Annual Progress Report 2013-2014

# James G. Hallett and Margaret A. O'Connell

# Biology Department Eastern Washington University Cheney, WA 99004

**Upper Columbia United Tribes Wildlife Monitoring and Evaluation Program (UWMEP) – project #2008-007-00**

**Report of Progress from 2009 ISRP Wildlife Categorical Review**

Contents

[1 Introduction 2](#_Toc386786014)

[2 Field sampling 2](#_Toc386786015)

[2.1 Monitoring locations 2](#_Toc386786016)

[2.2 Vegetation sampling 3](#_Toc386786017)

[2.3 Vertebrate sampling 4](#_Toc386786018)

[2.4 Permitting 4](#_Toc386786019)

[3 Field data 4](#_Toc386786020)

[4 Dissemination of project results 5](#_Toc386786021)

[4.1 Availability of data 5](#_Toc386786022)

[5 Acknowledgements 5](#_Toc386786023)

[6 Literature cited 5](#_Toc386786024)

# Introduction

Following the Wildlife Category Review process, the ISRP reported that the UCUT Wildlife Monitoring and Evaluation Program (UWMEP) met scientific criteria ([ISRP 2009-17](http://www.nwcouncil.org/fw/reviews/2010/wildlife/isrp2009-17/)). Based on ISRP recommendations, the Northwest Power and Conservation Council asked that the ISRP provide further review of the project and its applicability to other geographical areas after 3 years of implementation. We presented a report of progress last year providing discussion of the analytical approach to assessing ecological change. This report was reviewed by the ISRP in October 2013. They concluded again that the UWMEP meets scientific review criteria. Specifically the ISRP said that: “The progress report meets the ISRP’s previous qualifications from the Wildlife Category Review by providing a very good summary of analytical approaches and a thoughtful and rigorous preliminary analysis of data. The ISRP believes this wildlife M&E approach can be used in other areas. However, if the use of the approach is expanded to other areas, the ISRP recommends that the sponsors develop a companion document where the analytical approaches are explained in more detail. This companion document can be provided to the ISRP during the next review process.”

During the 2013-2014 project year, we completed work on lands managed by the Kootenai, Coeur d’Alene, and Kalispel (partial Idaho units) Tribes. We continue to be about a year ahead of the schedule that we first proposed and will complete initial sampling of all properties during the 2015-2016 project year. In summer 2014, we will revisit some of the Kalispel mitigation units that were last sampled in 2006. Sites on the west side of the Colville Reservation will be sampled in 2015 to complete the first cycle. During the 2015-2016 project year, we will be at a very good point to again assess our approach because we will be able to include the Kalispel sites which have been sampled and managed over the longest time period. We will provide full documentation of the analytical methods used at that time as requested by the ISRP. In this report, we summarize the results of the 2013-2014 field season.

# Field sampling

## Monitoring locations

The Albeni Falls Work Group (2001) used a stratified-random sampling design to determine the location of points for monitoring. The protocol mapped a geo-referenced grid (200-m spacing) onto each mitigation property using GIS. Grid points were sequentially numbered and represented potential monitoring sample points on mitigation areas that could then be randomly selected by use of a random numbers generator. The 200-m spacing is equal to the preferred sample point separation for breeding bird point-count stations ([Huff et al. 2000](#_ENREF_4)), and yields one potential sample point for every 4 ha of habitat. Closer grid-point spacing would decrease the probability that data from adjacent sample points are independent and increase the risk of double counting birds when using point-count sampling techniques. Sites managed by the Kalispel Tribe were selected with this technique in 2004.

The same approach was used to determine sampling locations for the Coeur d’Alene and Kootenai properties using map products provided by each Tribe. Because of there was a total of 11 new management units, we were able to sample only one location for 9 units (Table 1).

Table 1. Habitats and number of sampling sites for mitigation units managed by the three Tribes. Sampling could not be conducted on the single riparian shrub site near Sandpoint, Idaho because of flooding.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tribe | Management unit | Habitat | Number of sites | Years sampled |
| Coeur d'Alene | Windy | Mixed Conifer | 1 | 2013 |
| Coeur d'Alene | Hangman | Wetland Meadow | 2 | 2013 |
| Coeur d'Alene | Benewah | Wetland Meadow | 1 | 2013 |
| Coeur d'Alene | Hepton Lake | Wetland Meadow | 1 | 2013 |
| Coeur d'Alene | Goosehaven | Wetland Meadow | 1 | 2013 |
| Coeur d'Alene | Elkhorn Flats | Wetland Meadow | 1 | 2013 |
| Coeur d'Alene | Cougar | Wetland Meadow | 1 | 2013 |
| Coeur d'Alene | St. Joe | Wetland Meadow | 1 | 2013 |
| Kalispel | Sandpoint | Emergent Wetland | 1 | 2004, 2013 |
| Kalispel | Sandpoint | Mixed Conifer | 3 | 2004, 2013 |
| Kalispel | Sandpoint | Riparian Shrub | 1 | 2004 |
| Kootenai | Mirror Lake | Emergent Wetland | 1 | 2013 |
| Kootenai | Trout | Riparian Forest | 1 | 2013 |
| Kootenai | Nimz Ranch | Wetland Meadow | 4 | 2013 |

## Vegetation sampling

Composition and structure of the vegetation are typically the first things to be addressed in terrestrial ecological restoration projects. In some cases, soil amendments or other changes to the physical environment might be necessary before this can proceed. Vegetation provides the template for inclusion and maintenance of wildlife species by directly providing requisites such as food, cover, perches, and nests, and indirectly through its effects on ecosystem functioning and microclimate. The goal of vegetation sampling was to collect comparative information on herbaceous vegetation, shrubs, and trees on both reference and mitigation points.

Frequency and percent cover of ground vegetation and substrate features were measured. Unless precluded by plant condition (e.g., seedling), all plants were identified to species. Ground vegetation and substrate were measured using a 20 x 50-cm plot placed at the center of each site point and on alternating sides of a 32-m transects radiating in each of the cardinal directions from the sampling point for a total of 33 plots. Species of herbaceous vegetation and substrate features (e.g., rock, litter) were recorded and assigned to 1 of 6 cover categories (Daubenmire 1959). The height (to nearest cm) of the tallest vegetation rooted in the plot was measured at three points along the midline of the plot frame. In tall marsh vegetation, the plot frame used is 3-sided (open on 1 of the 50-cm sides) to be able to slide the plot into the vegetation rather than placing over the vegetation. Instead of cover class, the number of stems of cattails and bulrushes were recorded.

Shrubs were measured along the same 32-m transects used for cover measurements. A 2-m belt was used and species and size (length x width x height) of each shrub were recorded. Number of trees by species and diameter at breast height (DBH) size class were recorded within 16 × 16-m plots centered on each reference or mitigation point in 6 size classes. Number of standing dead trees (i.e., snags) was recorded by size class and stage of decay.

## Vertebrate sampling

Full details of sampling procedures for larval amphibians, birds, and small mammals are available at MonitoringMethods.org ([Hallett and O'Connell 2013c](#_ENREF_3), [b](#_ENREF_2), [a](#_ENREF_1)).

# 2.4 Permitting

A scientific collecting permit was approved by the Idaho Department of Fish and Game. We received a collecting permit from the Coeur d’Alene Tribe to work on their lands. Environmental compliance requirements of the Bonneville Power Administration were met. Approval by the Eastern Washington University Institutional Animal Care and Use Committee was renewed.

# Field data

Fieldwork was conducted from June through September 2013. Relative to previous years, we had very large sample sizes for amphibians and small mammals (Table 2). Full analysis of these data will be provided in our next annual report. Data summaries are now available online (see next section).

Table 2. Number of records obtained and number of species identified for each species group in 2013.

|  |  |  |
| --- | --- | --- |
| Group | Number of records | Number of species |
| Herbaceous vegetation | 1733 | 127 |
| Shrubs | 4184 | 31 |
| Trees | 2115 | 17 |
| Amphibians | 12517 | 5 |
| Birds | 2362 | 106 |
| Small mammals | 930 | 8 |

# Dissemination of project results

## Availability of data

All of the data collected between 2002 and 2013 are available in summarized form on the Geospatial Database Viewer created by the Kalispel Natural Resources Department (<http://gis.knrd.org/knrdgisviewer/>). The data viewer provides filters for restricting data to, for example, specific mitigation units or years, and displays the locations of sampling points. Data can be exported in summary form or raw data tables can be requested online.

Data tables are refreshed after field data have been examined and updated. This is usually several months after field work has been completed because of the time required to ensure correct species identification of plants and small mammals. The most recent implementation of the Geospatial Database Viewer now incorporates new data immediately after we have uploaded it to our SQL database.

We have been working with the data consultants in charge of managing the Geospatial Database Viewer to increase the analytical tools available online. This year, the first of several stages was completed by incorporating the database extensions using the R programming language. As development proceeds, summary tables should provide more information and additional tools for analysis and graphical display will become available.

# Acknowledgements

Cam Hauser, Gerry Green (Coeur d’Alene), Ray Entz, Matt Berger (Kalispel Tribe), Scott Soults and Norm Merz (Kootenai) provided support for work conducted on the lands under their management. Kristi Kimmet managed the field work and data entry. Adam Gebaneur, Rachel Salazar, and Sarah Stankovich conducted much of the field work. Scott Price and Cindy McCormack conducted the bird surveys. Funding was provided by the Bonneville Power Administration.

# Literature cited

Hallett, J. G. and M. A. O'Connell. 2013a. Amphibian Surveys Using Minnow Traps. Monitoring Methods 1296.

Hallett, J. G. and M. A. O'Connell. 2013b. Breeding Bird Surveys Using Point Counts. Monitoring Methods 1295.

Hallett, J. G. and M. A. O'Connell. 2013c. Small Mammal Surveys Using Removal Trapping. Monitoring Methods 1293.

Huff, M. H., K. A. Bettinger, and et.al. 2000. A habitat based point-count protocol for terrestrial birds, emphasizing Washington and Oregon General Technical Report PNW-GTR-501 U.S.D.A Forest Service, Pacific Northwest Research Station, Portland, OR.