

Project ID: 199701900

Evaluate The Life History Of Native Salmonids In The Malheur Basin

Sponsor: BPT

Province: Middle Snake

Subbasin: Malheur

FY03 Request: \$324,401

5YR Estimate: \$991,485

Short Description: Evaluate and determine the life history, distribution, and critical habitats pertinent to populations of bull trout and other salmonids within the Malheur subbasin.

Response Needed? Yes

ISRP Preliminary Recommendation and Comments:

A response is needed. The management application of data previously generated by this project looks strong. The focus of this project is solely on bull trout; has work on redband trout been completed? Is the information already gathered by this project, augmented by literature, sufficient to develop a bull trout recovery plan?

Although discussed following the presentation, the proposed focus on sub-adult fish needs better justification. Other than the knowledge gap, why focus on this life-stage? Has work on adult fish been completed?

The proposal does well at describing methods but does not attempt to frame testable hypotheses. Asking "what do fish do" in the face of poor summer environmental conditions is a good start but should be followed by some hypotheses that can be tested by the data to be gathered. This should be done for objectives 1, 2, 5, and 7 and some objectives will require multiple hypotheses. The proposal largely ignores bull trout work done elsewhere. Those results should be used to help develop quality hypotheses. Adult bull trout information already acquired by this project should also be used in sub-adult hypothesis generation for the response. Why were there no even-numbered objectives in the proposal except for #2?

Response:

1. Has work on redband trout been completed?

- Redband work will be completed by 2003
- The focus of the redband work was to analyze the genetic integrity of the population within the Upper Malheur Subbasin. Genetic samples were collected in 1999 and 2000. These samples are currently being analyzed by Paul Spruell and Aaron Maxwell (Wild Trout and Salmon Genetics Laboratory, Division of Biological Sciences, University of Montana Missoula, MT). Samples will also be collected in 2002.
- Some work had been previously completed by ODFW and USFS as to redband relative abundance through presence/absence surveys though out the subbasin. As part of BPA's project # 199701900 and 199701901 (Which are now considered to be one project) the

BPT filled critical data gaps as to relative abundance of redband trout within the subbasin, which complemented previous work.

2. Is the information already gathered by this project, augmented by literature, sufficient to develop a bull trout recovery plan? The proposed focus on sub-adult fish needs better justification. Other than the knowledge gap, why focus on this life-stage?

Justification:

- The BPT Fish and Wildlife Department and the cooperators of this project believe that the current information is not enough to formulate a comprehensive bull trout recovery plan and have the support of other bull trout working groups throughout the basin (Mary Hanson, State of Oregon bull trout coordinator and other ODFW, USFWS, USFS, BOR, biologists, personal contact). It is felt that preliminary studies through out the basin have shown that sub-adult bull trout may occupy distinct habitats and display different behavior patterns that may play an important role in population persistence. Limited data from the Deschutes River suggest sub-adult bull trout display nomadic behavior patterns (Brun 2000). Sub-adult bull trout tend to have a more sporadic and wandering distribution pattern thus breaking the pattern of adult seasonal distribution and migration. Some may return with spawning adults where as others may reside where food sources are abundant and water quality conditions favor their life history. The Malheur River basin stream temperatures tend to be warmer than the streams flowing off the east rim of the Cascade Mountains and isolated sightings of presumed sub-adult bull trout have been documented in warm water habitats (Buchanan 1997, Bowers 1993, Miller 2002 (personal communication)). One of our Hypotheses pertain to summer reservoir occupancy for sub-adult bull trout rearing. Summer reservoir occupancy for sub-adult rearing currently has not been shown within the Malheur Subbasin. This aspect of the life history has important implications on water management and delivery.
- The purpose of the proposal is to determine the distribution of juvenile and adult bull trout and habitats associated with that distribution. This will allow assessment and tracking of bull trout populations and guide efforts towards habitat protection, enhancement, and restoration on private and public lands. Such habitat information is necessary for the protection of existing critical habitat and any restoration efforts that may be undertaken. Without this type of information it is impossible to properly protect and manage the fisheries resources. Land management practices to date mostly focus on protecting adult bull trout spawning habitat but neglect to identify and protect habitats used by sub-adults.

In the narrative (Part 2) section of the proposal (page 6) list the Columbia River Basins Fish and Wildlife programmatic measures that that relate to the importance of this project.

1994 Columbia River Basin Fish and Wildlife Programmatic measures:

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| Measure 2.2A | Support Native Species in Native Habitat. |
| Measure 3.2C.1 | Focuses on identifying key uncertainties associated with program measures. |

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| Measure 10.1 | Resident fish goal to recover and preserve health of native resident fish injured by hydropower system. |
| Measure 10.1A.1 | Fund the fishery managers' efforts to complete assessments of resident fish losses throughout the Columbia River Basin |
| Measure 10.2A.1 | Accord high priority to areas of the basin where anadromous fish are not present |
| Measure 10.2C.1 | Implement 7.7 of this program to also apply to resident fish, including the watershed provisions, where applicable. |
| Measure 10.5 | Bull trout mitigation. |
| Measure 10.5A | Study and evaluate bull trout populations. |
| Measure 10.6 | Other resident fish populations. |

This proposal is also in line and would comply with the following measures within the Malheur basins (Draft) bull trout recovery workgroups action plan to initiate recovery.

- 1.2 Identify barriers or sites of entrainment for bull trout and implement tasks to provide passage and eliminate entrainment.
- 1.3 Identify impaired stream channel and riparian areas and implement tasks to restore their appropriate functions.
- 1.4.1 Review reservoir operational concerns (water level manipulation, methods of release, entrainment, minimum fisheries pool, passage, etc.) and provide operating recommendations through Federal consultation.
- 3.1 Develop and implement State and tribal native fish management plans integrating adaptive research.
 - 3.1.1 Incorporate bull trout recovery actions into The Oregon Plan for Salmon and Watersheds and the Pacific Northwest Power Planning Council Subbasin plans. Request assistance with implementation of recovery strategies for bull trout through both planning processes.
 - 3.1.2 Coordinate bull trout recovery with recovery efforts, management plans, etc. of other species, e.g., redband trout.
 - 3.1.3 Adaptively integrate research results into management programs (information transfer).
- 3.2.2 Educate anglers about bull trout identification, special regulations, how to reduce hooking mortality of bull trout caught incidentally, and the value of bull trout and their habitat and their place in the ecosystem.
- 3.2.3 Improve and implement fisheries management guidelines and policies designed to protect native species, e.g., Oregon Draft Native Fish Conservation Policy, Malheur River Basin Fish Management Plan.
- 4 Characterize, conserve, and monitor genetic diversity and gene flow among local populations of bull trout.
 - 4.1.1 Assess severity of threat due to hybridization with brook trout in the Middle Fork and Malheur populations.
- 5 Conduct research and monitoring to implement and evaluate bull trout recovery activities, consistent with an adaptive management approach using feedback from implemented, site-specific recovery tasks.
 - 5.2 Conduct research evaluating relationships among bull trout distribution and abundance, bull trout habitat, and recovery tasks.

- 5.2.1 Evaluate historic and present conditions in bull trout habitats by life stage.
- 5.2.2 Identify site-specific threats that may be limiting bull trout in watersheds with historic bull trout habitat.
- 5.2.3 Determine suitability of temperature regimes in currently occupied and potentially restorable bull trout drainages.
- 5.2.5 Determine movement and seasonality of use of different habitat types of adult and sub-adult migratory bull trout in multiple drainages, with emphasis on reservoirs and mainstem rivers.
- 5.5 Develop and conduct research and monitoring studies to improve information concerning the distribution and status of bull trout.
 - 5.5.1 Review and update databases for bull trout distribution records.
 - 5.5.2 Conduct regular surveys in potential habitat where bull trout status is unknown or recolonization is anticipated.
 - 5.5.3 Develop and implement a process for sharing all bull trout monitoring data.
 - 5.5.5 Coordinate bull trout recovery monitoring with the Oregon Plan for Salmon and Watersheds monitoring program.
 - 5.5.6 Determine life history requirements of local resident and migratory bull trout populations.
 - 5.5.7 Determine mechanism by which resident forms undergo transition to migratory life forms in the North Fork Malheur and upper Malheur local populations. Coordinate results with other recovery unit teams.
 - 5.5.8 Determine consequences of genetic fragmentation/isolation due to human-made barriers.
- 6.1 Use partnerships and collaborative processes to protect, maintain, and restore functioning core areas for bull trout.
 - 6.1.1 Promote collaborative efforts to establish or support existing local watershed groups to accomplish site-specific protection/restoration activities. Participate in restoration efforts, provide technical support, organize volunteers, etc.
 - 6.1.4 Develop educational materials on bull trout and their habitat needs, e.g., watershed form and function, riparian and side channel restoration, large wood placement, etc.
- 7.2.1 Design and implement a monitoring plan to track progress toward achieving recovery criteria for the Malheur Recovery Unit.

3. Has work on adult fish been completed?

- Seasonal distribution of adult bull trout will be completed by 2003. The BPT is proposing to continue monitoring bull trout spawning activities as well as conduct a more detailed genetic analysis of the species within the subbasin, focusing on hybridization and introgression.

4. Proposal does not attempt to frame testable hypotheses. This should be done for objectives 1, 2, 5, and 7 and some objectives will require multiple hypotheses.

- **Objective #1:**
 - Sub-adult bull trout over summer in irrigation reservoirs within the Upper Malheur River Subbasin (null). This would imply that sub-adult bull trout stay in the reservoirs through out the summer months.

- Sub-adult bull trout losses are occurring at unscreened diversions within the Upper Malheur River (null). This would suggest that sub-adult bull trout are migrating and becoming trapped in unscreened diversion channels within the Upper Malheur Subbasin.
- Sub-adults that have yet to migrate to irrigation reservoirs are over summering in habitats that are not currently being managed for bull trout (null). This would imply the down migrating sub-adults are over summering in areas where current land use practices do not take bull trout into consideration.
- Down migrating juvenals enter irrigation reservoirs in the fall (null). This would suggest that peak juvenal downward migrations occur in the fall of the year.
- **Objective 2:**
 - Bull trout spawning within the Upper Malheur Subbasin occurs above 5000' Elevation (null). This would imply that no bull trout spawning was occurring below 5000' elevation.
 - Bull trout spawning within the Malheur subbasin is only occurring in streams with temperatures less than 10°C (null). This would suggest that no bull trout spawning is occurring in streams that exceed 10 degrees Celsius during the spawning period.
- **Objective 5:**
 - Hypotheses a) under objective 1 would also apply to this objective.
 - Bull trout are being entrained through irrigation reservoirs (null). This would suggest that under current operations bull trout are being passed over and through irrigation dams.
- **Objective 7:**
 - Hybridization of the bull trout population with an exotic species (brook trout) is occurring within the Upper Malheur River (null). This would imply that bull trout and brook trout are interbreeding thus having negative effects on the native bull trout population.

5. Why were there no even-numbered objectives in the proposal except for #2?

- Page 12 of the narrative part of the proposal lists the objectives 1 through 9. Objectives 4,6 and 8 have been listed as completed.

Objectives:

1. Document the complete migratory patterns of bull trout within the Malheur River basin.
2. Continue monitoring population trends (index) and age class structure in native salmonids within the Malheur basin.
3. Monitor water quality within the Malheur basin.
4. Determine the timing of bull trout spawning and critical locations within the Malheur basin (**Completed**).
5. Determine the pre-migration use by bull trout in Beulah and Warm Springs Reservoir and the entrainment over the dam.
6. Evaluate habitat profiles of critical bull trout spawning and rearing tributaries within the Malheur basin (**Completed**).
7. Continue quantifying genetic population structure in salmonid populations within the Malheur basin.
8. Determine cool micro-refugia within the Malheur basin (**Completed**).
9. Progress Reports.

References:

- Bowers, W.L., P.A. Dupee, M.L. Hanson, and R.R. Perkins. 1993. Bull trout population summary, Malheur River basin. ODFW, Hines, OR.
- Brun, C.V. 2000 Bull trout distribution and abundance on waters on and bordering Warm Springs Reservation. Annual report, BPT. Portland Oregon
- Buchanan, D.V., M.L. Hanson, and R.M. Hooton. 1997. Status of Oregon's Bull Trout. Oregon Department of Fish and Wildlife, Portland, OR.
- Hanson, M. 2002. Personal contact with employee of department of Fish and Wildlife, Portland, Oregon
- Hanson, M.L., R.C. Buckman, and W.E. Hosford. 1990. Malheur River Basin fish management plan. Oregon Department of Fish and Wildlife, Portland, OR.
- Miller A. 2002. Personal contact with employee of Prairie City, Ranger District, USFS, Prairie City, Oregon