

# **Assessing Habitat Conservation, Enhancement & Restoration Impacts on Non-game Wildlife**

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## **Executive Summary**

Within MFWP's non-game wildlife program, there are distinct opportunities to understand the benefits of habitat conservation, enhancement, and restoration projects on non-game species through analyses of existing data. Monitoring data related to small mammal and passerine species have been collected in relation to habitat projects across the state – these data could be analyzed to indicate how these efforts affected non-game wildlife, specific to the habitat treatment objectives. At a larger scale, a suite of species of conservation interest with broad space-use patterns stand to benefit from Conservation Lease and Easement efforts (e.g. Grassland Initiative). Through the analysis of existing data, we aim to address the impacts of habitat treatments and conservation easements on non-game wildlife. At the end of 2023, we have made progress on both components. HS will be taking FMLA at the end of 2023 and early 2024—we will discuss whether timelines need to be adjusted as a result and remain committed to completing the work in the agreed-upon time frame.

## Subcomponent 1: Assessing effects of specific habitat treatments on non-game wildlife where data have already been collected

### Background:

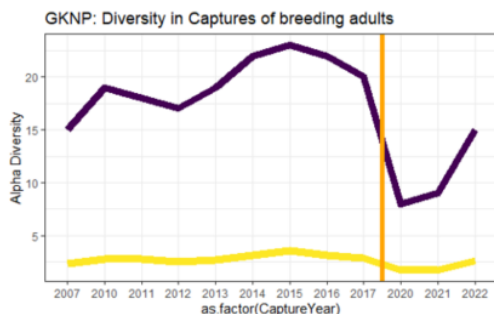
Habitat projects have different non-game objectives that vary from use of non-game habitat-condition-associated species as indicators of restoration effectiveness to general interest in characterization of community change over the time since the treatment. For a variety of projects across the state, appropriate before-after or treatment-control data have already been collected. We aimed to complete the feedback loop by analyzing non-game data with respect to management objectives.

### Narrative of completed work:

In Fall 2022, we conducted a call for datasets and project prioritization process wherein we considered existing, un-analyzed non-game datasets to understand the power of the dataset to address questions of interest and the broader relevance to FWP management. By early 2023 we obtained relevant datasets from collaborators and (this week) received 2023 data from collaborators with which to update analyses. Since, HS has worked iteratively with collaborators, presenting summary analyses in Spring 2023, sharing site-specific analyses in early fall 2023, and working on integrating relevant habitat data (summer 2023 - ongoing). Iterative collaborator meetings continue to provide direction to ensure that analyses are addressing questions and that collaborators receive copies of figures (etc.) that are useful to their own reporting.

Project Stage	Status
Call for datasets & prioritization process	Completed Fall 2022
Initial questions identified	Completed Fall 2022
Datasets given to Hannah	Completed Fall 2022
Question refinement	Ongoing
Summary analyses	Spring 2023
Initial results	Spring 2023
Obtaining, prepping & integrating habitat covariate data	Summer 2023, Presented Fall 2023, Ongoing
Determination of research products	Ongoing during Fall 2023

### Project Summary:



**Figure 1.** The purple line shows a steep drop in the diversity of breeding birds at Grant Kohrs immediately following remediation (orange line) and graduate increase in the years since as the vegetation structure recovers.

The Clark Fork River Superfund Area is affected by metals contamination from mining, milling and smelting within the watershed and by the 1908 flood which distributed contaminants downstream. FWP has been involved in the remedy and restoration of the Mt. Haggin Injured Area for almost 20 years, with expectation of improved ecological function. MAPS (Monitoring Avian Productivity and Survival) bird banding stations operated by MFWP and the University of Montana Bird Ecology Lab (UMBEL) over the last 15 years in riparian areas throughout the watershed can offer insight into the bird community response to habitat regeneration on restored or remediated sites. We are assessing differences in and changes to bird community metrics in an accident assessment framework; metrics include community composition, species

abundance, productivity, fidelity and potentially adult age structure or survival. Initial findings show bird community response to the vegetation restoration at Grant Kohrs National Historic Site (e.g. Figure 1). We are in the process of model development to assess significance of differences between Mt. Haggin and reference sites.

## Subcomponent 2: Predict the contribution of Conservation Easements and Leases to the conservation of grassland bird species using a mitigated loss model

**Background:** The primary aim of the Grassland Initiative Project pursued by FWP from 2017-2022 was to work towards stemming declines of grassland species through preservation of existing grassland habitat. Functionally, this strategy works to prevent further decline of populations by preventing potential habitat loss. Thus, the impact of such efforts is most properly evaluated by estimating the negative consequences that would occur for the species of interest if the conserved grassland were to be converted to row crop.

**Narrative of completed work:** During 2023, we revised the modeling framework for using Sprague’s Pipit and Lark Buntings as example species. Drawing on feedback from the initial models, we shifted to a model framework that uses density (instead of occupancy) models produced by the USFWS-HAPET division (Fields et al. 2018) such that outputs could be quantified as the *number of birds not displaced*. We also integrated the risk of habitat conversion into the model (Niemuth et al. 2022), as not all habitat is equally vulnerable to conversion. USFWS density models are available for four of the potential species of interest. We presented initial results from these revisions for Sprague’s Pipit in early 2023, and received feedback from collaborators. We have subsequently spent some time resolving spatial inconsistencies and are ready to apply our model framework to other focal species.

Project Stage	Status
Model framework built out for 1 species	Completed Summer 2022
Model framework feedback elicitation	Completed Fall 2022
Model framework revision & first species	Completed Winter/Spring 2023
Model framework revision feedback elicitation	Completed Spring 2023
Complete first species	Completed Spring 2023
Remaining species	Winter 2023-24
Multi-species outcomes & development of use products	Spring 2024

### Project Summary:

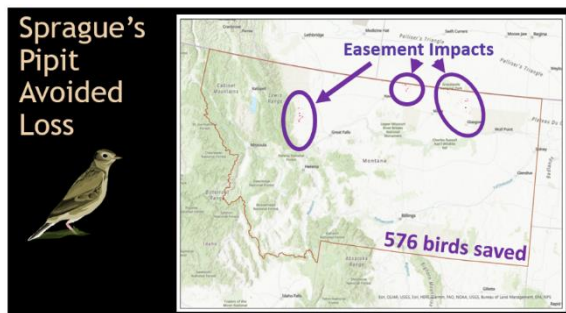


Figure 1. An example of the revised mitigated loss model for Sprague’s Pipit in NE Montana, showing mitigated declines in occurrence from easements and leases.

The revised mitigated loss models (e.g. Figure 1) has allowed us to estimate the proportion of birds vulnerable to the effects of conversion that are not displaced by habitat loss. This revised modelling approach included easements and leases from FWP and others (e.g. TNC, Land Trusts) to place FWP’s work in a broader context. Not surprisingly, the impacts of easements are greatest for easements that are located in areas of high conversion risk and high habitat value for a given species. After building these models for other focal species, we will generate a “community” metric reflecting easement impacts across focal species.