record the fate of the captured fish as either “K” = kept/harvested or “R” = released

CRC Loc.: Record the catch record card (CRC) location based on where the fish was caught (see most up-to-date “Sport Fishing Rules” pamphlet).

Hook Loc. (Report/Actual): record the angler reported and actual/verified hooking location under the “Report” and “Actual” columns, respectively. Refer to the “Filling out Datasheet” section for specific instructions.

FL (mm): fork length of the fish record to the nearest millimeter

CWT?: If fish was scanned with a CWT wand, record whether a tag was present (Y) or absent (N). If fish was not scanned, record ‘NC’ = not checked.

PIT?: If fish was scanned with a PIT tag wand, record whether a tag was present (Y) or absent (N). If fish was not scanned, record ‘NC’ = not checked.

FLOY?: Externally examine fish for floy tags and record whether tags were present (Y) or absent (N). If fish not examined, record ‘NC’ = not checked.

DNA?: record whether a DNA sample was collected (Y) or not (N)

SCALE?: record whether a scale sample was collected (Y) or not (N)

Comments: record any additional information such as sex, condition (e.g., bright, kelt), natural marks (seal bites), etc. This additional information can be extremely helpful, but only if the data are reliable.

- Kelt: fish with an atrophied body (i.e., really skinny), most likely female and tend to lose their dark secondary spawn traits and start to silver up like a smolt getting ready to migrate.

Appendix H - Hook Size Chart

JANN'S NETCRAFT
HOOK SIZING CHART
www.jannsnecraft.com

Treble Hooks
 3/0, 4/0, 5/0, 6/0, 7/0, 2/0, 1/0, 1, 2, 4, 6, 8, 10, 12, 14

Roundbend Treble Hooks
 6, 4, 2, 1, 2, 4, 6, 8, 10, 12

Live Bait Hook, Ice Jig Hook
 Mustad 3260B, 3282, 3261

Aberdeen Jig Hooks
 4/0, 3/0, 2/0, 1/0, 1, 2, 4, 6, 8, 10, 12

O'Shaughnessy Spinnerbait & Trailer hooks
 2/0, 3/0, 4/0

60° Bend Jig Hooks
 3/0, 4/0, 5/0, 730

Octopus Hooks
 8, 6, 4, 2, 1, 1/0, 2/0

FLY TYING HOOK SIZING CHART
 R30-04833 10, R70-7067 8, R82-38068 8, R73-8071 10, R50-94846, R76-79500 10, L87-3885A 8

Central Draught Hooks
 26, 34, 22, 30

Salmon Egg Hooks
 6, 8, 10

Turned Down Eye Sproat Hooks
 8, 4, 2

Legend
 1"

Please contact
 Technical Customer Service for additional information
 on our products
 email - techhelp@jannsnecraft.com
 Phone - (419) 868-8288
 fax - (419) 868-8338

sizing_chart ©Jann's Netcraft LLC 2010

CHART MUST BE PRINTED FOR ACCURATE SIZING

Appendix I – Species Abbreviation Codes

Species Code	Species Name	Species Code	Species Name	Species Code	Species Name
AC	ARCTIC CHAR	LT	LAKE TROUT	TMT	TADPOLE MADTOM
AG	ARCTIC GRAYLING	LW	LAKE WHITEFISH	TNC	TENCH
AMS	AMERICAN SHAD	MNS	MOUNTAIN SUCKER	TR	TROUT: GENERAL
AT	ATLANTIC SALMON	MQF	MOSQUITOFISH	TRS	TORRENT SCULPIN
BBH	BROWN BULLHEAD	MRS	MARGINED SCULPIN	TSS	3-SPINE STICKLEBACK
BC	BLACK CRAPPIE	MTS	MOTTLED SCULPIN	TT	TIGER TROUT
BCF	BLUE CATFISH	MU	MUSKELUNGE	WAD	WHITE AMUR-TRIPLOID
BG	BLUEGILL	NOD	NOOKY DACE (PENDING)	WAL	WALLEYE
BLB	BLACK BULLHEAD	NP	NORTHERN PIKE	WAT	WHITE AMUR-DIPLOID
BLC	BULL TROUT	NSF	NORTHERN SQUAWFISH	WC	WHITE CRAPPIE
BRS	BRIDGELIP SUCKER	OMM	OLYMPIC MUDMINNOW	WCT	CUTTHROAT
BT	BROWN TROUT	OWF	WEATHERFISH	WF	MOUNTAIN WHITEFISH
BUR	BURBOT	PGW	PYGMY WHITEFISH	WL	W. BROOK LAMPREY
CC	CHANNEL CATFISH	PI	GRASS PICKEREL	WM	WARMOUTH
CCT	COASTAL CUTT-RES.	PK	PINK SALMON	WS	WHITE STURGEON
CH	CHUM SALMON	PL	PACIFIC LAMPREY	YBH	YELLOW BULLHEAD
CK	CHINOOK SALMON: GEN	PMO	PEAMOUTH CHUB	YP	YELLOW PERCH
CMO	CHISELMOUTH	PRS	PRICKLY SCULPIN		
CO	COHO SALMON	PS	PUMPKINSEED SUNFISH		
COT	SCULPIN: GENERAL	PSS	SCULPIN		
CP	CARP	PTS	PIUTE SCULPIN		
CSS	COASTRANGE SCULPIN	RB	RAINBOW TROUT, RES.		
CT	CUTTHROAT: GENERAL	RFS	RIFFLE SCULPIN		
DAC	DACE: GENERAL	RKB	ROCK BASS		
DVC	DOLLY VARDEN TROUT	RL	RIVER LAMPREY		
EB	BROOK TROUT	RS	REDSIDE SHINER		
EUL	COL.R.SMELT-EULACHON	RTS	RETICULATE SCULPIN		
FAT	FATHEAD MINNOW	RU	RAINBOW-UNK.FORM		
FCF	FLATHEAD CATFISH	RXC	HYBRID?: RB X CT		
GC	GRASS CARP	SAN	SANDROLLER		
GF	GOLDFISH	SB	STRIPED BASS		
GRS	GREEN STURGEON	SCT	COASTAL CUTT-SEARUN		
GS	GREEN SUNFISH	SD	SPECKLED DACE		
GSH	GOLDEN SHINER	SF	STARRY FLOUNDER		
GT	GOLDEN TROUT	SH	STEELHEAD: GEN/UNK		
KO	KOKANEE SALMON	SHS	SHORTHEAD SCULPIN		
LCH	LAKE CHUB	SK	SUCKER: GENERAL		
LCT	LAHONTAN CUTTHROAT	SLS	SLIMY SCULPIN		
LED	LEOPARD DACE	SMB	SMALLMOUTH BASS		
LFS	LONGFIN SMELT	SO	SOCKEYE SALMON		
LM	LAMPREY: GENERAL	SP	SHINER PERCH		
LMB	LARGEMOUTH BASS	SSK	SALISH SUCKER		
LND	LONGNOSE DACE	SU	SUNFISH: GEN/UNK		
LNS	LONGNOSE SUCKER	TCH	TUI CHUB/COL.R.ROACH		
LRS	LARGESCALE SUCKER	TMK	TIGER MUSKY (HYBRID)		



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