



**Meeting Notes – Baker River Basin Native Char Consultation  
Fish Passage Technical Working Group (FPTWG)**

**Project:** Baker River Project  
FERC No. 2150

**Written By:** Nathanael Overman, PSE

**Meeting Date:** March 16, 2010, 1:30 – 2:15 pm

**Location:** Conference Call

**Attendees:** Jeff Chan, USFWS  
Denise Hawkins, USFWS  
LouEllyn Jones, USFWS  
Nathanael Overman, PSE  
Maureen “Mo” Small, WDFW

**Purpose:** Final confirmation of 2010 Baker bull trout handling protocols and continue discussion of bull trout metapopulation dynamics in Baker Basin.

In the previous Baker River Basin Native Char Consultation meeting (February 26, 2010) it was decided that implications for managing metapopulation dynamics of Baker Basin bull trout needed further discussion, and that protocols for transportation of Sulphur Creek origin bull trout should be confirmed with Mo and Denise before being finalized.

**Summary**

1. Denise thought that it was reasonable to assume that when bull trout volitionally enter the FSC, they likely desire to exit Baker Lake, whereas when it comes to bull trout caught by angling, one is left to infer where they may be going based on genetic origins.
2. Although the risk of artificial population segmentation by complete segregation of bull trout populations is not consistent with historical bull trout population dynamics, it appears from the genetic analysis that out-of-basin fish have not substantially integrated after years of being transported to Baker Lake. As such, it makes sense to put out-of-basin bull trout back into the Skagit River. The few that are missed will provide some diversity in the system.
3. Denise said she would support moving Sulphur Creek origin bull trout entering the FSC to Lake Shannon, and commented that it seemed a less invasive alternative to bypassing the lake and transporting

to the Skagit River. However, if bull trout are caught by angling in Baker Lake, moving all Sulphur Creek origin fish to Lake Shannon poses more of a concern over artificial population segmentation. Prior to construction of the dams, there was likely mixing of populations. However, historically Sulphur Creek origin bull trout were less likely to have moved past Sulphur Creek into Baker Lake, whereas migratory Upper Baker origin fish would all pass by Sulphur Creek on their way to or from Upper Baker. For now, Sulphur Creek origin fish will be put back into Lake Shannon if caught in Baker Lake by angling.

4. Denise mentioned that in the Willamette River, a monitoring plan was established to evaluate increased issues with genetic drift. Given that we have a genetic baseline for future comparisons, it was suggested that obtaining new baseline samples every 10 years would be beneficial for monitoring genetic drift. It was concluded that periodic monitoring of genetic drift should be a topic for a future meeting.

5. Nathanael pointed out that there were juveniles from the Upper Baker FSC that assigned genetically to Sulphur Creek and Sauk River populations. This implies that paring of same-origin parents from these outside populations occurs in Upper Baker. Jeff noted that even if their origins are out-of-basin, if their parents spawned in Upper Baker, the juveniles would likely be imprinting in Baker Lake.

6. Mo provided clarification on interpreting genetic results when samples do not reach 90% likelihood values. Likelihood values less than 90% could be indicative of mixed ancestry. Given the current protocols, bull trout with mixed ancestry would be considered to be of unknown origin, and if caught when angling, would be returned to the lake in which they were caught.

7. Mo asked that the tissue collection procedures in the protocols be adjusted to 1 part tissue to 9 parts ethanol rather than 4 parts ethanol. She said WDFW will supply labeled vials and a spreadsheet for bull trout tissue collection at Baker. Nathanael will coordinate with Mo.

8. The meeting concluded with a summary of the transportation protocols for bull trout that are known to be of Sulphur Creek origin: all bull trout >40 mm entering the Lower Baker Gulper will be transported to the Skagit River, regardless of genetic origin. Otherwise, all Sulphur Creek origin bull trout will be transported to Lake Shannon, regardless of capture location or method.

### **Action items**

Nathanael will send the February 26, 2010 meeting summary for review and include the 2010 bull trout handling protocols (attachment 1).

Nathanael will coordinate with Mo in regards to tissue collection supplies for Baker bull trout.

### **Attachment 1.**

#### **DRAFT 2010 Baker River Basin Native Char Handling Protocol**

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### **Lower Baker Adult Trap**

Record date, capture location & method, measure and record length & weight, record sampler initials & condition (if abnormal), interrogate and record tag number if present, compare tag number against list of char PIT tags

- 1) Adults/sub-adults ( $\geq 125$  mm):
  - If carrying char PIT tag: transport and release into Baker Lake or Lake Shannon depending on genetic origin; if out-of-basin origin, release into Skagit River. If genetic origin is unknown, collect DNA tissue sample\*, transport and release into Baker Lake.
  - If not carrying char PIT tag: take scales & tissue sample, PIT tag, record # and release into Skagit R. (priority of release sites: (1) Hamilton, (2) Faber Landing, (3) mouth of Baker R.)
- 2) Juveniles ( $< 125$  mm): take scale sample, if juvenile  $> 40$  take small tissue sample ( $> 2$  mm diameter), release all juveniles downstream in the Skagit River.

### **Char Volitionally Entering and Captured in Baker Lake FSC**

Record date, capture location & method, measure and record length & weight, record sampler initials & condition (if abnormal), interrogate and record tag number if present, compare tag number against list of char PIT tags

- 1) Adults and sub-adults ( $\geq 125$  mm):
  - If carrying char PIT tag: transport and release Upper Baker and out-of-basin fish into Skagit R. (priority of release sites: (1) Hamilton, (2) Faber Landing, (3) mouth of Baker R.); release Sulphur Creek origin fish into Lake Shannon. If genetic origin is unknown, collect DNA tissue sample\*, transport and release into Skagit River.
  - If not carrying char PIT tag: take scales & tissue sample, PIT tag, record # and release into Skagit R. (priority of release sites: (1) Hamilton, (2) Faber Landing, (3) mouth of Baker R.)
- 2) Juveniles/ fry (41 mm to 124 mm): measure length, record capture, take small DNA tissue sample using several small clips (total  $> 2$  mm diameter) release downstream in the Skagit River
- 3) Fry ( $\leq 40$  mm): measure length, record capture, release back into reservoir at mouth of Welker Creek or near boat launch (Baker Lake)

### **Char Volitionally Entering and Captured in Lake Shannon Gulper**

Record date, capture location & method, measure and record length & weight, record sampler initials & condition (if abnormal), interrogate and record tag number if present, compare tag number against list of char PIT tags

- 1) Adults and sub-adults ( $\geq 125$  mm):
  - If carrying char PIT tag: transport and release Upper Baker, Sulphur Creek and out-of-basin origin fish into Skagit R. (priority of release sites: (1) Hamilton, (2) Faber Landing, (3) mouth of Baker R.). If genetic origin is unknown, collect DNA tissue sample\*, transport and release into Skagit River.

- If not carrying char PIT tag: take scales & tissue sample, PIT tag, record # and release into Skagit R. (priority of release sites: (1) Hamilton, (2) Faber Landing, (3) mouth of Baker R.)
- 2) Juveniles/ fry (41 mm to 124 mm): measure length, record capture, take small DNA tissue sample using several small clips (total >2 mm diameter) release downstream in the Skagit River
- 3) Fry ( $\leq 40$  mm): measure length, record capture, release back into reservoir at NW shore adjacent to log boom (Lake Shannon)

### **Baker Lake Angling Captures**

*2010 study efforts under Article 104: Connectivity do not include angling in Baker Lake for bull trout. If angling in Baker Lake is conducted as part of other studies:*

Record date, capture location & method, measure and record length & weight, record sampler initials & condition (if abnormal), interrogate and record tag number if present, compare tag number against list of char PIT tags

Adults and sub-adults ( $\geq 125$  mm):

- If carrying char PIT tag: release fish of Upper Baker genetic origin back into Baker Lake, release Sulphur Creek origin fish into Lake Shannon, release out-of-basin origin fish into Skagit River; if genetic origin is unknown, collect DNA tissue sample\* and release back into Baker Lake.
- If not carrying char PIT tag: take scales & tissue sample, PIT tag, record # and release back into Baker Lake

### **Lake Shannon Angling Captures**

Record date, capture location & method, measure and record length & weight, record sampler initials & condition (if abnormal), interrogate and record tag number if present, compare tag number against list of char PIT tags

1) Adults and sub-adults ( $\geq 125$  mm):

- If carrying char PIT tag: release Sulphur Creek origin fish back into Lake Shannon and release out-of-basin origin fish into the Skagit River. If Upper Baker origin bull trout are captured December through May, release into Skagit River; if Upper Baker origin fish are captured June through November transport and release into Baker Lake. If genetic origin is unknown, collect DNA tissue sample\* and release back into Lake Shannon.
- If not carrying char PIT tag: take scales & tissue sample, PIT tag, record # and release back into Lake Shannon at a location where immediate recapture is less likely.

**\*Collect new tissue sample if genetic analysis indicated either <7 Loci or 7-9 Loci with <90% Likelihood value, or if prior sample was compromised (e.g., contaminated, misnumbered, lost, or never taken).**

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### PIT Tagging Procedure

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- Collect lengths and weights,
- Collect DNA sample by clipping portion of anal fin,
- Disinfect PIT tags with 60-90% ethanol for a minimum of 15 minutes prior to tagging; disinfect needles subsequent to each injection,
- Inject PIT tag into the abdominal cavity of the fish using 20-gauge hypodermic needle; needles must be maintained free of scales and accumulated fish mucus; discard dull needles; keep smolts in water during the tagging and measurement process to the maximum extent possible,
- After inserting tag, scan fish with Biomark hand-held PIT tag reader to ensure successful implantation and record the individual tag code,
- Allow fish to recover in flow through container before release.

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### DNA Tissue Collection Procedure

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- Fish > 85 mm - clip portion of anal fin to obtain a 5-mm-diameter tissue sample
- Fish < 85 mm - clip portion of caudal fin lobe (lower lobe) to obtain a 2mm-diameter tissue sample
- Place tissue in the sample bottle containing 95% non-denatured ethanol solution; do not dilute the ethanol; do not use methanol or reagent alcohol solutions (i.e., rubbing alcohol or denatured alcohol) because these chemicals disrupt DNA extraction; do not overload the vials with tissue because DNA will degrade; vials should contain no more than 1 part tissue to 9 parts ethanol,
- Label each bottle with geographic location, statistical area, species, date and sampler; it is important that all this information be included for the sample to be useful,
- If labels placed inside vials - **Do not use (wood) paper-based waterproof paper** (e.g., *Rite-in-the-Rain*) because chemicals interfere with DNA extraction; plastic paper (e.g., *Dura Copy*) is acceptable,
- If labels are attached to the outside of vials, cover the label with clear tape to ensure the writing does not get dissolved by preservative.

5-mm diameter ● 2-mm diameter ●



## 2010 Baker River Basin Native Char Activities

- Submit for analysis all juvenile, sub-adult and adult tissue samples collected in 2010 (submit samples to WDFW in November 2010).
- Capture **adult char** by angling in Lake Shannon; schedule and specific protocols to be determined.
- Transport and release char according to proposed handling protocols.
- Conduct snorkel surveys in Sulphur Creek and Upper Baker (mid-August through mid-November).

