

2017 Lake Roosevelt Angler Creel Survey Protocol Overview (v2.1)

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Survey Components

- Stratified random sampling scheme
 - Reach strata (Reach 1, 2, and 3)
 - Season strata
 - Season 1: Jan 1 – Mar 31
 - Season 2: Apr 1 – Sep 30
 - Season 3: Oct 1 – Dec 31
 - AM/PM sampling sessions
 - Season 1 and 3 (6hr): 9AM – 3PM/ 1PM – 7PM (2hr overlap)
 - Season 2 (6.5hr): 8AM – 2:30PM/ 2:30PM – 9PM
 - ACCESS and BUS ROUTE surveys
 - Weighted equally within each Reach (**fixed sampling probabilities**)
- Survey days assigned systematically (4 on, 2 off)

Season Strata

- Reliable estimates are derived from observations collected under uniform conditions.
- Inconsistency within the survey frame may increase the variability of estimates.
 - e.g. changes in survey day length
- Fewer temporal strata allow more observations to be included in generation of estimates.
 - 3 seasonal strata (60 -120 obs/ season)
 - 12 monthly strata (20 obs/ month)
 - Limits observations among sites
- **Priority: Generate the most robust estimates possible.**

Survey Schedule

- Creel calendar will be generated by the Spokane Tribe.
- Systematic sampling scheme is used to assign survey days within each season and reach strata.
 - A systematic sampling scheme best met logistical constraints (4 on, 2 off)
 - Ex. employee cannot work more than 5 days in a row, must have 2 days off in a row, cannot work more than 36 field hours/week, provides some weekend days off each month

AM/PM Sessions

- Provide coverage across the entire sampling day.
 - AM:PM weighted equally
 - Designed to collect complete trip info.
 - Fixed session overlap in seasons 1 and 2 are allowed to fulfill logistical constraints (maximize creel clerk clock time, provide more biological data [TL, wt.])
 - The extended session duration (6.5 hrs & no overlap) in season 2 ensures 100% of the fishing day is covered
- Session times are not flexible.
 - Unplanned session overlap is not acceptable
 - Clerks/supervisors may not move session start times

Survey Types

- TRADITIONAL “ACCESS SURVEY”
 - Clerk surveys at a single site for the entire session
 - Will only be conducted at high-use sites
 - All angler types should be surveyed
- BUS ROUTE SURVEY
 - Clerk stops at several sites along a route during session
 - Only low-use sites
 - All angler types should be surveyed
 - Starting location randomly selected
 - Route is staggered to increase randomness
 - Robson and Jones (1989) - choose routes in geographically cyclical manner, rather than linear.

PM Sessions and Daylight (Pt 1)

- During some months of the year, PM session end times will extend past sunset.
- Current survey trades “lost” time at the end of PM sessions for fewer temporal strata.
- Protocol clarification:
 - “During PM ACCESS surveys, if no boat trailers or shore angler parties are present, the creel clerk may depart 30 minutes after sunset. If boat trailers or shore angler parties are present, the creel clerk will remain until 1 hour after sunset or the session end time.” <http://www.weather.com/>

PM Sessions and Daylight (Pt 2)

- Protocol clarification:
 - “During PM BUS ROUTE surveys, the creel clerk should follow the protocol schedule and stay at each site for the allotted time, if a scheduled site occurs 30 minutes after sunset, we assume “no fishing pressure” and the clerk will give that site a (1 minute) placeholder in the data sheet and record no activity. Occasionally, a BUS ROUTE with 4 sites may be discontinued after stopping at just 2 of them due to “darkness”, in that case we would record a (1 minute) placeholder for each site. ALWAYS NOTE SUNSET TIME AND ACTUAL DEPARTURE TIME
<http://www.weather.com/>
- Only a difficulty between Oct and Jan

Interview Procedures

- Interview all angler types during surveys.
- Clerk should introduce self to shore angling parties.
 - Encourage anglers to participate in survey
- Only complete trip information is used to generate estimates.
 - **Complete trip information is highest priority**
 - Minimum complete trip information includes: Number of Anglers, Fishing Start/End Time, and Species Caught/Released, Fish Origin (or note No. of AD clipped fish)
- The protocol recommends that incomplete trip information be collected towards end of survey sessions
 - **Only if** no conflict with collection of complete trip information.
 - Incomplete trip interviews provide additional opportunities to collect data (e.g. TL, wt., tag detections, tissue samples).
- **Clerks should note if any complete trip surveys are missed.**

ACCESS Survey Priorities

- Set up visible presence.
 - STI will provide vehicle magnet and signage
- Complete trip interviews are #1.
 - If many anglers are departing at once:
 - Only collect minimum trip information
- Incomplete trip information.
 - Useful for collecting biological data
- Conduct survey normally if launch is inaccessible.
 - Shore Anglers may still be present
- If site is completely inaccessible (road access/weather), complete data sheet as though entire day was surveyed with 0 fishing activity.

BUS ROUTE Survey Priorities

- Complete trip interviews #1.
 - If time limited, collect only minimum trip info
 - Collect incomplete trip information when time permits
- If launch is inaccessible (reservoir elevation), visit normally (shore anglers).
- If a site is entirely inaccessible (barricade, road access, weather) distribute remaining time among accessible sites on same Bus Route.
 - Record entirely inaccessible sites as visited for 1 minute with 0 fishing activity (analysis requires this)

Creel Data Sheets

- Original data sheets should continue to be mailed to the Spokane Tribe at the end of every month.
- Scans of data sheets should be provided by Creel Clerk or Supervisor Friday every week.
 - Scan file names need to be descriptive, logical, and consistent (e.g. RaCreelData2016Feb01.jpg)
 - Email to: Charles.Lawson@SpokaneTribe.com
 - CC: Elliott.Kittel@SpokaneTribe.com
BNichols@SpokaneTribe.com

Lake Roosevelt Creel Survey Form 3.1

Date: _____ Survey Type: Access Bus Route Start Work Day: _____ Start Creel: _____
 Loc. No: _____ Session: AM PM Finish Work Day: _____ Finish Creel: _____
 Loc. Name: _____ Day: Mon Tue Wed Thu Fri Sat Sun Clerk Name: _____ Page _____ of _____

ANGLER PARTY INFORMATION													ANGLER CATCH INFORMATION							COMMENT #			
LOCATION CODE	*START CREEL	*FINISH CREEL	PARTY NO.	TIME CHECKED	NO. ANGLERS	ANGLER TYPE	ANGLER START TIME	ANGLER END TIME	COMPLETE TRIP (Y/N)	ZIP CODE	TARGET.SPP 1	TARGET.SPP 2	SPP.CAUGHT	NO. HARVEST	NO. RELEASED	TOTAL LENGTH (mm)	WEIGHT (g)	FIN CLIP CODE	ORIGIN		TAG CODE	TAG CODE/ COLOR/ NO.	

- Please complete and double check all fields.
- New Field : Day of Week (circle)
- New protocol: Minimize numerical codes
 - Simplify data collection (ex. substitute clerks)
 - Fish common name abbreviations will be included in updated protocol
 - Clerk can write out common name in comment section

Lake Roosevelt Creel Survey Form 3.1

Date: _____	Survey Type: <input type="checkbox"/> Access <input type="checkbox"/> Bus Route	Start Work Day: _____	Start Creel: _____
Loc. No: _____	Session: <input type="checkbox"/> AM <input type="checkbox"/> PM	Finish Work Day: _____	Finish Creel: _____
Loc. Name: _____	Day: Mon Tue Wed Thu Fri Sat Sun	Clerk Name: _____	Page _____ of _____

- Date (mm/dd/yy)
 - ex. 01/15/16
- Access/ Bus Route #
 - ex. Check “Access”, write 5 next to the check box,
Check AM or PM session
- Start/Finish Work: 24 hr time, write time clerk “clocked in/out”
- Start/Finish Creel: 24 hr time, write time clerk began survey at first site and at end of last site

ANGLER PARTY INFORMATION													ANGLER CATCH INFORMATION						COMMENT #				
LOCATION CODE	*START CREEL	*FINISH CREEL	PARTY NO.	TIME CHECKED	NO. ANGLERS	ANGLER TYPE	ANGLER START TIME	ANGLER END TIME	COMPLETE TRIP (Y/N)	ZIP CODE	TARGET.SPP 1	TARGET.SPP 2	SPP.CAUGHT	NO. HARVEST	NO. RELEASED	TOTAL LENGTH (mm)	WEIGHT (g)	FIN CLIP CODE		ORIGIN	TAG CODE	TAG CODE/ COLOR/NO.	

- Location code (refer to protocol)
- Party # - unique party ID No. for current survey day
- Party Size - No. of individuals in party
- Time Checked - (24 hr) time that clerk interviewed party
- No. of Anglers - No. of individuals in party that participated in fishing
- Angler Type - Indicate whether each individual was a **BOAT** or **SHORE** angler
- Start Time - (24 hr) Time that angler started fishing
- End Time – (24 hr) Time that angler stopped fishing
- Note: Please ask anglers when they finished fishing, it is not always 10 minutes prior to interview time.

ANGLER PARTY INFORMATION													ANGLER CATCH INFORMATION										
LOCATION CODE	*START CREEL	*FINISH CREEL	PARTY NO.	TIME CHECKED	NO. ANGLERS	ANGLER TYPE	ANGLER START TIME	ANGLER END TIME	COMPLETE TRIP (Y/N)	ZIP CODE	TARGET.SPP 1	TARGET.SPP 2	SPP.CAUGHT	NO. HARVEST	NO. RELEASED	TOTAL LENGTH (mm)	WEIGHT (g)	FIN CLIP CODE	ORIGIN	TAG CODE	TAG CODE/COLOR/NO.	COMMENT #	

- Complete Trip - **Yes/No**, indicated whether the angler has finished the fishing trip
- Zipcode - **Individual** angler primary residence zip code
 - If time restricted, the creel clerk may skip this field
- Target Species 1 & 2 - The primary/secondary target species of each angler
 - Can be used in analysis to generate target species specific catch rates
- Species Caught - Fish species caught by the angling party
- Released and Kept - No. of fish (of a particular species) harvested and released by the angling party
(ex. 2 and 5)

ANGLER PARTY INFORMATION													ANGLER CATCH INFORMATION						COMMENT #				
LOCATION CODE	*START CREEL	*FINISH CREEL	PARTY NO.	TIME CHECKED	NO. ANGLERS	ANGLER TYPE	ANGLER START TIME	ANGLER END TIME	COMPLETE TRIP (Y/N)	ZIP CODE	TARGET.SPP 1	TARGET.SPP 2	SPP.CAUGHT	NO. HARVEST	NO. RELEASED	TOTAL LENGTH (mm)	WEIGHT (g)	FIN CLIP CODE		ORIGIN	TAG CODE	TAG CODE/ COLOR/ NO.	

- Total Length - measured by the clerk to the nearest mm
- Weight - measured by the clerk to the nearest gram
 - Spokane Tribe will provide digital spring scales. Use of analog spring scales is discouraged
- Fin Clip - Clerk may mark AD,N, or Y if non-AD clip present - provide detail in comment (ex. EWU clipped SMB)
- Species Origin - Currently applies only to RBT and KOK. Indicate Hatchery/Wild origin as per Fin Clip. Skip if other species (e.g. WAL, SMB)
- Tag Code – Abbreviated tag type (PIT, Floy, etc.)
- Tag Code/Color/No. – Individual code, color, or number

Lake Roosevelt Creel Survey Form 3.1

Date: 01/11/17

Survey Type: Access

Bus Route

Start Work Day: 7:30

Start Creel: 9:00

Loc. No: 17

Session: AM

PM

Finish Work Day: 16:00

Finish Creel: 15:00

Loc. Name: Ft. Spokane

Day: Mon Tue Wed Thu Fri Sat Sun

Clerk Name: CML

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ANGLER PARTY INFORMATION													ANGLER CATCH INFORMATION						COMMENT #		
LOCATION CODE	*START CREEL	*FINISH CREEL	PARTY NO.	TIME CHECKED	NO. ANGLERS	ANGLER TYPE	ANGLER START TIME	ANGLER END TIME	COMPLETE TRIP (Y/N)	ZIP CODE	TARGET.SPP 1	TARGET.SPP 2	SPP.CAUGHT	NO. HARVEST	NO. RELEASED	TOTAL LENGTH (mm)	WEIGHT (g)	FIN CLIP CODE		ORIGIN	TAG CODE
17	9:00		1	10:15	2	B	7:00	10:05	Y	99201	RBT	KOK	RBT	5	3	433	1080	Ad	H		
										99203						425	975	Ad	H	PST	985.12345678
																361	570	Ad	H		
																375	615	Ad	H		
																405	950	None	W		
																515	1480	None	W		
			2	12:45	1	B	6:45	12:30	Y	99141	KOK			1	0						
	15:00		3	14:50	2	S	13:00		N	83854	SMB			0	7						
										83854	SMB										

- Ex. of a ACCESS SURVEY data sheet.
 - Clerk has encountered 3 angling parties. The first party had two anglers who targeted RBT and KOK, caught 5 but released 3 RBT, and also caught 1 KOK. The second party had 1 angler who targeted KOK but did not catch anything. The third party had 2 anglers who only targeted SMB, released 7, but were not done fishing.

Lake Roosevelt Creel Survey Form 3.1 Sunset @ 16:34

Date: 1/21/17
 Loc. No: 10
 Loc. Name: Hunters

Survey Type: Access Bus Route #96
 Session: AM PM
 Day: Mon Tue Wed Thu Fri Sat Sun

Start Work Day: 11:30 Start Creel: 13:00
 Finish Work Day: 18:00 Finish Creel: 19:00
 Clerk Name: CML Page 1 of 1

ANGLER PARTY INFORMATION													ANGLER CATCH INFORMATION						COMMENT #				
LOCATION CODE	*START CREEL	*FINISH CREEL	PARTY NO.	TIME CHECKED	NO. ANGLERS	ANGLER TYPE	ANGLER START TIME	ANGLER END TIME	COMPLETE TRIP (Y/N)	ZIP CODE	TARGET.SPP 1	TARGET.SPP 2	SPP.CAUGHT	NO. HARVEST	NO. RELEASED	TOTAL LENGTH (mm)	WEIGHT (g)	FIN CLIP CODE		ORIGIN	TAG CODE	TAG CODE/COLOR/NO.	
10	13:00	14:00																					
15	15:15	16:15	1	16:05	1	S	13:30		N	99148	BUR			0	1								
19	18:59	19:00																					
(1.5 hr travel time between loc 15 and loc 19, did not visit loc 19 due to darkness)																							

- Ex. of a BUS ROUTE SURVEY data sheet
 - Bus Route 96 randomly started at location 10 where no anglers were present. Then the clerk drove to location 15 where he/she encountered 1 angler targeting BUR, who had released 1, but was not done fishing. The sunset time (16:34) and complete darkness (17:04) would occur before the creel clerk could safely drive to location 19, so the clerk recorded “no angler activity, and a “1 minute” placeholder, and did not physically drive to location 19.
 - Note the drive time from location 15 to 19 (1.5 hrs) exceeded the amount of daylight time the creel clerk had left in the day (45 min), so there was no need to drive to location 19. However if the drive time does not exceed the amount of daylight time left the clerk should drive to the next location, even if they are only there less than 5 minutes.

Scenarios Pt1

- When should I end a PM survey in relation to sunset times?
 - ACCESS – Creel clerk will arrive at session start time. Creel clerk may depart 30 minutes after sunset if no shore parties or boat trailers are present. If shore anglers or boat trailers are present, the creel clerk may depart 1 hour after sunset and will document that shore angler parties or boat trailers were present at departure.
 - BUS ROUTE – Creel clerk should stay on schedule and depart the survey 30 minutes after sunset. If a location, or in rare cases, multiple locations can not be sampled due to darkness a “1 minute” placeholder and “no angler activity” will be recorded for those locations. (Refer to the previous slide for an example)
 - Daily sunset times available online.
 - Only a pronounced issue part of the year.
- I’m late to my ACCESS or BUS ROUTE survey session! (Corrected)
 - ACCESS – Creel clerk will survey the session assigned on the calendar. The actual survey start time should be recorded (under all circumstances) and end at the normal end time. The creel clerk may not make up the time by extending the survey session and should note the late start time.
 - BUS ROUTE – Creel clerk should follow the scheduled timeline. The survey of the location that they are late to should end in time to get to the next location on time.
 - ex. Protocol: Season 1 PM Bus Route 96 starting at location 10 (13:00-14:00), 1hr travel, location 15 (15:00-16:00), 1.5hr travel, location 19 (17:30-19:00).
 - Running 30min Late: starting at location 10 (13:30-14:00), 1 hr travel, location 15 (15:00-16:00), 1.5 hr travel, location 19 (17:30-19:00). Note: the survey end time must be the same, do not extend the survey.
- I missed a survey!
 - Creel clerk should contact their supervisor ASAP. Use of a substitute clerk is preferred to missing a scheduled survey day. If the day is missed, the supervisor should inform the Spokane Tribe within 1 week.

Scenarios Pt2

- My ACCESS site is completely inaccessible.
 - The creel clerk should contact their supervisor and complete a data sheet that documents that a survey was conducted for the whole session and 0 fishing activity was observed. The clerk should provide a comment stating the site was inaccessible.
- One or more BUS ROUTE sites on my route are inaccessible.
 - The creel clerk should document that a survey was attempted at the site. The data sheet should reflect at least 1 minute of survey effort (at each inaccessible site).
 - The clerk should divide the remaining BUS ROUTE time among all accessible sites on the BUS ROUTE.
 - If the inaccessible location is the last location of the scheduled BUS ROUTE, the clerk should end the survey, DONT return to previous locations.

Scenarios Pt3

- 20 boats have all arrived at once!
 - Gather as much minimum complete trip information as possible (No. of Anglers, Angler Start/End Time, No. of each Species Caught/Released, Fish Origin (or No. of AD clipped fish))
 - Try to keep track of any angling groups (number, party size) that are missed
 - **Survey assumes that almost 100% of parties can be interviewed**
 - Do not record entries for non angling parties
 - If this becomes a consistent problem, have your supervisor contact the Spokane Tribe so help can be arranged
- Shore and Boat angling parties are leaving at the same time!
 - Try (within reason) to alternate collecting complete information from each (ex. 2 boat, 2 shore, 2 boat...)
 - Document fishing parties that are missed

References

- (Sunset times) - <http://www.weather.com/>
- Robson, D., and C. M. Jones. 1989. The theoretical basis of an access site angler survey design. *Biometrics* 45:83-98.
- Lake Roosevelt Angler Creel Survey, 2017 Survey Design and Protocol. Prepared by Elliott Kittel and Fawn Hornsby. Spokane Tribe of Indians. December, 16 2015. Ver 2.0.
- Spokane Tribal Fisheries Creel Web Page
<http://spokanetribalfisheries.com/projects/the-lake-roosevelt-creel-survey/>