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U.S. Bureau of Land Management, Jonah Interagency Office, and Jonah Field Operators

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2015 Jonah Infill Drilling Project Area

Wildlife Monitoring

Final Report

ASTER CANYON CONSULTING, INC.

2015 JONAH INFILL DRILLING PROJECT AREA WILDLIFE MONITORING FINAL REPORT

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TABLE OF CONTENTS

LIST OF APPENDICES IV
LIST OF MAPS V
LIST OF FIGURES VII
1.0 EXECUTIVE SUMMARY 8
2.0 INTRODUCTION 11
2.1 Study Area 12
2.2 Objectives 14
2.3 Datum and GPS 14
2.4 Threatened, Endangered, Proposed, and Candidate Species; Wyoming Sensitive Species; and Species of Greatest Conservation Need 14
2.5 Overall Monitoring and Protection Measures 15
3.0 RAPTORS 16
3.1 Raptors Methods 17
3.2 Raptors Results 18
3.3 Raptors Discussion 20
4.0 BURROWING OWL 22
4.1 Burrowing Owl Methods 22
4.2 Burrowing Owl Results 23
4.3 Burrowing Owl Discussion 24
5.0 MOUNTAIN PLOVER 25
5.1 Mountain Plover Methods 26
5.2 Mountain Plover Results 26
5.3 Mountain Plover Discussion 27
6.0 LANDBIRDS 29
6.1 Landbirds Methods 30
6.2 Landbirds Results 30
6.3 Landbirds Discussion 35
7.0 FENCE MONITORING 36
7.1 Fence Monitoring Methods 37

7.2 Fence Monitoring Results 38
7.3 Fence Monitoring Discussion 38
8.0 GENERAL WILDLIFE 41
8.1 General Wildlife Methods 41
8.2 General Wildlife Results 41
8.3 General Wildlife Discussion 45
LIST OF ACRONYMS 47
COMMON AND SCIENTIFIC NAMES OF SPECIES PRESENTED IN THIS REPORT 48
LITERATURE CITED 50

LIST OF APPENDICES

(On Data CD)

Appendix A: Raptors

Appendix B: Burrowing Owl

Appendix C: Mountain Plover

Appendix D: Landbirds

Appendix E: Fence Monitoring

Appendix F: General Wildlife

LIST OF MAPS

Map 1. 2015 Wildlife study areas: the JIDPA (landbirds), its 3-mile buffer (mountain plover, fence and general wildlife) and its 3-mile buffer minus the PAPA (raptors and burrowing owl)……..……..……..13

Map 2. Landbird point count locations, total birds recorded (size of pie chart) and proportion of each species recorded at each point (fraction of pie chart)……..……..……..…...32

Map 3. Fences monitored and fence strike locations recorded in the JIDPA and 3-mile buffer.....40

Map 4. General wildlife observations in the JIDPA and 3-mile buffer…….…..……....….44

LIST OF TABLES

Table 1. Standard protection measures for all development-related activities in the JIDPA (BLM 2006)……..15-16

Table 2. Summary of 2015 raptor monitoring results in the JIDPA and 3-mile buffer (minus the PAPA)...18

Table 3. Summary of burrowing owl monitoring results: 2009-2014……...…...….23-24

Table 4. 2015 mountain plover sightings in the JIDPA and 3-mile buffer…….…….…….…..27

Table 5. Summary of mountain plover sightings in the JIDPA and 3-mile buffer: 2013-2015…….....28

Table 6. Landbird species detected in the JIDPA during 2015 point count surveys……...…...31

Table 7. Fence strikes recorded on 9.3 miles of fence in the northern portion of the JIDPA 3-mile buffer during sage-grouse lekking season……...……...……...38

Table 8. Fence strikes recorded on the JIDPA during the 2010-2015 sage-grouse lekking season...……38

Table 9. List of general wildlife observations in the JIDPA and 3-mile buffer……....……..…..42-43

LIST OF FIGURES

Figure 1. Abundance of landbird species detected in the JIDPA during 2015 point count surveys……..…34

Figure 2. Landbird species detected in the JIDPA in 2007, 2008, 2010, 2011, 2012, 2013, 2014, and 2015 as a percentage of total birds detected…….…….…….....34

1.0 EXECUTIVE SUMMARY

Aster Canyon has prepared this 2015 Jonah Infill Drilling Project Area Wildlife Monitoring Report in accordance with the criteria set forth in the *Wildlife Monitoring Plan for the Jonah Infill Drilling Project*, updated February 2015 (WMP; JIO 2015). The WMP was prepared by the Bureau of Land Management (BLM) and the Jonah Interagency Mitigation and Reclamation office (JIO), and establishes wildlife monitoring protocol for the Jonah Infill Drilling Project Area (JIDPA). The goal of wildlife monitoring on the JIDPA and surrounding 3-mile buffer are: (1) to compare observations and data collected over time; (2) to identify existing mitigation and protection measures as described in the BLM Jonah Field Record of Decision (ROD; BLM 2006); and (3) to offer recommendations on how to improve monitoring, mitigation, and protection measures.

The primary protection measure employed on the JIDPA for the majority of wildlife species is avoidance of disturbance to critical wildlife habitats, especially during sensitive life stages such as breeding and nesting times. This is accomplished through the use of spatial buffers that prohibit or limit disturbance in areas such as sage-grouse leks, burrowing owl and raptor nesting sites, and mountain plover breeding grounds.

The WMP sets forth guide lines for monitoring species that are US Fish & Wildlife Service (USFWS) Threatened, Endangered, Proposed, and Candidate (TEPC) species, Wyoming Game & Fish Department (WGFD) Species of Greatest Conservation Need (SGCN), and BLM Wyoming Sensitive Species (WSS). Species monitored in 2015 include raptor (golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), etc.), burrowing owl (*Athene cunicularia*), mountain plover (*Charadrius montanus*), and landbirds. Additional surveys were completed to collect data on greater sage-grouse (*Centrocercus urophasianus)* fence strikes and general wildlife observations. All data presented in this report was collected between March 19th and September 28th, 2015.

For your reference past monitoring reports are located on the JIO website at: http://www.wy.blm.gov/jio-papo/jio/monitoring.htm.

This report is organized according to species, and provides an introduction, survey methods, results, and a discussion on each species inventoried. Below is a summary of survey results for the 2015 monitoring season:

RAPTORS

- 121 nest locations were monitored in the JIDPA and 3-mile buffer in 2015.
- 2 new raptor nests were recorded.
- 3 golden eagle nests were active; 1 successfully hatched and fledged young, 1 had an undetermined hatch and fledge status, and the third nest failed.
- 2 ferruginous hawk nests on artificial nest platforms in the 3-mile buffer were active and successfully fledged 6 young.
- 4 American kestrel nests were active.
- 1 red-tailed hawk nest was active and successfully fledged young.

BURROWING OWL

- 87 nest locations were monitored in the JIDPA and 3-mile buffer in 2015.
- 4 new burrowing owl nests were recorded.
- 8 burrowing owl nests were active, 6 of which successfully hatched and fledged young.

MOUNTAIN PLOVER

- 20 previously-identified mountain plover habitats were surveyed in the JIDPA and 3-mile buffer in 2015.
- 2 adult mountain plovers (2 separate sightings) were observed.

LANDBIRDS

- 34 landbird point count surveys were conducted in the JIDPA in 2015.
- 291 individual birds, comprising 8 species of landbird, were detected during point counts.

FENCE MONITORING

- 9.3 miles of fence were monitored 8 times during greater sage-grouse lekking season (March, April, and May 2015).
- 26 simple strikes and 4 mortality strikes of greater sage-grouse were recorded.

GENERAL WILDLIFE

- Common species which were routinely observed in the JIDPA and 3-mile buffer in 2015 include: pronghorn antelope (*Antilocarpa americana*), white-tailed jackrabbit (*Lepus townsendii)*, cottontail rabbit (*Sylvilagus spp.)*, white-tailed prairie dog, ground squirrel (*Spermophilus spp.)*, common raven (*Corvus corax)*, horned lark (*Eremophila alpestris)*, Brewer's sparrow (*Spizella breweri)*, sage sparrow (*Amphispiza belli)*, vesper sparrow (*Pooecetes gramineus)*, and sage thrasher (*Oreoscoptes montanus).*
- 26 other wildlife species (22 avian, 3 mammalian, 1 reptilian) were detected in the JIDPA and 3-mile buffer in 2015; species of note that are TEPC, WSS, SGN, and/or protected by the Bald Eagle and Golden Eagle Protection Act include ferruginous hawk *(Buteo regalis)*, bald eagle *(Haliaeetus leucocephalus)*, golden eagle *(Aquila chrysaetos)*, lark bunting *(Calamospiza melanocorys)*, loggerhead shrike *(Lanius ludovicianus)*, long-billed curlew *(Numenius americanus)*, and greater sage-grouse (*Centrocercus urophasianus*).

Species not specifically referred to in the WMP, but who are TEPC, SGCN, or WSS, including white-tailed prairie dog (*Cynomys leucurus*), pygmy rabbit (*Brachylagus idahoensis*), greater sage-grouse, and black-footed ferret (*Mustela nigripes*), are discussed below:

WHITE-TAILED PRAIRIE DOG

- White-tailed prairie dog town mapping was not required in 2015.
- White-tailed prairie dog town mapping will reinitiate next year in 2016.

PYGMY RABBIT

- Pygmy rabbits were not required to be monitored in 2015.

- Monitoring for pygmy rabbits will reinitiate next year in 2016.

GREATER SAGE-GROUSE

- Monitoring for greater sage-grouse was not required in 2015.
- The BLM and WGFD conduct annual sage-grouse lek surveys and inventories in the JIDPA and 3-mile buffer.
- A total of 10 incidental greater sage-grouse observations, totaling 52 individuals, occurred in the JIDPA and 3-mile buffer in 2015.

BLACK-FOOTED FERRET

- Monitoring for black-footed ferret is no longer required in the JIDPA as per a USFWS decision.

2.0 INTRODUCTION

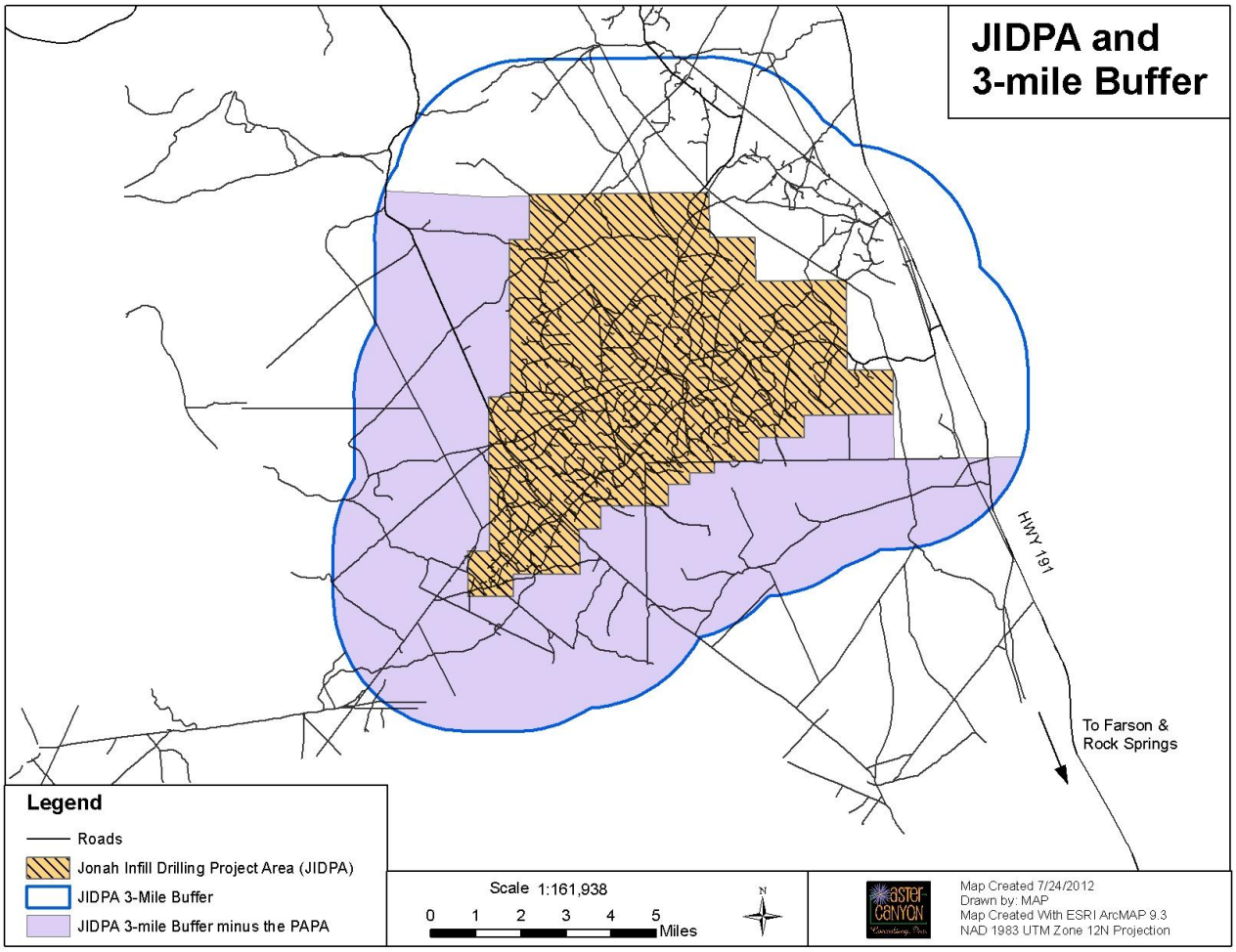
The JIDPA is located in the Upper Green River Basin and exists entirely in Sublette County, Wyoming. The JIDPA lies approximately 32 miles southeast of Pinedale, Wyoming, between United States Highways 189 and 191. The JIDPA is situated almost exclusively (94%) on federally-owned lands and has one of the richest concentrations of natural gas in the United States (JIO 2012a). Meanwhile, the sagebrush-dominated ecosystem that predominates in the JIDPA and surrounding area is critically important to many Wyoming wildlife species, and several of Wyoming's TEPC, SGCN, and WSS depend on sagebrush during some part of their life history. Accordingly, the BLM has initiated wildlife monitoring and inventory studies as recommended under the Environmental Impact Statement (EIS), which was written in compliance with the National Environmental Policy Act of 1969 (NEPA). Environmental studies commenced in 1996 with Anderson Environmental Consultants, Inc. and continued from 1997-2005 with TRC Mariah Associates, Inc. (TRC). No funding was allocated for the project in 2006. Since 2007, Aster Canyon has been performing wildlife inventories in the JIDPA and 3-mile buffer.

A greater sage-grouse observed in the JIDPA; Photo by A. Tompkins

2.1 Study Area

The JIDPA encompasses approximately 30,500 acres of land in townships 28N and 29N, ranges 107W, 108W and 109W. Aster Canyon's 2015 Jonah Infill Drilling Project Area Wildlife Monitoring study area includes the JIDPA as well as a surrounding 3-mile buffer (Map 1). Mountain plover, general wildlife, and fence monitoring were conducted throughout the JIDPA and entire 3-mile buffer in 2015. The 3-mile buffer on the north and east sides of the JIDPA has been eliminated for raptor and burrowing owl monitoring since 2009, as it overlaps with the Pinedale Anticline Project Area's (PAPA) 3-mile buffer. Landbird point counts were carried out solely within the JIDPA boundary.

Map 1. 2015 Wildlife study areas: the JIDPA (landbirds), its 3-mile buffer (mountain plover, fence and general wildlife) and its 3-mile buffer minus the PAPA (raptors and burrowing owl)



The JIDPA and 3-mile buffer consists of shrub-steppe habitat dominated by Wyoming big sagebrush (*Artemisia tridentata var. wyomingensis*) and containing other species of sagebrush (*Artemisia spp.*), rabbitbrush (*Chrysothamnus spp.*), saltbush (*Atriplex spp.*), and a variety of forbs and grasses. It is considered a semi-arid, cold desert and is punctuated by rolling hills interspersed with scattered buttes and rocky outcrops. The area is intersected by numerous ephemeral stream channels and washes and contains a handful of man-made reservoirs, including livestock water sources and a spring-fed earthen dam. Total precipitation averages 8.0 inches per year, and the elevation ranges from 7,000 – 7,400 feet above sea level (BLM 2006).

2.2 Objectives

The objectives of JIDPA Wildlife Monitoring in 2015 were to: (1) identify and record wildlife occurring within the JIDPA and 3-mile buffer; (2) provide data to assist in the maintenance of desired wildlife population levels within the JIDPA; and (3) assist land managers and Operators with planning efforts. Aster Canyon's monitoring of the JIDPA and 3-mile buffer provides data that assists in determining the effects of disturbance on wildlife while also providing guidance related to future monitoring. This is intended to help land managers identify appropriate mitigation and protection measures and, if needed, revise the EIS wildlife models and projections.

2.3 Datum and GPS

Global Positioning System (GPS) locations were recorded using Garmin Rino110 and Trimble GeoXT GeoExplorer - 2005 series in the Universal Transverse Mercator (UTM) coordinate system, Zone 12 north in the North American Datum of 1983. All locations were then projected into a Geographic Information System (GIS) and plotted using ESRI ArcGIS 9®, ArcMap version 9.3.

2.4 Threatened, Endangered, Proposed, and Candidate Species; Wyoming Sensitive Species; and Species of Greatest Conservation Need

There are several species on the USFWS's TEPC list, the BLM's WSS list, and the WGFD's SGCN list that occur within the JIDPA and 3-mile buffer. These species can be found online at:

USFWS Federally listed, Proposed and Candidate Species by County – Wyoming:
http://www.fws.gov/wyominges/Pages/Species/Species_Endangered.html

BLM Wyoming Sensitive Species Policy and List:
http://www.blm.gov/wy/st/en/programs/Wildlife.html

WGFD Wyoming Species of Greatest Conservation Need:
https://wgfd.wyo.gov/Habitat/Habitat-Plans/Wyoming-State-Wildlife-Action-Plan

TEPC, WSS, and SGCN species which are discussed in the WMP include the following (JIO 2012b): black-footed ferret, white-tailed prairie dog, pygmy rabbit, ferruginous hawk, golden eagle, western burrowing owl, mountain plover, greater sage-grouse, and

landbirds including the sage sparrow, sage thrasher, brewer's sparrow, and loggerhead shrike. All incidental observations of species not specifically surveyed for in 2015 were recorded in the WGFD Wildlife Observation System (WOS) and are included in the General Wildlife section of this report.

2.5 Overall Monitoring and Protection Measures

Each species presented in this report has monitoring and protection measures specific to its individual needs. Table 1 presents wildlife protection measures (by species) that pertain to development-related activities occurring within the JIDPA. However, some measures, such as the protection and conservation of critical habitat, apply to all wildlife species. Particular habitats which effectively increase the JIDPA's biodiversity include: sand draws, rocky outcrops, reservoirs, and un-fragmented sagebrush stands. Aster Canyon posits that the preservation of these vital habitats is critical for the persistence of many sensitive species in the area. Also, prairie dogs are an important resource for several species in the JIDPA, as they provide food for raptors and habitat for burrowing owl and mountain plover.

Table 1. Standard protection measures for all development-related activities in the JIDPA (BLM 2006)

Affected Areas	Applied Restrictions	Restriction Time Frame	Restricted Area Distance
Greater sage-grouse lek	No surface occupancy	Year-round	Within 0.25-mile of occupied lek boundary
Greater sage-grouse lek	No surface-disturbing activity	March 1 - May 15	Within 0.25-mile of occupied lek boundary
Greater sage-grouse nesting habitat	No surface-disturbing activity	March 15 - July 15	Within 2-miles of active lek or within suitable nesting habitat
Greater sage-grouse winter habitat	No surface-disturbing activity	November 15 - March 14	Within identified winter habitat
Greater sage-grouse lek/strutting grounds	Surface occupancy or use restricted or prohibited	March 1 - May 15 (8 pm to 8 am)	Within 0.25-mile of lek/strutting grounds boundary
Mountain plover	No surface-disturbing activity until 2 surveys (no earlier than 4/20 and 5/4) show no nesting activity; activity must begin within 72 hours of survey	April 10 - July 10	Within potential mountain plover habitat
Bald eagle nest	No surface occupancy	Year-round	Within .5-mile of active nest

Bald eagle nest	No surface-disturbing activity	February 1 - August 15	Within 0.5-mile of active and alternative nests
Bald eagle winter use area	No surface-disturbing activity; disruptive activities restricted	November 15 - April 1	Within 1-mile of roost site
Ferruginous hawk nest	No surface occupancy	Year-round	Within 1,000 feet of active nest
Ferruginous hawk nest	No surface-disturbing activity	February 1 - July 31	Within 1-mile of active nest
Other raptors	No surface occupancy	Year-round	Within 825 feet of active nest
Other raptors	No surface-disturbing activity	February 1 - July 31	Within 0.5-mile of active nest
Sand draw	No surface occupancy	Year-round	Within 300 feet

As stated in the ROD, intensive surface-disturbing activities in the JIDPA will likely have significant impacts on wildlife, including displacement and/or extirpation of local populations; therefore, mitigation is encouraged to maintain and protect wildlife. The JIO was formed to provide overall on-site and off-site management of field monitoring and mitigation activities. The JIO is also tasked with managing a 'monitoring and mitigation' fund, which was initially provisioned $24.5 million by EnCana Oil and Gas (USA) Inc. and BP American Production Company. Of the original $24.5 million, $16.5 million were committed to off-site wildlife mitigation while the remaining $8 million were committed to other environmental initiatives (JIO 2012a).

Finally, previously-unidentified protection measures for TEPC, WSS, and SGCN species are often identified during field reviews by the BLM and Operators during on-site meetings for Applications for Permits to Drill, Right of Way, and in Sundry Notices. When these protection measures are identified, surveys by BLM-approved consulting biologists are usually required, with survey protocols being coordinated with BLM biologists.

3.0 RAPTORS

Raptors play an important role in maintaining stable populations of small mammals on the JIDPA and 3-mile buffer. They prey upon ground squirrels and prairie dogs, among other mammalian. Raptors are also very sensitive to anthropogenic sources of

disturbance, such as oil and gas development, and therefore serve as a good indicator of overall ecosystem health. Yearly raptor nesting surveys offer a snapshot of the raptor population that is using the JIDPA and 3-mile buffer, and can be used to track overall nesting trends.

The Migratory Bird Treaty Act of 1918 (MBTA) prohibits the take, kill, possession, and transport among other regulations, of all migratory birds and their parts, nests, and eggs (USFWS 2004). Raptors that are commonly found nesting on the JIDPA that are regulated under the MBTA include the American kestrel (*Falco sparverius*), ferruginous hawk (*Buteo regalis)*, and golden eagle (*Haliaeetus leucocephalus)*. There is also a red-tailed hawk (*Buteo jamaicensis)* pair that has been actively nesting in 2013 and 2015. Golden eagles are granted additional protection under The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) of 1940. Also, the ferruginous hawk is listed as a WSS and a SGCN species. All other incidental sightings of species outside of these regulations are discussed in the "General Wildlife" portion of this report. Below are the methods, results and discussion for the 2015 monitoring season.

3.1 Raptors Methods

2015 raptor nest monitoring was performed as per the *Raptor Survey Protocol*, found in the *Wildlife Survey Protocols, Pinedale Field Office* Version 2.3 and the *Wildlife Monitoring Plan for the Jonah Infill and Drilling Project*. BLM-required spreadsheets were used to record all monitoring data.

A total of 121 raptor nests were surveyed in the JIDPA and 3-mile buffer (minus the PAPA) in 2015; 119 of those were provided to Aster Canyon by the Pinedale BLM, and 2 were newly discovered nests in 2015. Of the 121 nests, 40 were reported as historic and gone. Raptor nest surveys and new nest searches were performed between April 15th and June 15th, 2015. Each nest was surveyed at least twice with a minimum of 3 weeks time between surveys to determine nest condition, occupancy, and activity status in accordance with the *Wildlife Monitoring Plan for the Jonah Infill and Drilling Project*. Aster Canyon performed additional productivity surveys to determine nest hatch and

fledge rates for all active nests. The results of each round of surveys were provided to the BLM, JIO, and operators in order to assist with real-time planning and conservation efforts.

3.2 Raptors Results

Of the 121 raptor nests surveyed on the JIDPA and 3-mile buffer (minus the PAPA) in 2015, there were 11 nests found to be occupied: 5 American kestrel nests (291081313, 291081205, 291081208, 291081314, and 291081209), 2 ferruginous hawk nests (291073201 and 291073301), 3 golden eagle nests (281090101, 291082504, and 281081401), and 1 red-tailed hawk nest (281070301). All except for one of the occupied nests were also active, which totals 10 active nests in 2015. An 'active' nest is defined by the BLM as one which hosted a breeding attempt. Both ferruginous hawk nests successfully hatched and fledged a total of 6 young. Golden eagle nest 291082504 and red-tailed hawk nest 281070301 successfully hatched and fledged young. Table 2 summarizes results from the 2015 raptor monitoring season. Appendix A contains BLM-required spreadsheets detailing nest activity for all known raptor nests, spreadsheets for Operators to assist with planning, as well as a map displaying all nest locations, occupied and active nests, and NSO and seasonal restriction buffers.

Table 2. Summary of 2015 raptor monitoring results in the JIDPA and 3-mile buffer (minus the PAPA)

Species Monitored	Total Number of Nests	Number of Occupied Nests	Number of Active Nests	Number of Nests Hatch Successful	Number of Nests Fledge Successful
American kestrel	23	5	4	Unknown	Unknown
Ferruginous hawk	89	2	2	2	2
Golden eagle	4	3	3	1	1
Common raven	1	0	0	0	0
Red-tailed hawk	1	1	1	1	1
Unknown raptor	3	0	0	0	0
Total	**121**	**11**	**10**	**4**	**2**

American kestrel

There were 5 American kestrel nests found to be occupied in 2015, 4 of which were also active. Hatch and fledge status for the 4 active nests were unable to be determined. American kestrels are cavity nesters and their nests are located in rock crevices in the JIDPA and 3-mile buffer. American kestrels have been commonly found to be nesting there during annual raptor surveys.

Ferruginous hawk

There were 2 occupied and active ferruginous hawk nests recorded in 2015, both of which are located on artificial nest platforms that are located within the southern portion of the JIDPA buffer. Both nests successfully hatched young; 2 and 4 juveniles were observed in each nest. They were fully feathered and we assume they took flight from the nest, however, we did not observe them on the ground. These nests have successfully produced young for many consecutive years.

Ferruginous hawk artificial nesting structure in JIDPA 3-mile buffer; Photo by M. Pomilia

Golden eagle

Three occupied and active golden eagle nests were recorded on the JIDPA and 3-mile buffer in 2015, which is the highest number recorded since 1996. One of the nests successfully hatched and fledged two young (291082504), while another had an unknown hatch and fledge status (281081401). The third nest (281090101) failed when it was reported that the eggs cracked, after which Aster Canyon observed that the nest had been abandoned. Nests 291082504 and 281081401 were newly discovered nests in 2015.

Red-tailed hawk

A red-tailed hawk nest (281070301) successfully hatched and fledged young in 2015. This nest is located in a cell phone tower and was first discovered in 2013 when it was also occupied and active.

3.3 Raptors Discussion

There were a total of 121 nests surveyed: 119 were provided by the BLM, and two were newly discovered nests. There were 40 nests recorded as historic and found to no longer exist. An additional 15 nests were also found to be inactive and gone, bringing the total of nests that no longer exist to 55. Eleven nests were found to be occupied, 10 of which were also active. Four nests were confirmed to have hatched young, all of which also fledged young. This represents an increase in occupied nests in 2015, up from 9 occupied nests in 2014 and just 6 in 2013. Accordingly so, nest activity also went up in 2015, up from 5 active nests in 2014 and 6 in 2013. Twice as many nests hatched and fledged young in 2015 as compared to 2014.

American kestrels continue to utilize rock crevices for nesting in the JIDPA and 3-mile buffer, and are expected to persist in doing so as long as these rock structures remain in tact. American kestrels are generally tolerant of human disturbance, and will even nest in nesting boxes attached to man-made structures (Smallwood & Bird 2002).

It was a record year in 2015 for golden eagle nesting in the JIPDA and 3-mile buffer. Golden eagle nest 291082504 successfully hatched and fledged two young this year. It is of importance to note that conflict often occurs among young and results in siblicide, which is why golden eagle nests commonly produce only one surviving chick. The sex of the young and hatching order may explain why two young survived from nest 291082504; siblicide is more probable when a female is born before a male (Kochert et al. 2002). The same nest hatched and fledged 1 young in 2012.

Nest 281081401, which is a new golden eagle nest located on a dilapidated windmill, was found to be occupied and active, however, a hatch and fledge status could not be determined for this nest.

Nest 281090101 is also a new golden eagle nest that was occupied and active, but the nest failed after the egg(s) cracked. This nest is located on the catwalk of a tank on an active well pad. The lease operator and USFWS closely monitored this nest and additional data can be found with them.

The ferruginous hawk platforms continue to successfully produce young. Nest platforms provide a safer and more desirable nesting location off the ground for the ferruginous hawks.

The cell phone tower in the southeastern corner of the JIDPA buffer also provides protection for a pair of nesting red-tailed hawks that built an active nest there in 2013. Red-tailed hawks typically nest in trees and other man-made structures that are taller than surrounding features and jut above the landscape. These features provide them with a view of the surrounding area and overhead access to land (Preston & Beane 2009). The cell phone tower provides great hunting and nesting opportunities for red-tailed hawks.

In accordance with the Jonah ROD, active ferruginous hawk nests are protected year-round with a no surface occupancy buffer of 1,000 feet from the nest, and a no surface disturbance buffer from February 1st through July 31st of 1-mile. All other active raptor nests are protected year-round with no surface occupancy within 825 feet of an active nest, and no surface disturbance from February 1st through July 31st of a half mile. Future monitoring efforts should continue to focus on prompt identification of nesting raptors and implementation of appropriate protection buffers. Known nesting sites should also continue to be afforded protection from human disturbance in order to increase likely hood of raptor re-use in the future. The surge in golden eagle nesting on the JIDPA and buffer should be monitored closely in hopes of facilitating safe and successful nesting opportunities for the eagle population in the area.

4.0 BURROWING OWL

The western burrowing owl *(Athene cunicularia)* is a small, long-legged owl that lives underground and is commonly found in the JIDPA and 3-mile buffer. Burrowing owls are known to arrive in Wyoming mid April through late May where they nest and produce young, and then migrate South in early fall (Bureau of Land Management 2012.) Banded burrowing owls migrants from Wyoming have been found in Arkansas, Oklahoma, Texas, and Mexico during the winter. The burrowing owl relies upon prairie dog or badger burrows for nest sites, and typically nests in small groups. As such, loss of prairie dog habitat and burrows poses a significant threat to the burrowing owl population (Poulin et al. 2011).

A juvenile burrowing owl observed in the JIDPA

The burrowing owl is protected under the MBTA, which prohibits their take, kill, possession, and transport, among other activities. Additionally, the burrowing owl is protected as a WSS and SGCN.

4.1 Burrowing Owl Methods

2015 burrowing owl nest monitoring was performed as per the *Burrowing Owl Survey Protocol* which is found in the *Wildlife Survey Protocols, Pinedale Field Office* Version 2.3 and the *Wildlife Monitoring Plan for the Jonah Infill and Drilling Project*. BLM-required spreadsheets were used to record all monitoring data; the forms and data collection standards for burrowing owl are the same as those for the raptor nesting surveys. Below are the methods, results, and discussion for the 2015 monitoring season.

A total of 87 burrowing owl nests were surveyed in the JIDPA and 3-mile buffer (minus the PAPA) in 2015; 83 of those were provided to Aster Canyon by the Pinedale BLM, and four were newly discovered nests in 2015. Of the 87 nests, 15 were reported as gone. Burrowing owl nest surveys and new nest searches were performed between May 1st and October 31st, 2015. Each nest was surveyed at least 3 times, with a minimum of 3 weeks time between surveys, to determine nest condition, occupancy, and activity status in

accordance with the *Wildlife Monitoring Plan for the Jonah Infill and Drilling Project*. Aster Canyon performed additional productivity surveys to determine nest hatch and fledge rates for all active nests. The results of each round of surveys were provided to the BLM, JIO, and operators in order to assist with real-time planning and conservation efforts.

4.2 Burrowing Owl Results

Of the 87 burrowing owl nests surveyed on the JIDPA and three-mile buffer (minus the PAPA) in 2015, there were 11 nests found to be occupied: 281070701, 281093302, 291082208, 291082902, 291083003, 291083105, 291091401, 291091503, 291091504, 291092201, and 291092202. All except for 3 of the occupied nests were also active, making for a total of 8 active nests in 2015. An 'active' nest is defined by the BLM as one which hosted a breeding attempt. Hatch and fledge status was unable to be determined for two of the active nests (291091401 and 291091504), and the other 6 successfully hatched and fledged young (281070701, 291082208, 291083003, 291091503, 291092201, 291092202). The BLM protocol does not define the term 'fledge' in the case of burrowing owls. Aster Canyon defines 'fledge' as when fully-feathered young voluntarily leave the nest for the first time (Bird and Bildstein 2007).

Appendix B contains BLM-required spreadsheets detailing nest activity for all known burrowing owl nests, spreadsheets for Operators to assist with planning, as well as a map displaying all nest locations, occupied and active nests, and NSO and seasonal restriction buffers. Table 3 summarizes results from burrowing owl monitoring during the 2009 – 2015 seasons. The study area in the JIDPA and 3-mile buffer has remained unchanged during these years.

Table 3. Summary of burrowing owl monitoring results: 2009-2015

	Total number of nest locations	Number of Occupied Nests	Number of Active Nests	Number of Nests Hatch Successful	Number of Nests Fledge Successful
2015	87	11	8	6	6
2014	83	10	10	10	10
2013	75	12	12	7	7

2012	64	9	8	6	6
2011	61	10	8	7	7
2010	51	12	11	7	7
2009	38	*	6	2	2

* 'Occupied' was not a term that was used in the BLM protocol in 2009

4.3 Burrowing Owl Discussion

There were a total of 87 nests surveyed: 83 were provided by the BLM, and four were newly discovered nests. There were 15 nests recorded as gone and found to no longer exist. Eleven nests were found to be occupied, 8 of which were also active. Six nests were confirmed to have hatched and fledged young. This represents an increase in occupied nests in 2015 compared to 2014, but a decrease in active nests. There was also a decrease in nests that hatched and fledged young in 2015 compared with 2014 and 2013.

While exact dates of arrival and departure of burrowing owls to their breeding grounds in western Wyoming is largely unknown, they are generally found on their northern breeding grounds from March to September (Poulin et al. 2011). On March 31st, 2015 Aster Canyon was notified by email correspondence from Jonah Energy that a burrowing owl was spotted on the JIDPA. This marks the earliest burrowing owl sighting on the JIDPA since Aster Canyon began reporting in 2007. The second earliest sighting was on April 4th, 2008.

In addition to observing an early arrival for the burrowing owls on the JIDPA, Aster Canyon also observed an early dispersal. During round 3 surveys which took place between August 11th and September 28th, Aster Canyon noticed that many of the previously occupied nests appeared vacant. An early dispersal could have influenced the number of nests found as active in 2015 and may have affected the number of hatchlings and fledglings observed; burrowing owls may have already dispersed and/or begun migration.

Seasonal restrictions for surface-disturbing activities are required by the Jonah ROD. Such activities are prohibited from February 1st through July 31st within 0.5 miles of active burrowing owl nests. Also, no surface occupancy is permitted anytime within 825

feet of active burrowing owl nests. Quick identification of new nests and implementing protective buffers is crucial to protect burrowing owls from potential disturbance.

Besides protecting the burrowing owl nests themselves, it is also important to evaluate trends in prairie dog habitat available on the Jonah, as it provides important nesting habitat for burrowing owl. As per the *Wildlife Monitoring Plan for the Jonah Infill and Drilling Project*, suitable white-tailed prairie dog habitat is surveyed and mapped every 3 years on the JIDPA and 3-mile buffer. When evaluating prairie dog survey results, it is important consider implications that they may have to burrowing owl.

5.0 MOUNTAIN PLOVER

The mountain plover is an uncommon shorebird similar is size to a killdeer (*Charadrius vocierus*) but with longer legs and straighter posture, lacking the black breast band that is common in plovers (Knopf & Wunder 2006). The mountain plover migrates to breeding grounds in the short-grass prairies of the western Great Plains and shrub-steppe habitats in Rocky Mountain states, including Wyoming. Mountain plover breeding grounds in Wyoming consist of grasslands with sparse and low vegetation, as well as open shrub-steppe habitats (Smith & Keinath 2004). Mountain plover nests have also been found on bare ground created by oil and gas development (BLM 2012). Wyoming alone provides breeding habitat for approximately 3,400 mountain plovers, which represents 24-31% of the global mountain plover population (Plumb et al. 2005).

Mountain plover adult in Wyoming; Photo by J. Brauch

Mountain plover numbers were found to have decreased significantly within the last century (Drietz et al. 2006), especially between the 1960's and the 1990's (Knopf & Rupert 1996). Due to concerns about a loss in mountain plover population and habitat, it was proposed for Federal listing as "threatened" under the Endangered Species Act (ESA) in 1999. However, the proposal was subsequently withdrawn in 2003 when it was

determined that threats to the species were not as severe as previously thought. More recently in 2010 the proposal to list the mountain plover was re-instated. Once again the proposal was withdrawn by the USFWS in 2011 when it was determined that the mountain plover was not threatened or endangered throughout its range (USFWS 2011). The mountain plover is currently afforded protection as a Bird of Conservation Concern by the USFWS, a Species of Concern by the United States Forest Service, a SGCN, and a WSS. Additionally, the mountain plover is federally protected under the MBTA. Below are the methods, results and discussion for the 2015 monitoring season.

5.1 Mountain Plover Methods

Mountain Plover surveys were conducted in accordance with the "large scale/long term project" guidelines in the *Mountain Plover Survey Protocol* which is found in the *Wildlife Survey Protocols, Pinedale Field Office* Version 2.3 and the *Wildlife Monitoring Plan for the Jonah Infill and Drilling Project*. BLM- required spreadsheets were used to record all monitoring data.

Aster Canyon surveyed 20 mountain plover habitat areas within the JIDPA and 3-mile buffer (minus the PAPA) in 2015 which were provided by the BLM. Three rounds of surveys were conducted between May 1st and June 19th, 2015, which were separated by at least 14 days. Per protocol, surveys were conducted by vehicle to determine mountain plover presence/absence in each habitat area. Surveys were performed between local sunrise and 10:00 A.M., and were not performed during periods of inclement weather such as high wind, precipitation, etc. Survey results were reported to the BLM, JIO, and operators at the conclusion of each round.

5.2 Mountain Plover Results

There were two mountain plover sightings in 2015 in the JIDPA and 3-mile buffer (Appendix C-2; Table 4). The first sighting occurred during round one surveys on May 6th in habitat area #1. The adult mountain plover was observed walking/ducking through sagebrush in an attempt to hide. The second sighting took place on June 1st during round

two surveys. The second observation was also an adult mountain plover walking/ducking through sage in habitat area #1. No mountain plovers were observed during round three surveys.

Table 4. 2015 mountain plover sightings in the JIDPA and 3-mile buffer

Sighting #	Date	Habitat (Plot) ID	Adult	Juvenile
1	5/6/2015	1	1	0
2	6/1/2015	1	1	0

5.3 Mountain Plover Discussion

Above average rainfall in May delayed 2015 mountain plover surveys due to wet and muddy road conditions. Based on data collected between 1981 and 2010, average precipitation for the month of May at the Boulder rearing station, which is approximately 20 miles north of the JIDPA and 3-mile buffer, is 1.30 inches. In May of 2015 the Boulder rearing station reported 2.37 inches of precipitation which represents an 82% increase in precipitation compared to the average (NOAA, 2015). Round 2 surveys in May were delayed, which in turn pushed back round 3 surveys. Round 3 was completed on June 19th, a few days after the June 15th protocol deadline. The BLM was notified of the delay in an email correspondence on June 16th, 2015.

Mountain plover sightings were down from 4 sightings in 3 different habitat areas in 2014 to 2 sightings within a single habitat area in 2015, and the above average rainfall may have been a contributing factor. Due to the rather drab coloring and small size of the mountain plover it can be difficult to spot, especially in vegetated areas. Rainfall may have bolstered vegetative cover in 2015 making the surveys more challenging.

There have been a total of 76 mountain plover sightings within 12 different habitat areas on the JIDPA and 3-mile buffer since 2000. The sightings occurred in habitat areas 1, 6, 15, 10, 18, 24, 26, 27, 28, 29, 30, and 40. The year 2000 is the earliest that we have recorded mountain plover sightings (Table 5). The data in Table 5 should not be used to

evaluate trends because methodologies have not been standardized to account for observer effort.

Table 5. Summary of mountain plover sightings in the JIDPA and 3-mile buffer: 2000-2015

Year	# Sightings	Habitat Areas
2000	1	30
2002	3	26, 30
2003	2	26, 27
2004	9	1, 26, 28, 29
2005	12	1, 6, 26, 27
2007	9	1, 10, 18, 26, 29
2008	4	6, 27, 29
2009	13	1, 26, 27, 29, 30
2010	7	1, 26, 29, 30
2011	8	1, 15, 24, 26, 29
2012	1	1
2013	1	24
2014	4	1, 40, 15
2015	2	1

Wyoming serves as breeding ground for a significant portion of the global mountain plover population. Both long-term and recent population loss are thought to be occurring in Wyoming. Habitat loss has been a major contributor to the decline in mountain plover population. Activities of concern that may lead to degradation of habitat include farming, removal or decline of grazers (prairie dog, bison, pronghorn), over-grazing, and land development such as the construction of roadways and well pads. Additionally, a decline in prairie dog towns could negatively impact the mountain plover as they provide suitable habitat for nesting mountain plovers (USFWS 2011). Any change in land use should be carefully managed so as not to negatively impact mountain plover and their habitat. Additionally, prairie dog towns are mapped and assessed every 3 years on the JIDPA and 3-mile buffer, and mountain plover habitat should be considered when evaluating those results.

The impact of energy development on the mountain plover is largely unknown, as there is little research on the response of mountain plover to oil, gas, and wind development (USFWS 2011). Vegetative height and percentage of bare ground are both key factors influencing suitable mountain plover breeding habitat (Smith & Keinath 2004). There are many industrial activities, such as road building and ground clearing that could impact both vegetative height and bare ground coverage. Aster Canyon recommends maintaining and/or restoring vegetative conditions favorable to mountain plover breeding habitat if any such disturbance occurs.

Habitat areas on the JIDPA and 3-mile buffer where there have been multiple mountain plover sightings include areas 1, 6, 15, 26, 27, 28, 29 and 30. It is valuable to protect these high-quality habitat areas, as well as all habitat areas, from potential disturbance in an effort to maintain local mountain plover populations into the future.

Mountain plover habitat areas are re-evaluated every 3 years, as per the *Wildlife Monitoring Plan for the Jonah Infill and Drilling Project*, in an effort to document changing landscape conditions and capture any additional suitable habitat areas that may exist. During re-evaluations the condition of previously mapped habitat areas is assessed, and any new suitable habitats are mapped. This re-evaluation has proven to be beneficial; area #40 was added in 2013 and a mountain plover was observed there in 2014. The next habitat assessment is scheduled for 2016 and will provide important information on the condition of mountain plover breeding habitat on the JIDPA and 3-mile buffer.

6.0 LANDBIRDS

The MBTA provides protection for all landbirds discussed in this section. Also, the BLM as a Federal entity must provide additional protection measures for migratory birds as mandated by Executive Order (EO) No. 13186, signed in 2001. In accordance with the EO and in cooperation with the USFWS, the BLM has implemented practices and principles to promote the conservation of migratory bird species. Conservation efforts

are specifically focused on reducing the risk of unintentional take of migratory birds, especially species of special concern, as well as restoring, enhancing, and conserving migratory bird habitat (U.S. National Archives and Records Administration 2015).

Point count surveys are performed during annual Jonah wildlife monitoring surveys as a proactive conservation measure by the BLM and its leaseholders to track the abundance and diversity of landbird species on the JIDPA. The surveys are focused on Passeriformes, or perching birds, half of which are songbirds. The Brewer's sparrow, sage sparrow, sage thrasher, and loggerhead shrike are listed as WSS and WGCN species, and as such are a focus of conservation efforts.

6.1 Landbirds Methods

The methods for landbird surveys on the JIDPA and 3-mile buffer were designed in 2010 using the Handbook of Field Methods for Monitoring Landbirds (Ralph 1993; Appendix D-2) along with the Rocky Mountain Bird Observatory (RMBO) protocol (Appendix D-1). Annual surveys commenced in 2010 and are conducted once a year at 34 pre-determined points which are located at the corners of each section within the JIDPA (Appendix D-3; Map 2).

Surveys were conducted within a half hour of local sunrise and 9:00 A.M., and consisted of 2 consecutive 3-minute intervals where all birds seen and heard are recorded, including flyovers. Observers counted each individual bird only one time per point. Distance of the bird from the observer was recorded, as well as survey time, percentage of cloud cover, temperature, wind speed, and precipitation. Surveys were not conducted when inclement weather could reduce visibility (i.e. rain, snow, and fog), or when the wind speed was greater than 15 mph.

A horned lark observed in the JIDPA; Photo by A. Tompkins

6.2 Landbirds Results

Landbird results include species abundance and diversity in 2015, as well as trends over time. There were 291 individual landbird observations in 2015,

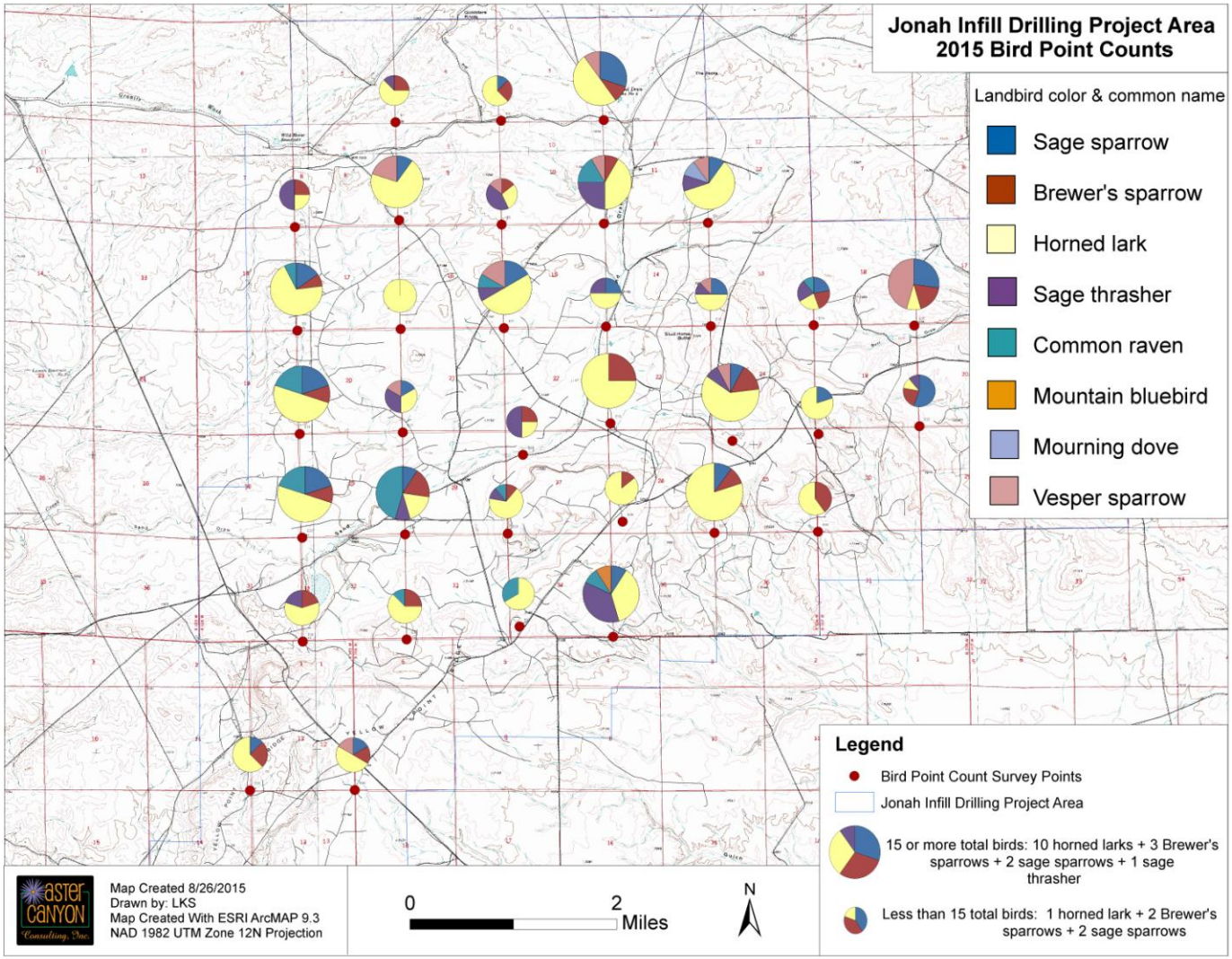
with 8 different species represented (Figure 1; Table 6). The average number of birds/point in 2015 was 8.6 compared to 7.6 birds/point in 2010, 8.2 birds/point in 2011, 10.8 birds/point in 2012, 8.9 birds/point in 2013, and 6 birds/point in 2014.

Table 6. Landbird species detected in the JIDPA during 2015 point count surveys

COMMON NAME	FOUR-LETTER CODE	SCIENTIFIC NAME
Brewer's sparrow	BRSP	*Spizella breweri*
Common raven	CORA	*Corvus corax*
Horned lark	HOLA	*Eremophila alpestris*
Mountain bluebird	MOBL	*Sialia currucoides*
Mourning dove	MODO	*Zenaida macroura*
Sage sparrow	SAGS	*Amphispiza belli*
Sage thrasher	SATH	*Oreoscoptes montanus*
Vesper sparrow	VESP	*Pooecetes gramineus*

Species that had the substantially highest detections in 2015 include horned lark with 152 observations, sage sparrow with 36 observations, Brewer's sparrow with 36 observations, and sage thrasher with 29 observations. Other birds detected in 2015 are common raven with 19 observations, vesper sparrow with 17 observations, mourning dove with 1 observation, and mountain bluebird with 1 observation. The 4 most predominant species in 2015 have been the same predominant species dating back to 2007 when surveys were first performed on the JIDPA. Below are detailed finding for these species:

Map 2. Landbird point count locations, total birds recorded (size of pie chart) and proportion of each species recorded at each point (fraction of pie chart)



Brewer's Sparrow (BRSP): There were 36 BRSP observations in 2015, accounting for 12% of all birds detected. This marked an increase in raw abundance from 2014 when there were 24 observations, but the same relative abundance of 12%. The percentage of BRSP detected has remained relatively unchanged since 2007.

Horned Lark (HOLA): There were 152 HOLA observations in 2015, accounting for 52% of all birds detected. This also marked an increase in raw abundance in 2015; there were 113 HOLA observations in 2014, however, the relative abundance was slightly higher in 2014 at 55%. HOLA observations significantly outnumbered all other species observations in 2015, as has been the case in all surveys on the JIDPA dating back to 2007.

Sage Sparrow (SAGS): There were 36 SAGS observations in 2015. This accounted for 12% of all birds detected, the exact same number as BRSP that were detected in 2015. This was an increase in raw abundance as there were 27 observations in 2014, but a decrease in relative abundance which was 13% in 2014.

Sage Thrasher (SATH): There were 29 SATH observations in 2015 which represented 10% of all birds detected. This was a decline in both raw and relative abundance compared to 2014 data where 36 SATH were observed representing 17% of all birds detected. This was the only predominant species that saw a decrease in both raw and relative abundance compared to 2014.

Figure 1. Abundance of landbird species detected in the JIDPA during 2015 point count surveys

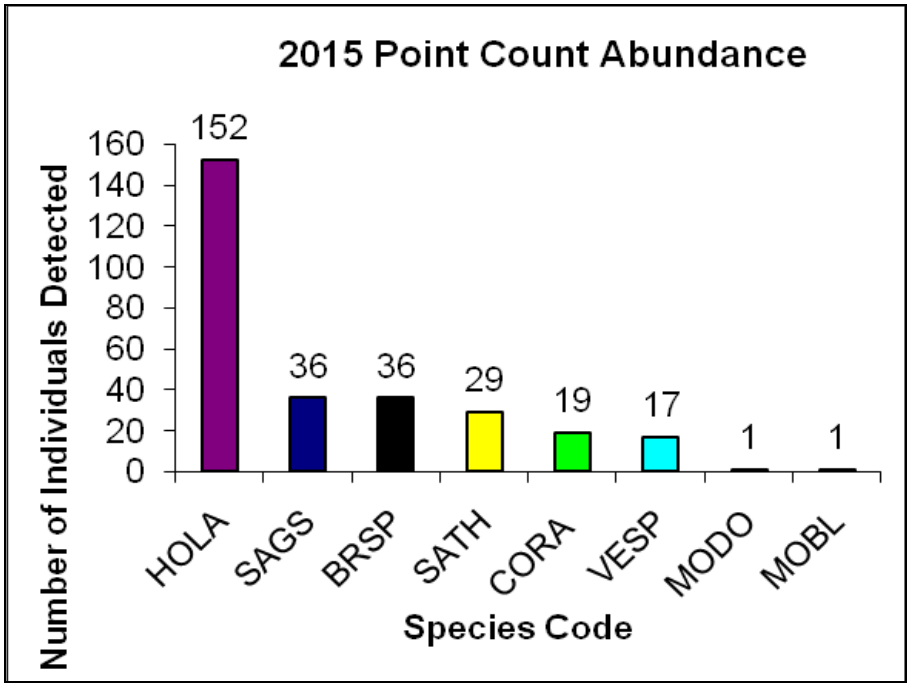
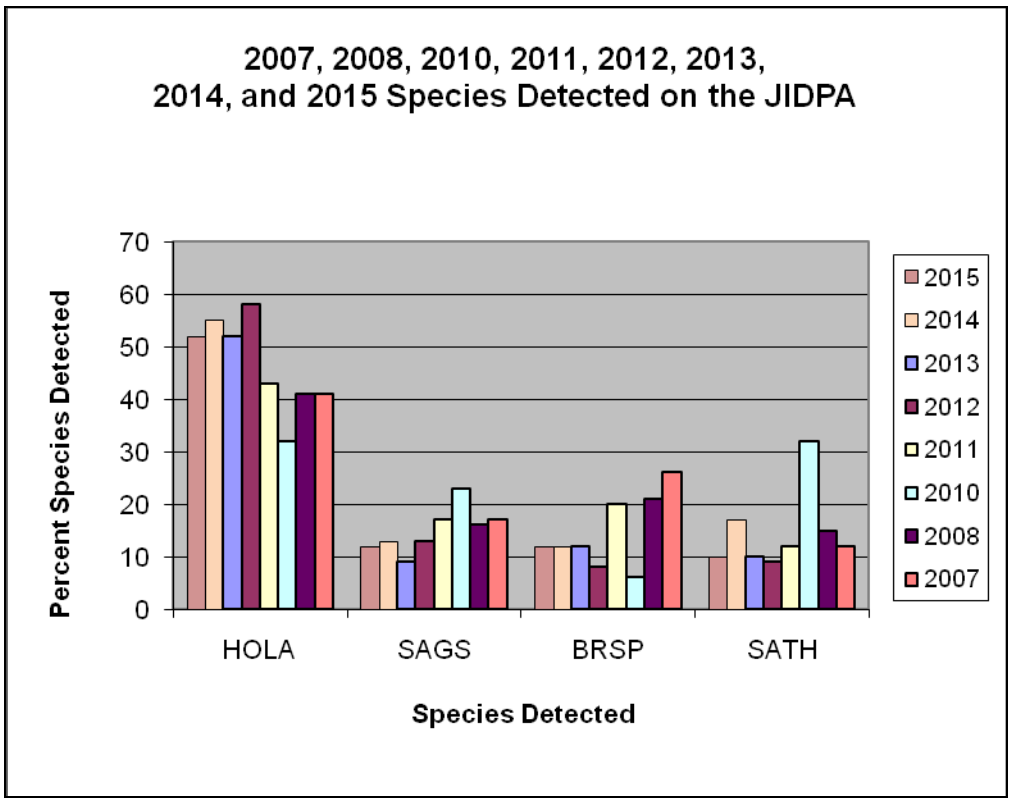


Figure 2. Landbird species detected in the JIDPA in 2007, 2008, 2010, 2011, 2012, 2013, 2014, and 2015 as a percentage of total birds detected



6.3 Landbirds Discussion

Shrubland and grassland birds are experiencing population declines greater than any other groups of bird species in North America. The Brewer's sparrow, sage sparrow, and sage thrasher are the 3 primary bird species of sagebrush habitats and are listed as WSS and SGCN species due to population decline (Knick et al. 2003). Brewer's sparrow experienced an annual decline of 1.5% between 1980 and 2007, while the sage thrasher declined 1.1% annually during the same time period (Sauer et al. 2008). The sage sparrow experienced a decline of 1-2.3% between 1966 and 1991 (Martin & Carlson 1998). Due to their sensitivity to habitat change they can be a good indicator of the general health of an ecosystem. Factors that can contribute to habitat change include livestock grazing, agricultural and urban development, energy development, habitat treatment, and even restoration activities (Knick et al. 2003). Below is a discussion on species abundance and diversity for the 2015 monitoring season, as well as an analysis of inter-annual trends.

Abundance

Of the most predominant species, relative abundance for the BRSP, SAGS, and VESP was higher in 2015 compared to 2014, with the exception of the SATH which dropped from 35 observations in 2014 to 29 in 2015. Relative abundance for these species has for the most part remained consistent over all survey years. Common raven sightings were higher in 2015 than in 2014, but similar to years prior to 2014.

Overall raw abundance increased from 220 total observations in 2014 to 291 total observations in 2015. Surveys in 2014 were conducted later in the season (mid to late June), as compared to 2015 (late May to early June.) Landbirds may have been incubating on nests by the time surveys were conducted in 2014, making them harder to spot and contributing to lower survey numbers. Overall raw abundance in 2015 was similar to years prior to 2014.

Diversity

There were 8 different landbird species detected in 2015, the same as 2014 and similar to earlier survey years as well. Species that were documented in 2014 surveys but were not found in 2015 surveys include the northern harrier and prairie falcon. Of note is that there were 17 vesper sparrow observations in 2015, the highest number of observations since 2010 when the current landbird survey methods were established. There were just 4 vesper sparrow observations in 2011, 4 more observations in 2012, and no sightings in 2010, 2013, and 2014.

7.0 FENCE MONITORING

The greater sage-grouse is the largest native grouse species in North America, and is a sagebrush dependant species. There are an estimated 200,000 to 500,000 greater sage-grouse found in 12 different states and 2 Canadian provinces. Wyoming has approximately 37% of their occupied range, or 8.6 million acres, 56% of which exists on Federal land (USFWS 2015).

A male Greater Sage-grouse; Photo by USFWS

Since 1985, it is estimated that there has been a 30% decline in the sage-grouse population. In 2010 the USFWS determined that the greater sage-grouse was warranted for protection under the ESA, but it was precluded because there were other higher priority species at that time. On September 22nd, 2015 the USFWS decided not to list the sage-grouse under the ESA. The decision was based on findings that showed the future of the species is not in peril, mostly due to large collaborative conservation efforts across western states that has reduced threats to the species (USFWS 2015).

In 2010 all non-industrial fences within the JIDPA and 3-mile buffer were inventoried to collect data on the amount and type of fences that exist, as well as to record wildlife crossings, collisions, and entanglements. During this time there were several greater sage-grouse strikes documented near known sage-grouse leks, or breeding grounds, in the northeastern portion of the JIDPA.

When sage-grouse travel to their lekking sites from March through May it can be difficult for them to see the wires on fences during dim pre-dawn hours. A study in Idaho found average collision rates as high as 1.2 strikes per mile of fence. Research has shown that sage-grouse are more likely to collide with fences in close proximity to leks (Sage Grouse Initiative 2014).

In 2011, fence markers were installed on the portion of fence where the 2010 strikes were found. Fence monitoring following the *Jonah Field Fence Inventory Protocol* began in 2011 and has been performed annually ever since. The objective of 2015 monitoring was to survey 9.3 miles of designated fence line in the northern JIDPA for greater sage-grouse and other wildlife collisions, crossings, and entanglements during sage-grouse lekking season. Please refer to Appendix E-2 and Map 3 for the fence line monitoring location.

7.1 Fence Monitoring Methods

Fence monitoring was performed in 2015 as per the *Wildlife Monitoring Plan for the Jonah Infill and Drilling Project* dated February 2015. Data was recorded using a GPS unit and data dictionary, provided by the BLM Pinedale field office.

Monitoring was conducted between 9 A.M. and 7 P.M. once a week during the last 2 weeks of March, once per week in April, and 2 surveys were conducted in May that were at least 14 days apart. Fence lines were surveyed by slow-moving vehicle where possible, and by foot in areas without road access. The 2015 survey excluded a section of fence line that is being used for a Rocky Mountain Bird Observatory study (Dale Woolwine, BLM Biologist, Pinedale Office; personal communication).

Strikes were recorded by species, and were classified as either simple strikes or mortality strikes. A simple strike was considered one in which feathers and/or hair was found on the fence or in the immediately surrounding area as evidence that the animal struck the fence. For a mortality strike a carcass must have been found on the fence or in the immediately surrounding area. Observers documented whether or not the fence had

markers, removed any feathers, hair, or carcasses they found in order to eliminate the chance of recording the same strike twice, and added markers in order to deter future strikes.

7.2 Fence Monitoring Results

During the 2015 monitoring season Aster Canyon recorded 30 total fence strikes on the 9.3 miles of designated fence line. All of the strikes were sage-grouse. Of the 30 strikes, 26 of them were simple strikes and 4 were mortality strikes (Table 7). All of the strikes, with the exception of 1 simple strike, were located on sections of fence had been previously marked to deter strikes.

Table 7. Fence strikes recorded on 9.3 miles of fence in the northern portion of the JIDPA 3-mile buffer during 2015 sage-grouse lekking season

Species	Simple Strikes	Mortality Strikes	Total
Sage-grouse	26	4	30

7.3 Fence Monitoring Discussion

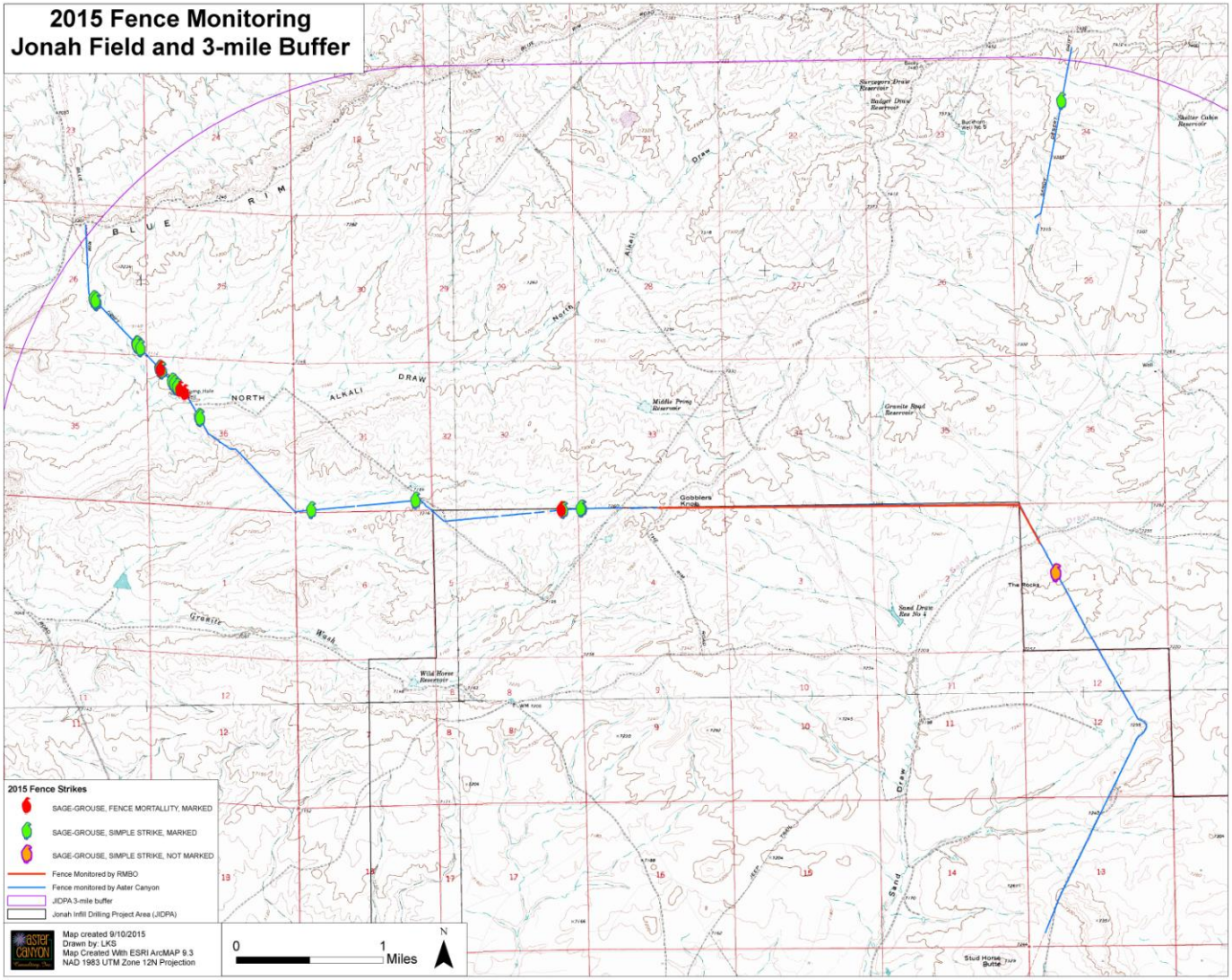
There was the highest number of fence strikes in 2015, more than recorded during any other monitoring year. Since fence monitoring was initiated in 2010 there have been a total of 95 strikes recorded. Of those strikes, 66 were simple strikes and 29 were mortality strikes (Table 8). Sage-grouse accounted for 83 out of the total 95 strikes.

Table 8. Fence strikes recorded on the JIDPA during the 2010-2015 sage-grouse lekking season

Year	Simple Strikes	Mortality Strikes	Total Strikes
2015	26	4	30
2014	5	9	14
2013	19	3	22
2012	4	4	8
2011	5	8	13
2010	6	1	7
TOTAL	66	29	95

Marking fences has been shown to be effective in reducing sage-grouse/fence collisions by up to 83% (Stevens et al. 2012). Fence markers have been placed on fences in the JIDPA and 3-mile buffer as a pro-active effort to reduce collisions. During 2015 monitoring all strikes, except for 1 simple strike, occurred on already marked sections of fence. Because there were substantially more simple strikes versus mortality strikes in 2015, it is possible that the markers provided last minute visibility for sage-grouse crossing the fence and allowed them to avoid mortality.

Map 3. Fences monitored and fence strike locations recorded in the JIDPA and 3-mile buffer



8.0 GENERAL WILDLIFE

General wildlife observation data is useful to analyze "presence/occurrence" of species on a local and/or state-wide level. Data collected on general wildlife on the JIDPA and 3-mile buffer can be used to analyze trends in population abundance, distribution, as well to document rare sightings. Species were documented while conducting other surveys or traveling through the study area. Common species that were not documented include: pronghorn antelope, magpies, common raven, brewers sparrow, sage sparrow, sage thrasher, jackrabbit, horned lark, cottontail, and ground squirrel. Additionally, focal species that were recorded during other surveys were not included in the general wildlife observations. However, if a species was observed outside of a normal survey period, for example a burrowing owl outside of the burrowing owl survey period, then it was included in the general wildlife observations.

8.1 General Wildlife Methods

Aster Canyon recorded general wildlife observations using the Wyoming Game and Fish Department's (WGFD) Wildlife Observation System (WOS). Information recorded upon sighting included age, habitat type, animal activity, and observation activity, as well as a GPS location. General wildlife observations were recorded from April 13th through July 18th, 2015 on the JIDPA and 3-mile buffer while performing wildlife monitoring.

8.2 General Wildlife Results

During 2015 monitoring season there was a total of 101 general wildlife observations of 228 individuals in the JIDPA and 3-mile buffer (Table 9). These observations included 26 different species. The location of all sightings can be found on Map 4, and the WOS spreadsheet detailing these observations is located in Appendix F.

Birds

Birds accounted for 162 of the 228 sightings during 2015 wildlife monitoring. There were 22 different bird species observed. Sightings included 4 species of duck, 3 species of shorebird, 2 species of songbird, and 7 species of raptor. Species of note that are listed

as a TEPC, WSS, and/or SGCN, or are protected under the Bald Eagle and Golden Eagle Protection Act include the long-billed curlew, greater sage-grouse, ferruginous hawk, golden eagle, bald eagle, lark bunting, northern pintail, and loggerhead shrike. Sightings of American avocet, green-winged teal, northern pintail, northern shoveler, mallard, and wilson's snipe occurred at reservoirs which remain full of water throughout the summer when water sources in the area are scarce. Sightings of rock wren and American kestrel were associated with the rock outcrops east of North Jonah Road.

Mammals

Mammals accounted for 63 of the total 228 general wildlife observations. There were 3 mammal species sighted in 2015: coyote, wild horse, and badger. Of note is the abundance of wild horses observed throughout the JIDPA and 3-mile buffer in comparison to previous monitoring years. There were 16 different observations of wild horse in 2015, which is higher than any of the previous years, and is considered significant since it is double the highest number of wild horse observations recorded.

Reptiles

The greater short-horned lizard was the only reptile observed in the project area; there were 2 observations of 3 individual short-horned lizards.

Table 9. List of general wildlife observations in the JIDPA and 3-mile buffer

Species	Observations	Individuals Observed
Birds		
Mallard	1	2
Green-winged teal	2	13
Northern shoveler	1	7
Northern pintail[3]	1	3
American avocet	5	12
Wilson's snipe	1	1
Long-billed curlew[1,3]	1	1

Killdeer	1	2
Greater sage-grouse[1,2,3]	10	52
Mourning dove	1	1
Northern harrier	7	7
Red-tailed hawk	5	5
Ferruginous hawk[1,3]	12	15
Golden eagle[4]	9	10
Bald eagle[1, 3,4]	1	1
Prairie falcon	2	2
American kestrel	2	2
Common nighthawk	1	4
Lark bunting[3]	1	1
Loggerhead shrike[1]	4	4
Rock wren	5	12
Mountain bluebird	5	5
Total	78	162
Mammals		
Coyote	4	5
Wild Horse	16	57
Badger	1	1
Total	21	63
Reptiles		
Greater Short-Horned Lizard	2	3
Total	2	3
Overall Total	**101**	**228**

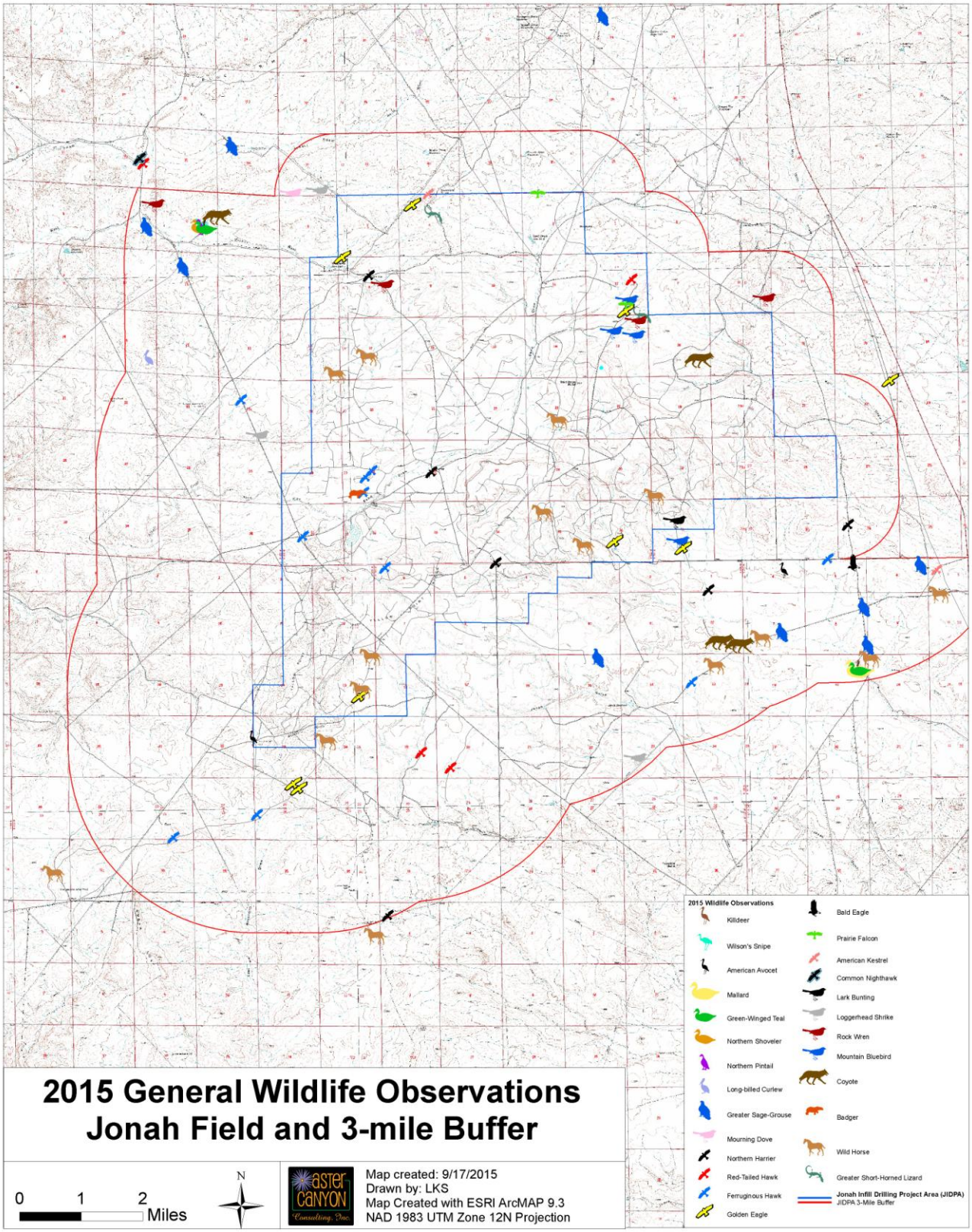
1 = BLM Sensitive Species

2 = USFWS Threatened, Endangered, Protected, and Candidate Species

3 = WGFD Species of Greatest Conservation Need

4 = Protected under Bald eagle and Golden eagle Protection Act

Map 4. General wildlife observations in the JIDPA and 3-mile buffer



8.3 General Wildlife Discussion

The JIDPA and 3-mile buffer provide important sagebrush/steppe habitat to a diverse range of wildlife including those that are resident, migratory, and wintering. The fact that 26 different species, some of which are of conservation concern, were recorded there during 2015 monitoring attests to the abundance and diversity of wildlife in the area.

Prior to 2014, wild horses were only observed in the 3-mile buffer south of the JIDPA. Last year marked the first documented occurrence of wild horse further north inside the JIDPA boundary. During 2015 monitoring there was twice as many observations of wild horse as 2014, and similar to 2014 they were observed throughout the JIDPA.

Wild horses are protected under the 1971 Wild and Free Roaming Horse and Burrow Act (as amended by Congress in 1976, 1978, 1996, and 2004). In accordance with this law, they must be "protected from capture, branding, harassment, or death." The BLM is required to remove excess horses from herds on public lands in an effort to maintain the health and productivity of the land. The BLM has established wild horse herd management areas (HMA), each of which has a designated appropriate management level (AML). The AML establishes the number of horses that the land can support. Horses in excess of the AML are rounded up and put up for adoption. In Wyoming there are 3,000 wild horses within 16 different HMAs (BLM 2015).

The JIDPA and 3-mile buffer are not currently included within an established HMA. The nearest HMA is the Little Colorado HMA. This HMA is located south of the JIDPA and 3-mile buffer and west of Farson, within the BLM Rock Spring field office territory. The Little Colorado HMA has an AML of 69-100 horses (BLM 2015).

It is unclear whether the spread of wild horses into the JIDPA represents a new wild horse population that has moved into the area, or, whether horses from the Little Colorado HMA may have expanded north out of the boundary of their territory. If it is a herd from outside of the Little Colorado HMA, it is possible that it has had recent population growth and the land they were living on could no longer sustain the

population, forcing them to spread into the JIDPA. If a continued wild horse population increase is observed on the JIDPA, it may be necessary to perform an environmental analysis to determine if management is needed in the area.

Wild horse observed in the JIDPA in 2015

9.0 CONCLUSION

In conclusion, to protect wildlife on the JIDPA and 3-mile buffer disturbance to habitat should be avoided, especially in areas considered critical habitats such as draws and rocky outcrops. For unavoidable disturbance, habitat should be returned to a pre-construction state. Seasonal no-construction constraints and spatial buffers are recommended around critical winter habitats, breeding grounds, and nests, to minimize disturbance

LIST OF ACRONYMS

Agencies and Companies

BLM = Bureau of Land Management
JIO = Jonah Interagency Reclamation and Mitigation Office
TRC = TRC Mariah Associates, Inc.
USFWS = United States Fish and Wildlife Service
WGFD = Wyoming Game and Fish Department
WLCI = Wyoming Landscape Conservation Initiative
WWNRT = Wyoming Wildlife and Natural Resource Trust

Other

ATV= All Terrain Vehicle
EIS = Environmental Impact Statement
EO = Executive Order
ESA = Endangered Species Act
GIS = Geographic Information Systems
GPS = Geographic Positioning Systems
JIDPA = Jonah Infill Drilling Project Area
JMPH= Jonah Mountain Plover Habitat (potential habitat)
MBTA = Migratory Bird Treaty Act
NEPA= National Environmental Policy Act
PAPA= Pinedale Anticline Project Area
RMBO = Rocky Mountain Bird Observatory
ROD = Record of Decision
SGCN = Species of Greatest Conservation Need
TEPC = Threatened, Endangered, Proposed, and Candidate Species
UTM = Universal Transverse Mercator
WMP = Wildlife Monitoring Plan
WOS = Wildlife Observation System
WSS = Bureau of Land Management Wyoming Sensitive Species

COMMON AND SCIENTIFIC NAMES OF SPECIES PRESENTED IN THIS REPORT

COMMON NAME	SCIENTIFIC NAME
Birds	
American avocet	*Recurvirostra americana*
American kestrel	*Falco sparverius*
Bald eagle	*Haliaeetus leucocephalus*
Brewer's sparrow	*Spizella breweri*
Burrowing owl	*Athene cunicularia*
Common nighthawk	*Chordeiles minor*
Common raven	*Corvus corax*
Ferruginous hawk	*Buteo regalis*
Golden eagle	*Aquila chrysaetos*
Greater sage-grouse	*Centrocercus urophasianus*
Green-winged teal	*Anas crecca*
Horned lark	*Eremophila alpestris*
Lark bunting	*Calamospiza melanocorys*
Loggerhead shrike	*Lanius ludovicianus*
Long-billed curlew	*Numenius americanus*
Mallard	*Anas platyrhynchos*
Mountain bluebird	*Sialia currucoides*
Mountain plover	*Charadrius montanus*
Mourning dove	*Zenaida macroura*
Northern harrier	*Circus cyaneus*
Northern pintail	*Anas acuta*
Northern shoveler	*Anas clypeata*
Prairie falcon	*Falco mexicanus*
Red-tailed hawk	*Buteo jamaicensis*
Rock wren	*Salpinctes obsoletus*
Sage sparrow	*Amphispiza belli*
Sage thrasher	*Oreoscoptes montanus*
Short-eared owl	*Asio flammeus*
Vesper sparrow	*Pooecetes gramineus*
Wilson's snipe	*Gallinago delicata*
Mammals	
American badger	*Taxidea taxus*
Black-footed ferret	*Mustela nigripes*
Coyote	*Canis latrans*
Ground squirrel	*Spermophilus spp.*
Cottontail rabbit	*Sylvilagus spp.*
Pronghorn antelope	*Antilocapra americana*
Pygmy rabbit	*Brachylagus idahoensis*

White-tailed jackrabbit	*Lepus townsendii*
White-tailed prairie dog	*Cynomys leucurus*
Wild horse	*Equus ferus*

Plants

Rabbitbrush	*Chrysothamnus spp.*
Sagebrush	*Artemisia spp.*
Saltbush	*Atriplex spp.*
Wyoming big sagebrush	*Artemisia tridentata* var. *wyomingensis*

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