

PRE-REHABILITATION PLAN
Highline Creek (Pend Oreille County)
03/22/2017 – Bill Baker and Brian Walker

I. PROPOSAL

A. Justification for Proposed Rehabilitation

Highline Creek is a tributary to Sullivan Creek (tributary to the Pend Oreille River) in Pend Oreille County. Presumably inhabited by Westslope Cutthroat Trout *Oncorhynchus clarki lewisi* prior to stocking, Highline Creek was invaded by Brook Trout *Salvelinus fontinalis* stocked into Sullivan Creek in the 1930's (WDFW unpublished data). Brook Trout became established and displaced the native Westslope Cutthroat Trout, which were eventually extirpated in Highline Creek.

Highline Creek is uniquely suited to Westslope Cutthroat Trout restoration due to the presence of a complete upstream fish passage barrier preventing reinvasion by non-native fish (antiquated log-crib splash dam) and a simple fish community, currently composed primarily of Brook Trout. Following non-native fish eradication in Highline Creek, it is anticipated that reintroduced Westslope Cutthroat Trout will establish self-perpetuating populations and re-occupy the treated area.

Native sculpin were observed in the proposed treatment area in fall 2016, and tentatively identified as Slimy Sculpin *Cottus cognatus* via morphometric characteristics. Tissue samples were collected and submitted to WDFW's Molecular Genetics Laboratory for species identification (results pending). Sculpin present in the treatment area will be collected, enumerated, and translocated to Sullivan Creek prior to treatment. Following successful eradication of Brook Trout and re-establishment of WCT, native sculpin (presumably Slimy Sculpin) will be collected from Sullivan Creek and restored to Highline Creek.

B. Physical Description of Water Proposed for Rehabilitation

1. WATER: **Highline Creek**
2. LOCATION: T39N, R44E, S29 and S30 Pend Oreille County
3. SURFACE ACRES: N/A MAXIMUM DEPTH: N/A
4. DISCHARGE: 1.25 cfs
5. OUTLET: Tributary to Sullivan Creek
6. STREAM: Yes. This is a tributary stream rehabilitation.
7. PUBLIC ACCESS: Yes
8. LAND OWNERSHIP: PUBLIC 100% (USFS)
9. ESTABLISHED RESORTS: None

C. Proposed Management Actions

1. WATER: **Highline Creek**
2. TARGET SPECIES: Brook Trout
3. DATE LAST REHABED: Never
4. PROPOSED TREATMENT DATE: September 12 or 13, 2017

5. REPLANTING DATE: ~Spring 2020
6. SPECIES: Westslope Cutthroat Trout and native Sculpin (species pending confirmation)
7. Approximately 100 wild Westslope Cutthroat Trout, and native Sculpin (number of sculpin to be determined based on number of Sculpin salvaged prior to treatment) will be introduced to Highline Creek through translocation from source populations in the Sullivan Creek basin. Artificial rearing of fertilized WCT gametes through use of Remote Site Incubators (RSI) may also be employed if sufficient fish are not available for translocation.
8. PROPOSED TOXICANT: Rotenone, liquid and powder. CONCENTRATION: 1-3 ppm
AMOUNT (ROTENONE AT 5% ACT. INGRED): 3-7 gal liquid and 10 lbs powder.
9. METHOD OF APPLICATION: Drip can, backpack sprayer, and rotenone/gelatin/sand mixture.
10. CREW DESCRIPTION: Leader(s) Bill Baker, Personnel ~ 25

II. PURPOSE:

Historically widespread and abundant throughout the lower Pend Oreille River Basin, Westslope Cutthroat Trout have experienced significant constriction of range and abundance within the last 100 years. Proposed restoration of the Westslope Cutthroat Trout population in Highline Creek is consistent with WDFW's goal to "conserve and protect native fish and wildlife". This work would aid in restoring ecosystem function, provide source stocks of genetically pure cutthroat for the future, and act as a buffer against future petitioning of Westslope Cutthroat Trout under the Endangered Species Act (ESA). In addition, Highline Creek likely acts as a source population contributing Brook Trout to Sullivan Creek, which hinders on-going mechanical suppression of Brook Trout within the Sullivan Creek drainage.

III. INTENDED OUTCOME/MEASURE OF SUCCESS:

WDFW intends to restore Westslope Cutthroat Trout to Highline Creek. This project has four objectives:

1. Eradicate non-native Brook Trout from upper Highline Creek and its tributaries.
2. Salvage native sculpin from the Highline Creek treatment area and translocate them to Sullivan Creek.
3. Re-establish a self-sustaining, healthy population of WCT in the treated area.
4. Following successful re-establishment of WCT, translocate native sculpin from Sullivan Creek back into the Highline Creek watershed.

The successful achievement of Objective 1 would be readily apparent following the final rotenone treatment when no fish carcasses are observed within the treatment section. Environmental DNA (eDNA) sampling may also be used to determine Brook Trout presence/absence. Objective 2 would be accomplished by collecting as many sculpin from Highline Creek as possible and translocating them to Sullivan Creek prior to treatment. A reproducing population of WCT, expanding both in population size and spatial distribution, would indicate successful completion of Objective 3. Successful achievement of Objective 4 will be accomplished by translocating sculpin back into Highline Creek. This could take several years, as successful re-establishment of WCT is a prerequisite.

IV. RESOURCE IMPACTS:

1. The population of the target species, Brook Trout, will be eradicated.
2. Native sculpin were observed in the treatment area, and tentatively identified as Slimy Sculpin. Fin clips were collected and submitted to WDFW's Molecular Genetics Laboratory for official species identification. Sculpin present in the treatment area will be collected, enumerated, and translocated to Sullivan Creek prior to treatment. Following successful eradication of Brook Trout and re-establishment of WCT, native sculpin will be collected from Sullivan Creek and restored to Highline Creek.
3. Regional Lands, Habitat, Wildlife and Non-Game managers have been apprised of the proposed Highline Creek rehabilitation. No unmitigated concerns have been expressed on the potential impacts to non-targeted species.
4. According to Bradbury (1986), the effects of rotenone on benthos are variable, depending on the concentrations and species. Crustaceans are most tolerant while the smaller insects are most affected. Immediate reduction of populations averages 25%, and survival doubles when access to bottom sediments exists. Benthic communities generally recover to at least pretreatment levels within two months. Zooplankton is more severely impacted, and communities generally take two to twelve months to fully recover. While relatively tolerant of even heavy doses of rotenone, amphibians (especially larval) are at risk, and herptiles are affected somewhat less so. Almost no chance of eliminating an entire population exists.
5. Professionals from multiple resource agencies have visited this site during the last 50 years. No known report exists of any threatened or endangered species habitually found within the proposed treatment area. The treatment area is located within the home range of the Salmo wolf *Canis lupus* (Washington State endangered) pack, but wolves are unlikely to occupy the area during treatment due to increased human presence, traffic, and activity in the days surrounding treatment. Similarly, lynx *Lynx canadensis* (Federal-Threatened; WA-Endangered), fisher *Martes pennanti* (Federal-Candidate; WA-Endangered), grizzly bear *Ursus arctos* (Federal-Threatened; WA-Endangered), wolverine *Gulo gulo* (Federal-Candidate; WA-Candidate), and woodland caribou *Rangifer tarandus* (Federal-Endangered; WA-Endangered) either historically, or currently, occur within the Selkirk Mountains. However, the likelihood of presence of these species in the treatment area is very low.

V. MITIGATING FOR ADVERSE IMPACTS:

1. Drinking water will be provided to landowners downstream of the project area (who use stream water for drinking) during the period of rotenone presence in the project area. Removal of the majority of dead fish is planned. Dead fish will be buried on USFS property. Additionally, water filtration may be supplied to downstream landowners who obtain drinking water from the stream if collection of fish carcasses is deemed not sufficient to alleviate public health concerns related to bacteria from decomposing fish in the stream.

2. Late summer/fall rehabilitation will not interfere with spring nesting of waterfowl or spawning of adult/rearing of juvenile amphibians.
3. Livestock use of the waters to be treated will not be significantly affected. The concentration of rotenone used in the treatment will be far below that considered harmful to mammals or birds. The landowners will be notified of the rehabilitation and consequent exposure of livestock to rotenone.
4. No endemic, rare, threatened or otherwise listed species are known to inhabit this area. The Highline Creek treatment area is located within the Salmo wolf pack home range, but wolves are unlikely to occupy the area during treatment due to increased human presence, traffic, and activity in the days surrounding treatment.
5. Appropriate respirators and other personal protective equipment (PPE) will be utilized by staff involved with mixing and distributing liquid and powder rotenone per the American Fisheries Society Rotenone Standard Operating Procedure (SOP) manual.
6. The stream will be posted according to Department of Ecology guidelines to notify the public of the treatment and discourage the public from possessing or consuming dead fish.

VI. RECREATIONAL IMPACT:

Recreational use of the Highline Creek drainage is limited. Eastern Brook Trout in the treatment area are small in size (4–6”) and receive little angling pressure. Westslope Cutthroat Trout will provide limited angling opportunity following translocation, but will also be of small size. Hunting, wood gathering, berry picking, and hiking likely occur on or near Highline Creek, but should not be adversely affected by the treatment.

Angling will be impacted by the change in species, as Westslope Cutthroat Trout will have more restrictive harvest regulations (2 fish per day) than those in place for Brook Trout (5 fish per day).

VII. ECONOMIC IMPACTS:

Economic impacts will be limited for this project area. Angling pressure is very light in the Highline Creek treatment section, and contributes little to the local economy. Total project cost for this treatment and reintroduction is estimated at \$291,000, but this project will be funded primarily through contracts with Seattle City Light (Federal Energy Regulatory Commission mitigation funds).

As noted previously, the re-establishment of Westslope Cutthroat Trout in Highline Creek is intended to provide some buffer against the listing of the species under the ESA. An ESA listing of Westslope Cutthroat Trout could impact area farming/ranching, logging, and mining operations, which comprise a significant portion of Pend Oreille County’s economy.

VIII. RELATED MANAGEMENT ACTION:

See I.C.6. and I.C.7 for fish planting data

Reintroduced Westslope Cutthroat Trout and native sculpin will require periodic monitoring to ensure the health and persistence of the populations. Following 3 years of rotenone treatment and subsequent re-establishment of Westslope Cutthroat Trout and native Sculpin, periodic electrofishing surveys will be conducted to monitor population abundance, spatial distribution, and genetic metrics.

IX. PUBLIC CONTACT:

Public meetings will be held sometime between May and July 2017 in Cusick, Metaline Falls, and Olympia to explain WDFW's 2017-18 rehabilitation proposals, assess public opinion, and address local concerns.

Initiated by: Region 1, District 1 Fisheries Management