

Avian response to habitat manipulation and natural fires in the oil and gas fields of northwest Colorado

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Final Report Summary:

Understanding and mitigating for the impacts of energy development on wildlife will be a major challenge for ecologists in the coming decades. The Piceance Basin of Northwest Colorado is currently experiencing an unprecedented level of natural gas development and provides critical habitat for the largest migratory mule deer herd in the United States. Assumed impacts from energy development have led to large-scale habitat manipulations in the Piceance Basin.

In 2013, 1,072 acres of pinyon-juniper woodlands were hydroaxed as part of a collaborative project between XTO Energy, the Bureau of Land Management, Colorado Parks and Wildlife and Colorado State University to study the effects woodland removal has on the productivity of game forage. Hydroax chops and mulches standing vegetation, but the degree to which this mechanical disturbance mimics natural disturbance is unknown. During the summer of 2012 wildfires burned approximately 8,000 acres throughout the Piceance Basin offering an opportunity to compare wildlife responses to mechanical disturbance (hydroax treatments) and natural disturbance (fires) in the same area and on the same time-scale.

The goal of this project is to understand how habitat manipulation for mule deer impacts avian communities – and how these impacts compare to the effects of natural disturbance in the pinyon-juniper ecosystem.

We received \$750 – which was matched with funding from XTO-Energy, totaling \$1,500 – from the Lois Webster Fund to hire an intern for six weeks of the field season. Molly Warner, a first year undergraduate student at Colorado State University conducted fieldwork from May 19 to June 30, 2014. Molly helped complete over 600 point count surveys and 125 vegetation surveys. During her internship – Molly has learned to identify approximately 60 western bird species by sight and sound (Table 1) and over 2 dozen plant species common in the pinyon-juniper system of Western Colorado. We feel this opportunity allowed Molly the rare opportunity to participate – in the field – alongside an ongoing research project to gain valuable experience in avian conservation. The experience and knowledge gained during this opportunity will be invaluable for her further career in conservation biology. Molly and our research team are extremely grateful for the funding provided by the Lois Webster Fund and Denver Audubon's support. Molly plans on writing up her experience for the ASGD Newsletter and presenting her experience alongside Travis during the end of season presentation to the Lois Webster Fund supporters.

We are currently analyzing our point count data in the occupancy modeling framework to understand the impacts of mule deer habitat treatments and natural fires on the avian communities, and will present more specific results in future communications.

Table 1. Species list from 2014 point count surveys

Species	Species	Species
American Kestrel	Empidonax Flycatcher	Red-breasted Nuthatch
American Robin	Green-tailed Towhee	Red-tailed Hawk
Ash-throated Flycatcher	Hairy Woodpecker	Rock Wren
Bewick's Wren	Hermit Thrush	Savannah Sparrow
Black-billed Magpie	House Finch	Say's Phoebe
Black-chinned Hummingbird	House Wren	Spotted Towhee
Black-throated Gray Warbler	Juniper Titmouse	Vesper Sparrow
Blue-grey Gnatcatcher	Lark Sparrow	Violet-green Swallow
Brewer's Blackbird	Lazuli Bunting	Virginia Warbler
Brewer's Sparrow	Lesser Goldfinch	Western Kingbird
Brown-headed Cowbird	Lincoln Sparrow	Western Meadowlark
Bullock's Oriole	MacGillivray's Warbler	Western Scrubjay
Canyon Wren	Mountain Bluebird	Western Wood Pewee
Cassin's Finch	Mountain Chickadee	White-breasted Nuthatch
Chipping Sparrow	Mourning Dove	White-crowned Sparrow
Common Nighthawk	Northern Flicker	White-sided Swift
Common Raven	Northern Harrier	Wild Turkey
Cooper's Hawk	Pine Siskin	Yellow-rumped Warbler
Dark-eyed Junco	Pinyon Jay	Yellow Warbler
Downy Woodpecker	Plumbeous Vireo	