

2013 Jonah Infill Drilling Project Area Wildlife Monitoring Final Report

Annual Report Prepared for:

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

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TABLE OF CONTENTS

LIST OF APPENDICES.....IV

LIST OF MAPS.....V

LIST OF TABLES.....VI

LIST OF FIGURES.....VII

1.0 EXECUTIVE SUMMARY.....8

2.0 INTRODUCTION.....11

 2.1 Study Area.....12

 2.2 Objectives.....12

 2.3 Datum and GPS.....13

 2.4 Threatened, Endangered, Proposed, and Candidate Species; Wyoming Sensitive Species; and Species of Greatest Conservation Need.....13

 2.5 Overall Monitoring and Protection Measures.....14

3.0 RAPTORS 16

 3.1 Raptors Methods.....17

 3.2 Raptors Results.....17

 3.3 Raptors Discussion.....19

4.0 BURROWING OWL..... 20

 4.1 Burrowing Owl Methods.....20

 4.2 Burrowing Owl Results.....21

 4.3 Burrowing Owl Discussion.....22

5.0 MOUNTAIN PLOVER 22

 5.1 Mountain Plover Methods.....24

 5.2 Mountain Plover Results.....25

 5.3 Mountain Plover Discussion.....25

6.0 WHITE-TAILED PRAIRIE DOG..... 27

 6.1 White-tailed Prairie Dog Methods Methods.....28

 6.2 White-tailed Prairie Dog Results.....29

 6.3 White-tailed Prairie Dog Discussion.....29

7.0 PYGMY RABBIT.....32



2013 Jonah Infill Drilling Project Area Wildlife Monitoring Final Report

7.1 Pygmy Rabbit Methods.....33
7.2 Pygmy Rabbit Results.....34
7.3 Pygmy Rabbit Discussion.....34
8.0 LANDBIRDS..... 35
8.1 Landbird Methods.....36
8.2 Landbird Results.....36
8.3 Landbird Discussion.....48
9.0 FENCE MONITORING.....39
9.1 Fence Monitoring Methods.....40
9.2 Fence Monitoring Results.....41
9.3 Fence Monitoring Discussion.....41
10.0 GENERAL WILDLIFE.....44
10.1 General Wildlife Methods.....44
10.2 General Wildlife Results.....44
10.3 General Wildlife Discussion.....48
10.0 CONCLUSION.....48
LIST OF ACRONYMS 50
COMMON AND SCIENTIFIC NAMES OF SPECIES PRESENTED IN THIS REPORT
..... 51
LITERATURE CITED 53



LIST OF APPENDICES
(On Data CD)

Appendix A: Raptors

Appendix B: Burrowing Owl

Appendix C: Mountain Plover

Appendix D: Pygmy Rabbits

Appendix E: Prairie Dogs

Appendix F: Landbirds

Appendix G: Fence Monitoring

Appendix H: General Wildlife



LIST OF MAPS

Map 1. 2013 Wildlife study areas: the JIDPA (landbirds and pygmy rabbits), its 3-mile buffer (mountain plover, prairie dogs, fence and general wildlife) and its 3-mile buffer minus the PAPA (raptors and burrowing owl).12

Map 2. White-tailed prairie dog towns in the JIDPA and 3-mile buffer as mapped in 2013 (red), 2010 (yellow) and 2005-7 (blue).....32

Map 3. Fences monitored and fence strike locations recorded in the JIDPA and 3-mile buffer.....43

Map 4. General wildlife observations in the JIDPA and 3-mile buffer.....47



LIST OF TABLES

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

Table 2. Summary of 2013 raptor monitoring results in the JIDPA and 3-mile buffer (minus the PAPA)...18

Table 3. Summary of burrowing owl monitoring results: 2009-2013.....21

Table 4. 2013 mountain plover sightings in the JIDPA and 3-mile buffer.....25

Table 5: Summary of mountain plover sightings in the JIDPA and 3-mile buffer: 2000-2013.....26

Table 6. White-tailed prairie dog town acreages as mapped in the JIDPA and 3-mile buffer in 2005, 2007, 2010 and 2013.....31

Table 7. Landbird species detected in the JIDPA during 2013 point count surveys.....37

Table 8. Fence strikes recorded on 11.9 miles of fence in the northern portion of the JIDPA 3-mile buffer during sage-grouse lekking season.....41

Table 9. Fence strikes recorded on 78.2 miles of previously inventoried fence in the JIDPA and 3-mile buffer during sage-grouse lekking season.....41

Table 10. List of general wildlife observations in the JIDPA and 3-mile buffer.....46



LIST OF FIGURES

Figure 1. Abundance of landbird species detected in the JIDPA during 2013 point count surveys.....38

Figure 2. Landbird species detected in the JIDPA in 2007, 2008, 2010, 2011, 2012 and 2013 as a percentage of total birds detected.....38



1.0 EXECUTIVE SUMMARY

Aster Canyon Consulting, Inc. (Aster Canyon) has prepared this 2013 Jonah Infill Drilling Project Area (JIDPA) Wildlife Monitoring Report in compliance with criteria set forth by the Bureau of Land Management (BLM) and the Jonah Interagency Mitigation and Reclamation Office (JIO), as described in the *Wildlife Monitoring Plan for the Jonah Infill Drilling Project Area* (WMP; JIO 2013), updated February 2013. The objectives of monitoring wildlife in 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 principal protection measure undertaken in the JIDPA for the majority of wildlife species is the avoidance of sensitive or critical habitats during certain times of the year, specifically raptor and burrowing owl nesting sites, mountain plover breeding grounds, and greater sage-grouse leks.

Monitoring criteria discussed in the WMP are for 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 included in these listings that were independently inventoried in 2013 include raptors (golden eagle (*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), burrowing owl (*Athene cunicularia*), mountain plover (*Charadrius montanus*), landbirds, white-tailed prairie dog (*Cynomys leucurus*) and pygmy rabbit (*Brachylagus idahoensis*). General wildlife observations were also recorded and fence monitoring conducted in 2013. All data presented in this report were collected between August 16th, 2012 and August 15th, 2013.

To view past wildlife monitoring reports, please visit 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, methods, results, and discussion section for each species inventoried. A brief summary of monitoring results is presented below:

RAPTORS

- 149 nest locations were monitored in the JIDPA and 3-mile buffer in 2013.
- 2 ferruginous hawk nests on artificial nesting structures in the 3-mile buffer were active and successfully fledged young.
- 1 prairie falcon (*Falco mexicanus*) nest in the JIDPA was active.
- 2 American kestrel (*Falco sparverius*) nests in the JIDPA were active.
- 1 new red-tailed hawk (*Buteo jamaicensis*) nest in the 3-mile buffer was active.

BURROWING OWL

- 69 nest locations were monitored in the JIDPA and 3-mile buffer in 2013.
- 6 new burrowing owl nests were recorded.
- 7 burrowing owl pairs successfully fledged young.

MOUNTAIN PLOVER

- 27 previously-identified mountain plover habitats were surveyed in the JIDPA and 3-mile buffer in 2013.
- 2 adult mountain plovers (1 sighting) were observed.
- Habitat quality was assessed for all 27 habitat areas plus two additional areas in the southwest.

LANDBIRDS

- 34 landbird point count surveys were conducted in the JIDPA in 2013.
- 301 individual birds, comprising 10 species, were detected during landbird point counts.

WHITE-TAILED PRAIRIE DOG

- 16 white-tailed prairie dog towns, comprising a total of 2295 acres, were mapped in the JIDPA and 3-mile buffer in 2013.
- 1 new prairie dog town was discovered while 7 previously-active towns were found to be no longer active.
- White-tailed prairie dog town mapping will re-initiate in 2016.

PYGMY RABBIT

- 83 400 m x 400 m plots (including 81 random plots) were surveyed for pygmy rabbits in the JIDPA in 2013.

- 12 observations of pygmy rabbit presence on 8 plots, including 2 observations of live rabbits and 6 observations of fresh sign, were documented.
- Monitoring for pygmy rabbits will re-initiate in 2016.

FENCE MONITORING

- 11.9 miles of fence was monitored 8 times during greater sage-grouse lekking season (March, April, and May).
- 19 simple strikes and 3 mortality strikes of greater sage-grouse were recorded during lekking season monitoring.
- 78.2 miles of previously inventoried fence was monitored 2 times (April and May)
- 4 simple strikes and 3 mortality strikes of greater sage-grouse were recorded.

GENERAL WILDLIFE

- Common species which were routinely observed in the JIDPA and 3-mile buffer in 2013 include: pronghorn antelope (*Antilocarpa americana*), white-tailed jackrabbit (*Lepus townsendii*), cottontail rabbit (*Sylvilagus spp.*), 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*), mourning dove (*Zenaida macroura*), and sage thrasher (*Oreoscoptes montanus*).
- 30 other wildlife species (26 avian, 3 mammalian, 1 reptilian) were detected in the JIDPA and 3-mile buffer in 2013; species of note include greater sage-grouse (*Centrocercus urophasianus*) and Wilson's snipe (*Gallinago delicata*).

Species not specifically referred to in the WMP, but who are TEPC, SGCN, or WSS, including greater sage-grouse and black-footed ferret (*Mustela nigripes*), are discussed below:

GREATER SAGE-GROUSE

- Monitoring for greater sage-grouse was not required in 2013.
- The BLM and WGFDF conduct annual sage-grouse lek surveys and inventories in the JIDPA and 3-mile buffer.

- A total of 2 incidental greater sage-grouse observations, totaling 2 individuals, occurred in the JIDPA and 3-mile buffer in 2013.

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.

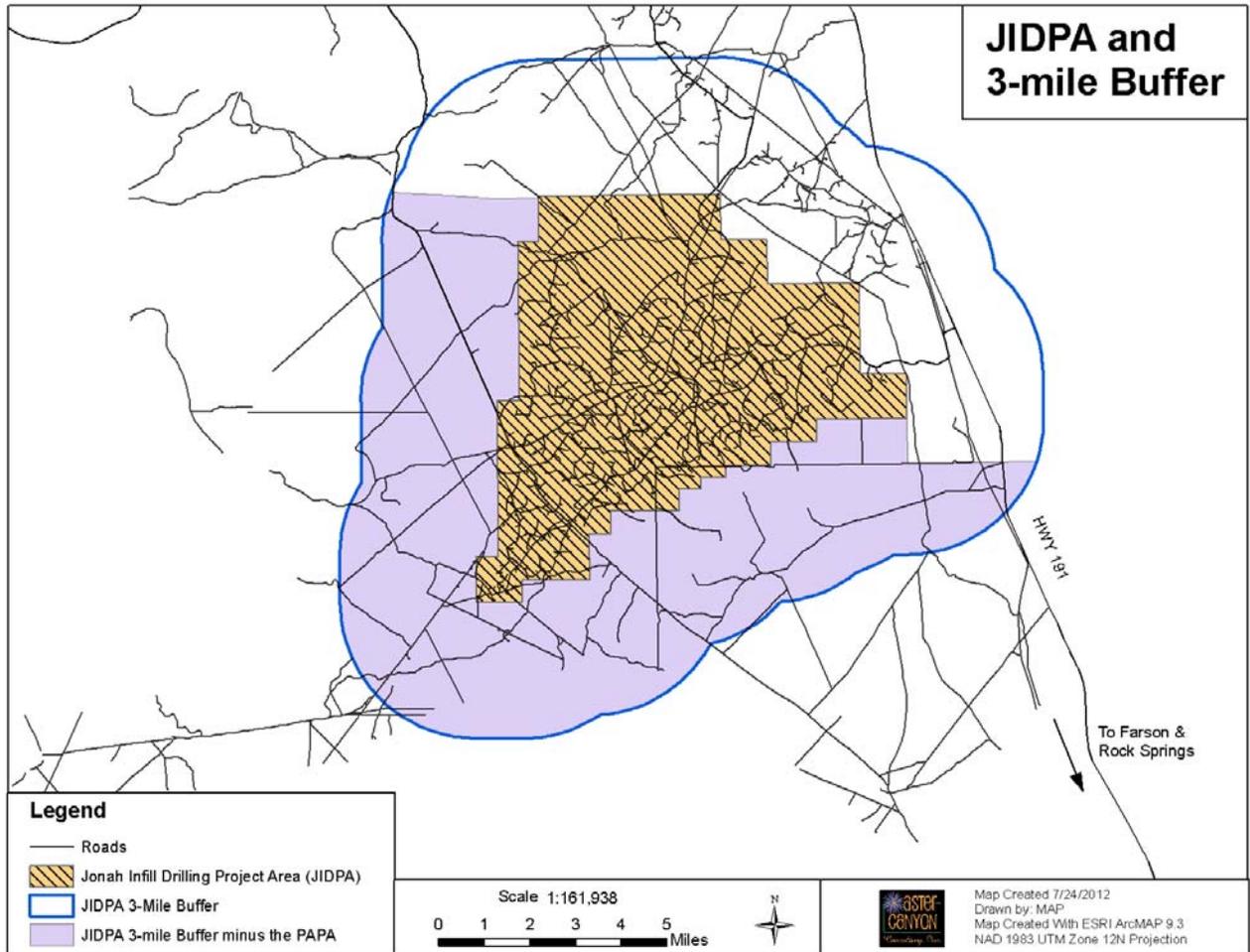


A greater sage-grouse observed in the JIDPA; Photo by A. Tompkins

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 2013 Jonah Infill Drilling Project Area Wildlife Monitoring study area includes the JIDPA as well as a surrounding 3-mile buffer (Map 1). Mountain plover, prairie dogs, general wildlife, and fence monitoring were conducted throughout the JIDPA and entire 3-mile buffer in 2013. 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 and pygmy rabbit surveys were carried out solely within the JIDPA boundary.

Map 1. 2013 Wildlife study areas: the JIDPA (landbirds and pygmy rabbits), its 3-mile buffer (mountain plover, prairie dogs, 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 2013 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-buffer provides data that assists in determining the effects of disturbance on wildlife therein 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 versions 9.1 and 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:
<http://wgfd.wyo.gov/web2011/wildlife-1000407.aspx>

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. All incidental observations of species not specifically surveyed for in 2013 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.



An American badger observed in the JIDPA; Photo by Nicole Leduc

2013 Jonah Infill Drilling Project Area Wildlife Monitoring Final Report

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). Organizations interested in mitigation efforts may find information about the JIO's strategic plan, current and past projects, reclamation monitoring, and data management system at: http://www.wy.blm.gov/jio-papo/jio/about_jio.htm

The Wyoming Landscape Conservation Initiative (WLCI), whose goal is “long-term science-based effort to assess and enhance aquatic and terrestrial habitats at a landscape scale in southwest Wyoming” (WLCI 2011), is another source of funding for wildlife-related projects. Wyoming Wildlife and Natural Resource Trust (WWNRT) funding is also available for a wide variety of projects throughout the state, including natural resource programs from other agencies (WWNRT 2011).

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.

3.0 RAPTORS

Raptors are an integral part of the sagebrush-steppe ecosystem, as they are critical for maintaining stable populations of small mammals such as ground squirrels and prairie dogs. They do so by regulating herbivory, which helps to safeguard plant communities and protect the overall health of the ecosystem. As many raptor species are sensitive to development and other anthropogenic disturbances, they can also serve as indicators of overall ecosystem health.

Raptors that are generally found nesting within the JIDPA and 3-mile buffer include the ferruginous hawk (*Buteo regalis*) and American kestrel (*Falco sparverius*), while a nesting pair of prairie falcon (*Falco mexicanus*) and red-tailed hawk (*Buteo jamaicensis*) were also documented this season. It is possible that short-eared owl (*Asio flammeus*), an open-country ground nester (Wiggins et al. 2006), is also breeding in the area. These raptors are all protected under the Migratory Bird Treaty Act (MBTA) of 1918; golden eagles are also protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) of 1940. In addition, the ferruginous hawk is listed as a WSS and a SGCN species. Incidental sightings of non-nesting raptors observed in the JIDPA and 3-mile buffer can be found in the general wildlife section of this report.

Aster Canyon biologists monitored nesting raptor activity in the JIDPA and 3-mile buffer (minus the PAPA) from May 3rd – July 16th, with the following objectives: 1) monitor previously-recorded raptor nests to determine nesting activity and success; 2) search for new nests; and 3) quality control the official BLM raptor nest database. Additionally, Aster Canyon’s monitoring assists industries with planning efforts and helps them remain in compliance with the MBTA. Real time reporting, which was submitted to operators, the BLM, and the JIO after each round of surveys, also offers nesting raptors valuable protection as soon as possible. The following are methods, results, and discussion for the 2013 monitoring season.

3.1 Raptors Methods

2013 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 one hundred forty-nine nest locations were received from the Pinedale BLM and were surveyed during the 2013 nesting season. Monitoring consisted of two rounds of nest surveys prior to June 15th plus additional productivity surveys. Productivity surveys were performed to determine hatch and fledge success of active nests. Each round of surveys took place a minimum of three weeks apart, as specified in the *Wildlife Monitoring Plan for the Jonah Infill and Drilling Project*.

3.2 Raptors Results

One hundred fifty raptor nest locations were surveyed in the JIDPA and 3-mile buffer (minus the PAPA) during 2013 nest monitoring. Of the 150, 54 were deemed to be historic; all nests were monitored 2 times to ensure data accuracy. One new raptor nest (281070301) was discovered in the JIDPA and 3-mile buffer in 2013. Appendix A contains BLM required spreadsheets detailing nest activity for all known raptor nests as well as spreadsheets for operators to assist with planning.

Six raptor nests were occupied in the JIDPA and 3-mile buffer in 2013: Two ferruginous hawk nests (291073301 and 291073201), two American kestrel nests (291080204 and 291081205), one

prairie falcon nest (291090301) and one red-tailed hawk nest (281070301). All of these nests were also active. An ‘active’ nest is defined by the BLM as one which hosts a breeding attempt. Table 2 summarizes results from the 2013 raptor monitoring season. Appendix A-6 is a map displaying all nest locations, occupied and active nests, and NSO and seasonal restriction buffers.

Table 2. Summary of 2013 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 Hatch Successful	Number Fledge Successful
American kestrel	23	2	2	Unknown	Unknown
Ferruginous hawk	88	2	2	4	4
Golden eagle	2	0	0	0	0
Prairie falcon	1	1	1	Unknown	Unknown
Red-tailed hawk	1	1	1	Unknown	Unknown
Unknown raptor	35	0	0	0	0
Total	150	6	6	4	4

Ferruginous hawk

Ferruginous hawk nests 291073201 and 291073301, both of which are located on the artificial nesting structures within the 3-mile buffer south of the JIDPA, successfully hatched and fledged young in 2013. These nests have successfully produced young for several consecutive years.



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

Red-tailed hawk

One red-tailed hawk nest (281070301) was the only new nesting site located within the JIDPA and 3-mile buffer in 2013. The hatch and fledge status of this nest is unknown.

American kestrel

Two American kestrel nests (291080204 and 291081205) were observed within the JIDPA and 3-mile buffer during the 2013 monitoring season. The hatch and fledge status of these nests are unknown. American kestrels were last observed occupying nests within the JIDPA and 3-mile buffer in 2011.

Prairie Falcon

One prairie falcon nest (291090301) was observed within the JIDPA and 3-mile buffer during the 2013 monitoring season. Prairie falcons are known to nest on cliffs (Steenhof, 1998). The hatch and fledge status of this nest is unknown.

3.3 Raptors Discussion

Of the 149 raptor nest locations received from the BLM, 95 were found to still exist as a nest (although in varying conditions) while 54 were recorded as historic sites. A total of 6 occupied and active nests were identified: Two ferruginous hawk, two American kestrel, one prairie falcon and one red-tailed hawk. Only the two ferruginous hawk nests were confirmed to have fledged young.

The artificial nesting structures in the 3-mile buffer south of the JIDPA appear to be serving as excellent nesting sites for ferruginous hawks. The nests on these structures (291073201 and 291073301) have hosted successful nesting attempts for six and seven years respectively. These artificial nesting structures are fairly isolated from human activity and are the only ferruginous hawk nests being utilized in the area. Based on Aster Canyon's experience and knowledge, it is predicted that populations of ferruginous hawk will remain stable with continual protection of these artificial nesting platforms. The success and productivity of these artificial nesting structures could be compromised if development begins to encroach on the area.

As drilling winds down in the JIDPA over the next several years and human disturbance decreases, the area may become more suitable for nesting raptors and we may begin to see an increase in nesting raptor activity.

Unfortunately, long term trends in raptor nesting activity cannot be accurately evaluated for the following reasons: 1) study areas have been reconfigured over time, 2) monitoring protocols have been altered over time, and 3) UTM locations of nests recorded prior to 2007 are unavailable to Aster Canyon. Looking ahead, quick identification of nesting raptors and implementation of appropriate protection buffers should continue to be the focus of monitoring efforts. These actions should decrease potential human disturbance and serve to increase the population of future nesting raptors.

4.0 BURROWING OWL

The western burrowing owl is by far the most common owl species observed within the JIDPA and 3-mile buffer. This small, long legged owl lives underground in burrows usually constructed by prairie dogs or other mammals. The burrowing owl migrates into the region in the spring and nests in the sagebrush-steppe habitat that dominates the JIDPA and surrounding landscape (Poulin et al. 2011). The burrowing owl is a WSS and SGCN, which is protected under the MBTA.

Aster Canyon biologists monitored burrowing owl nest activity within the JIDPA and 3-mile buffer (minus the PAPA) from May 3rd - August 8th with the following objectives: 1) monitor previously-recorded burrowing owl nests to determine nesting activity and success; 2) search for new nests; and 3) quality control the official BLM burrowing owl nest database. Real-time reporting, which was submitted to operators, the BLM, and the JIO after each round of surveys, also offers nesting burrowing owls valuable protection as soon as possible. The following are methods, results, and discussion for the 2013 monitoring season.

4.1 Burrowing Owl Methods

2013 burrowing owl nest monitoring was performed as per the *Burrowing Owl Survey Protocol*, which follows data collection standards for nesting raptors. This protocol 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.



A juvenile burrowing owl observed in the JIDPA

A total of 69 nest locations were received from the Pinedale BLM and were surveyed, along with newly-recorded nests, during the 2013 nesting season. Monitoring consisted of three rounds of nest surveys plus additional productivity surveys. Productivity surveys were performed to determine hatch and fledge success of active nests. Each round of surveys took place a minimum of 3 weeks apart, as specified in the *Wildlife Monitoring Plan for the Jonah Infill and Drilling Project*.

4.2 Burrowing Owl Results

Seventy-five burrowing owl nest locations were surveyed in the JIDPA and 3-mile buffer (minus the PAPA) during 2013 nest monitoring. Of the 75 nest locations, 14 of these nest locations were monitored two times, while 57 of the remaining 61 nests were monitored three, or more, times. The additional nests were surveyed once, or twice, as they were discovered surveying for mountain plover and prairie dogs. In total, 6 new burrowing owl nests (281070802, 281070901, 281080701, 281082308 291080701 and 291081607) were discovered by Aster Canyon biologists in the JIDPA and 3-mile buffer during the 2013 nesting season. Appendix B contains BLM required spreadsheets detailing nest activity for all known burrowing owl nests, as well as spreadsheets for operators to assist with planning.

Of the 61 existing burrowing owl nests, 12 were found to be occupied by burrowing owls (281070802, 281070901, 281080701, 281082308 291073103, 291080701, 291081402, 291081607, 291082803, 291083202, 291083501 & 291091502). The nests were also found to be active; an ‘active’ nest is defined as a nest which hosted a breeding attempt. Seven of the active nests successfully fledged young (Table 3). 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-6 is 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 – 2013 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: 2009-2013

	Total number of nest locations	Number of Occupied Nests	Number of Active Nests	Number Hatch Successful	Number Fledge Successful
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

Of the 69 nest locations received from the BLM, 55 were found to still exist as a nest (although in varying conditions) while 14 were recorded as historic nest locations. Six new nests were discovered and recorded. A total of 12 occupied and 12 active nests were identified and 7 nests successfully fledged young. These results are similar to 2011 when 10 occupied nests were observed, with 7 successfully hatching and fledging young.

Little is known on the specific dates of arrival and departure of burrowing owls to their breeding grounds, especially in western Wyoming. Burrowing owls are generally found on northern breeding grounds from March to September (Poulin et al. 2011). Aster Canyon has recorded owls on the JIDPA as early as April 4th (in 2008).

The Jonah ROD provides seasonal restrictions for surface-disturbing activities from February 1st through July 31st within 0.5 miles of all active raptor nests. The ROD also states that seasonal buffer distances and dates may vary, depending on factors such as raptor species, nest activity status, prey availability, natural topographic barriers, line-of-site distance(s), and other issues (BLM 2006). Aster Canyon recommends that adaptive management tools continue to be used to evaluate nest protection on a case-by-case basis. For example, inclement weather in a particular year can be considered in determining whether late snow melt has kept owls from using burrows until later in the nesting season. Data can also be analyzed to determine if a particular nest is a 'late' nest and whether a re-nesting attempt has occurred. Nest initiation dates and burrowing owl ecology should always be taken into account when considering potential protection measures.

Unfortunately, long-term trends in burrowing owl nesting activity cannot be accurately evaluated for a number of reasons: 1) study areas have been reconfigured over time, 2) monitoring protocols have changed over time, and 3) UTM locations of nests recorded prior to 2007 are unavailable to Aster Canyon. Future quick identification of burrowing owls and implementation of appropriate protection buffers should continue to be the focus of monitoring efforts.

5.0 MOUNTAIN PLOVER

The mountain plover is a migratory shorebird that breeds in open, dry areas of short-grass prairie in the western Great Plains and sagebrush-steppe habitats of the Rocky Mountains. In Wyoming,

mountain plovers can be found throughout much of the state in areas of sparsely-vegetated grasslands and open shrub-steppe habitats (Smith & Keinath 2004). An estimated minimum population size of around 3,400 individuals, or 30% of the total mountain plover population (Plumb et al. 2005), are present in the state during migration and throughout the breeding season.

There is evidence that mountain plover populations have experienced large-scale declines over the past century (Drietz et al. 2006) and that mountain plover numbers decreased significantly from the 1960s to the 1990s (Knopf & Rupert 1996). Population declines and concerns regarding habitat loss led to the mountain plover being proposed for federal listing under the Endangered Species Act (ESA). The mountain plover was first considered as a candidate species for federal listing in 1993 after sufficient evidence for its need for protection was presented. It was then listed as ‘threatened’ under the ESA in 1999. That proposal was amended in 2002, but then withdrawn in 2003 after a review deemed that protection for mountain plovers was unwarranted. Most recently, a 2010 proposal to re-list the mountain plover as a federally threatened species was



Mountain plover adult in Wyoming; Photo by J. Brauch

withdrawn by the USFWS in May 2011 after it was determined that the mountain plover was not threatened or endangered throughout a significant portion of its range (USFWS 2011). The mountain plover is currently listed as a Bird of Conservation Concern by the USFWS, a Species of Concern by the United States Forest Service, a SGCN, a WSS, and is federally protected under the MBTA.

Aster Canyon biologists surveyed for mountain plovers within the JIDPA and 3-mile buffer during May and June 2013. A total of three survey rounds were performed to determine the presence of mountain plovers within pre-determined mountain plover habitats. The results of surveys were reported to the BLM, JIO, and Operators in real-time, following the conclusion of each round. The following are methods, results and discussion for the 2013 monitoring season.

5.1 Mountain Plover Methods

Presence/Absence Surveys

Surveys were conducted as per the *Mountain Plover Survey Protocol*, which is found in the *Wildlife Survey Protocols, Pinedale Field Office Version 2.3*. This protocol was adapted from the USFWS mountain plover survey guidelines (USFWS 2002). The large scale/long term project survey protocol was utilized. BLM-required spreadsheets were used to record all monitoring data.

A total of 27 previously-identified mountain plover habitats within the JIDPA and 3-mile buffer were surveyed for three rounds during the breeding season. Appendix C-4 is a map displaying all mountain plover habitats surveyed in 2013. Each round being separated by at least 14 days, surveys were conducted between May 1st – June 14th 2013 - this period fell within the required dates for large scale/long term surveys as stated in the BLM survey protocol. Surveys were conducted from sunrise until 10:00 am and were only performed during ideal weather conditions when wind, rain, fog or other elements would not negatively affect mountain plover behavior or reduce the ability of observers to detect mountain plovers. Surveys were conducted from within a vehicle which remained on roads and two-tracks in order to reduce disturbance. Playbacks were not used during 2013 surveys, as they have not been deemed successful in past monitoring seasons. Habitats were not searched by foot for nests, as they are extremely difficult to find and searching may disturb nesting mountain plovers.

Habitat Assessment

As per the *Wildlife Monitoring Plan for the Jonah Infill Drilling Project* (updated February 2013), the condition and quality of previously-identified and prospective habitat areas were evaluated using the *Survey for Mountain Plover (Charadrius montanus) on Federal Lands in the Powder River Basin* (Keinath & Ehle 2001). In August 2013, 27 previously-identified habitats and two new habitat areas were evaluated based on the following criteria: presence/absence of killdeer, presence/absence of water, size of patch, slope, presence/absence of human development (well pad(s), fence(s), etc.), percentage of bare ground, average shrub height, average grass height, and the presence/absence of trees. Based on these criteria, each habitat area was determined to be of high, medium, or low quality.

5.2 Mountain Plover Results

Presence/Absence Surveys

A total of two adult mountain plovers were observed on one occasion within the JIDPA and 3-mile buffer during the 2013 monitoring season (Appendix C-4; Table 4). The adult mountain plovers were detected during survey Round 3 just southwest of previously-identified habitat area 24. Both individuals were observed foraging and one flew southwest to a dry basin. No breeding behavior was observed.

Table 4. 2013 mountain plover sightings in the JIDPA and 3-mile buffer

Sighting #	Date	Habitat (Plot) ID	Adult	Juvenile
1	6/11/2013	24	2	0

Habitat Assessment

Based on the criteria listed above, 16 habitat areas were determined to be of medium quality for mountain plovers while six areas were determined to be of low quality and seven areas were determined to be of very low quality. Two new habitat areas (39 and 40) to the southwest were evaluated and determined to be of medium quality. The boundaries of four habitat areas (4, 15, 26 and 29) were altered to better reflect the spatial orientation of suitable mountain plover habitat.

5.3 Mountain Plover Discussion

Wyoming serves as a breeding ground for a significant portion of the global mountain plover population; therefore the species should continue to be awarded special consideration by land managers in the state. Population declines in mountain plover have been attributed largely to a loss of suitable habitat. Human activity is a negative modifier of mountain plover habitat (Smith & Keinath 2004) and although mountain plovers may be tolerant of some habitat modification, encroachment of human development into critical habitats will likely decrease the quality of those habitats and hence reduce or exclude breeding mountain plovers from the area.

There are no areas within the JIDPA and 3-mile buffer that contain habitat of high quality for mountain plovers. However, areas of medium quality which have hosted breeding mountain plovers or been the location of multiple sightings include habitat areas 1, 6, 26, 27, 28, 29 and 30.

We recommend that these areas be protected from any potential disturbance, as they will likely play a key role in maintaining a local mountain plover population. There are seven habitat areas (8, 10, 19, 21, 22, 33 and 38) which were determined to be of very low quality. Mountain plovers have never been sighted in any of these habitat areas. We recommend that monitoring is discontinued in these areas and focuses on areas with a higher probability of use. For example, although not monitored in 2013, two new habitat areas (39 and 40) were determined to be of medium quality and should be monitored starting in 2014.

Since 2000 there have been a total of 70 mountain plover sightings in 11 designated habitat areas within the JIDPA and 3-mile buffer (Table 5). These habitat areas are: 1, 6, 10, 15, 18, 24, 26, 27, 28, 29, and 30. Please note that sightings data from previous years should be interpreted only as denoting the presence of mountain plover in a given area and do not represent population trends. Appendix C-3 is a map displaying sightings dating back to 2000.

Table 5. Summary of mountain plover sightings in the JIDPA and 3-mile buffer: 2000-2013

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

One major challenge when conducting mountain plover surveys in this area is that access to plots can be difficult, especially when surveying from a vehicle. Many of the habitats are large and do not have roads or two-tracks that allow access to portions of the mapped habitat, which may reduce the number of mountain plover sightings as a result. One option might be to use all-terrain vehicles (ATVs) to access habitats which are inaccessible by roads. While this option would allow for more



thorough surveys, it would likely be more time-consuming and increase disturbance to breeding mountain plovers. Thus, the trade-off between survey coverage and disturbance should be weighed and considered before protocols are altered.

Vegetative height and percentage of bare ground, both key factors influencing suitable mountain plover breeding habitat (Smith & Keinath 2004), can be greatly affected by industrial development. Industrial activities involving ground disturbance and road development tend to create conditions under which exotic plants can invade. Tall or dense-growing exotic vegetation, once established, may create conditions that could greatly decrease the quality of habitat for nesting mountain plovers. If mountain plover habitat is disturbed, efforts should be made to maintain vegetative characteristics that promote suitable conditions for mountain plovers.

6.0 WHITE-TAILED PRAIRIE DOG

The white-tailed prairie dog is a gregarious species of rodent which inhabits desert grasslands and shrub lands at elevations of between 5,000 and 10,000 feet above sea level (Pauli et al. 2006; USFWS 2010b). White-tailed prairie dogs are found in Colorado, Utah and Montana, though the majority of their range falls in Wyoming (Keinath 2004; Pauli et al. 2006; USFWS 2010b). Prairie dogs are considered a keystone species, as their burrows provide habitat for some species (e.g. burrowing owl, mountain plover) while they are taken as prey by others (e.g. black-footed ferret, ferruginous hawk, golden eagle; Pauli et al. 2006). Historically, white-tailed prairie dogs were common throughout their range, but over time their population has been reduced by disease, habitat loss, and human persecution (Keinath 2004; Pauli et al. 2006).



White-tailed prairie dog

In 2004, the USFWS determined that there was not sufficient biological information to support the listing of the white-tailed prairie dog as a threatened or endangered species

under the ESA (USFWS 2010b). In 2008, however, the USFWS reconsidered and began a status review on the white-tailed prairie dog (USFWS 2010b) although on June 1st 2010, after extensive review, the USFWS announced that white-tailed prairie dogs did not warrant protection as a threatened or endangered species (USFWS 2010b). While the USFWS concedes that white-tailed prairie dog populations are below historic levels, their range has not been greatly reduced and large areas of habitat remain occupied (USFWS 2010b). Wyoming in particular has been cited by the USFWS as possessing large tracts of land that are still inhabited by white-tailed prairie dogs (USFWS 2010b).

Under the three-year cycle of white-tailed prairie dog monitoring in the JIDPA and 3-mile buffer, surveys were performed in 2013 to determine the presence or absence of white-tailed prairie dogs and to map the distribution of prairie dog towns. The objectives of monitoring were: 1) to document shifts in the size and spatial orientation of prairie dog towns; and 2) to track changes in prairie dog town densities. Surveys were conducted in July and August, 2013. A shape file containing the locations of known white-tailed prairie dog towns within the JIDPA is provided with this report (Appendix E-4).

6.1 White-tailed Prairie Dog Methods

White-tailed prairie dog monitoring was conducted in accordance with the BLM's *White-tailed Prairie Dog Protocol* found in the *Wildlife Survey Protocols, Pinedale Field Office* Version 2.3 and the *Wildlife Monitoring Plan for the Jonah Infill Drilling Project*, updated February 2013. White-tailed prairie dog monitoring in the JIDPA and 3-mile buffer consisted of visiting previously-mapped prairie dog towns as well as areas of potential occupation to determine the presence or absence of white-tailed prairie dogs. Areas of potential occupation were identified by reviewing aerial photos and through direct field observations. Where white-tailed prairie dogs were discovered, towns were mapped using methods modified from the BLM *White-tailed Prairie Dog Survey Protocol* (Appendix E-1). The method consists of delineating the outside edge of active towns by walking towns and recording GPS points at the outermost burrows.

These burrows were defined as open burrows large enough for a prairie dog to gain entry (~10 centimeters in diameter or larger) and ≤ 100 meters from a previously-recorded burrow, regardless of activity (i.e. whether or not live prairie dogs or fresh sign was observed). Unoccupied towns were not mapped and recorded as zero (0) acreage (Table 6). New prairie dog towns were mapped and named using the next sequential number available in the prairie dog town database. In some instances, neighboring prairie dog towns merged into one town, in which case the name of the town with the lowest number was used.

6.2 White-tailed Prairie Dog Results

Sixteen active white-tailed prairie dog towns covering a total of 2295 acres were recorded in the JIDPA and 3-mile buffer in 2013 (Table 6). One new town was discovered (PDT 63) while one previously-recorded town (PDT 53) merged with a neighboring town (PDT 2) to form the largest town on record (1222 acres; PDT 2). Seven previously-recorded towns were found to be no longer active, while the status of three towns was unknown (i.e. open burrows were present but no live prairie dogs or fresh sign was detected). Half (eight) of the active prairie dog towns contained a low density of burrows, while only one town (PDT 42) was recorded as containing a high density of burrows. The highest concentration of white-tailed prairie dog towns was observed in the central portion of the JIDPA (Map 2).

6.3 White-tailed Prairie Dog Discussion

Prairie dog towns are dynamic - the size and density of towns are in continual flux and town boundaries frequently move across the landscape as populations expand and contract (Keinath 2004; Pauli et al. 2006). Mapping from this year demonstrates a decline in the total acreage (2295 acres) of prairie dog towns in the JIDPA and 3-mile buffer as compared to previous years (2005, 2007 and 2010; range: 2701 – 2986 acres). This may reflect a spike in the local occurrence of Sylvatic plague, a bacterial disease which can potentially wipe out entire prairie dog populations. In addition, industrial development (e.g. construction of pipelines, well pads, etc.) may be

contributing to a reduction in the acreage of prairie dog towns, as recent disturbance was noted at two locations where prairie dogs were observed in 2010 but not in 2013.

Although white-tailed prairie dogs have been excluded from federal protection under the ESA (USFWS 2010b), their keystone role in the ecosystem necessitates the safeguarding of all current populations. Conservation efforts in the JIDPA and 3-mile buffer should consist of directing development away from active towns *as well as* historic towns which have the potential to become re-colonized or which may be occupied by other sensitive species (e.g. mountain plover). If development in areas occupied by white-tailed prairie dogs cannot be avoided, it is suggested that translocation of prairie dogs be considered.



A pronghorn antelope observed within the 3-mile buffer.

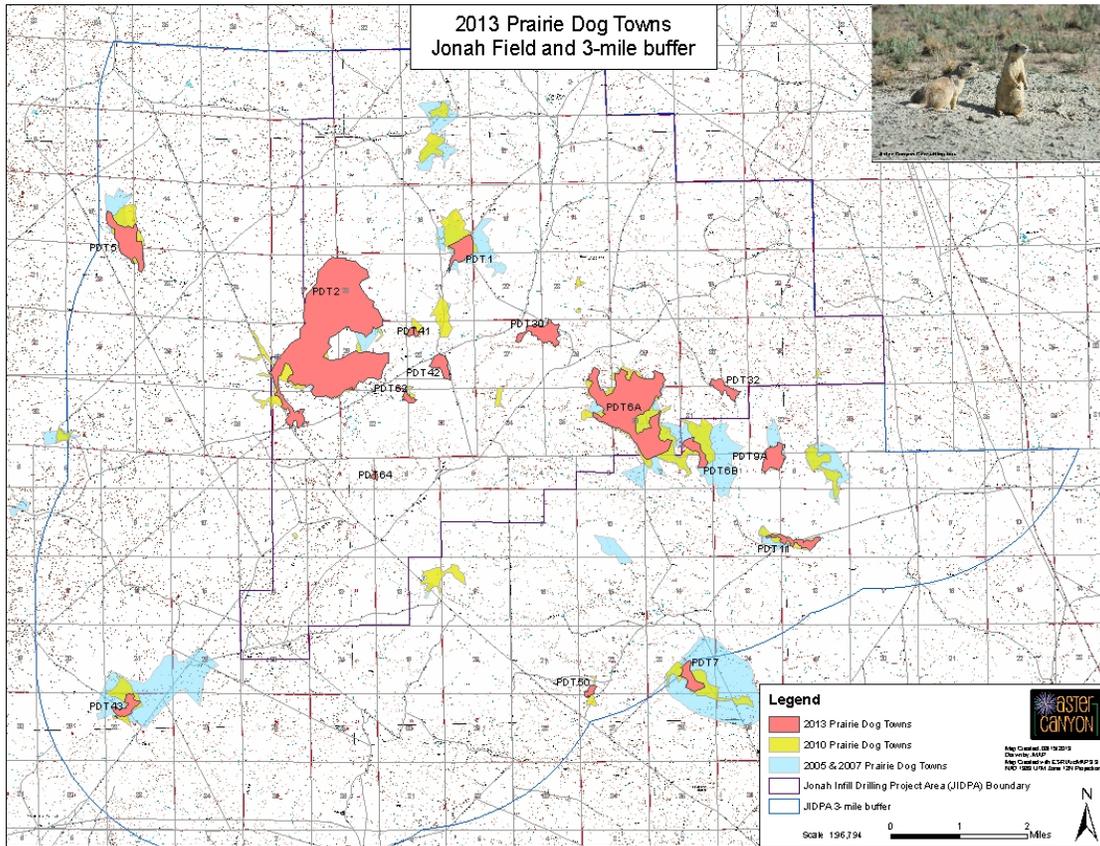
2013 Jonah Infill Drilling Project Area Wildlife Monitoring Final Report

Table 6. White-tailed prairie dog town acreages as mapped in the JIDPA and 3-mile buffer in 2005, 2007, 2010 and 2013. X indicates the town was not present in that year or joined another town.

Prairie Dog Town ID	2005	2007	2010	2013
	Acres	Acres	Acres	Acres
PDT 1	347	266	148	60
PDT 2A	157	234	747	1222
PDT 2B	65	35	JOINED PDT 2	X
PDT 2C	4	2	JOINED PDT 2	X
PDT 3A	2	0.0	0	X
PDT 3B	26	0.0	0	X
PDT 3C	X	5	71	0
PDT 4	114	60	0	X
PDT 5	103	189	185	122
PDT 6A	637	1041	790	499
PDT 6B	4	0	JOINED PDT 6	37
PDT 6C	17	NOT MAPPED	JOINED PDT 6	X
PDT 6D	8	NOT MAPPED	JOINED PDT 6	X
PDT 7	797	NOT MAPPED	151	40
PDT 9A	112	73	34	60
PDT 9B	166	156	80	0
PDT 11	90	50	65	39
PDT 26	38	0.2	0	X
PDT 26B	X	0.1	0	X
PDT 27	15	94	54	0
PDT 27B	X	X	27	0
PDT 28	169	NOT MAPPED	JOINED PDT 6	X
PDT 29	7	0	0	X
PDT 30	12	7	12	74
PDT 31	8	0	0	X
PDT 32	47	12	19	34
PDT 33	6	0	0	X
PDT 34	X	6	65	0
PDT 41	X	2	24	10
PDT 42	X	7	24	35
PDT 43	X	629	96	37
PDT 45	X	119	JOINED PDT 2	X
PDT 46	X	X	18	NOT MAPPED
PDT 49	X	X	15	0
PDT 50	X	X	18	11
PDT 51	X	X	2	0
PDT 52	X	X	7	0
PDT 53	X	X	29	JOINED PDT 2
PDT 60	X	X	3	0
PDT 61	X	X	4	0
PDT 62	X	X	13	10
PDT 63	X	X	X	5
Total Acreage	2947	2986	2701	2295



Map 2. White-tailed prairie dog towns in the JIDPA and 3-mile buffer as mapped in 2013 (red), 2010 (yellow) and 2005-7 (blue)



7.0 PYGMY RABBIT

The pygmy rabbit is a sagebrush specialist and is the world’s smallest leporid (leporidae = rabbits and hares). It is one of only two leporid species in North America known to excavate its own burrows, which are typically found in deep soil with surrounding sagebrush cover. The pygmy rabbit’s historical range includes portions of Washington, Oregon, Idaho, Montana, Wyoming, California, Nevada, and Utah.

In September 2010, the USFWS released its 12-month petition findings on the pygmy rabbit, determining that it did not warrant protection under the ESA (USFWSa 2010). The pygmy rabbit is, however, a WSS (BLM) and an S-R4 species (Sensitive - Region 4; USFWS).

Under the three-year cycle of pygmy rabbit monitoring in the JIDPA, occupancy surveys were performed in 2013 to determine the presence or absence of pygmy rabbits and to document their distribution.

7.1 Pygmy Rabbit Methods

Pygmy rabbit surveys were conducted in accordance with the BLM's *Pygmy Rabbit Survey Protocol* found in the *Wildlife Survey Protocols, Pinedale Field Office* Version 2.3 and the *Wildlife Monitoring Plan for the Jonah Infill Drilling Project*, updated February 2013. An appendix to the BLM protocol provides specific procedures for conducting 400 m x 400 m plot surveys for pygmy rabbits (Appendix D-3).

Any plots that did not meet certain criteria (that sagebrush was present and plots did not overlap) were discarded. Aster Canyon biologists participated in a focused training effort before initializing field surveys in order to standardize data collection.

The following techniques were used:

- Eighty-three 400 m x 400 m plots within the JIDPA were surveyed;
- Plots were surveyed using nine transects of north-south orientation spaced 50 m apart, with a 50 m buffer around the outer boundary;
- Biologists walked meandering transects, targeting pygmy rabbit habitat (e.g. taller, denser sagebrush, rocky outcrops, draws, etc.) while less desirable habitats, such as grasslands or bare ground, were surveyed but at a quicker pace;
- Each live pygmy rabbit, burrow system (i.e. not individual opening) or pellet pile (distinguished from immature cottontail pellets by size and quantity) encountered on transects was recorded using the BLM data sheet (Appendix D-1).

7.2 Pygmy Rabbit Results

Plot locations included two plots which were documented as having fresh pygmy rabbit sign in 2010, plus 81 random plots provided by the BLM Pinedale Field Office (PFO). Eighty-three 400 m x 400 m plots (each approximately .25 mi²) were surveyed for pygmy rabbits in the JIDPA in 2013 (Figure 6). Twelve unique observations of pygmy rabbit presence were recorded in eight plots, including two observations of live rabbits and six observations of fresh sign. One observation of fresh sign occurred in a location (NE Section 1) where fresh sign was also recorded in 2010 (Figure 7).

7.3 Pygmy Rabbit Discussion

In 2007, Aster Canyon conducted a thorough baseline survey of pygmy rabbits in the JIDPA, identifying a total of 226 active pygmy rabbit burrow complexes and recording 40 visual observations of live pygmy rabbits (Aster Canyon 2007). Using a more limited, randomized sampling protocol in 2010, 14 observations of sign and zero live rabbits were reported during survey efforts. Following this same protocol in 2013, 12 observations of sign and two live rabbits were recorded during field surveys. Pygmy rabbits are not randomly distributed throughout the landscape; rather, they select for certain sagebrush characteristics and soil conditions (Keinath and McGee 2004). Therefore, random survey methods that might be appropriate for a more evenly-distributed species are inefficient for pygmy rabbits. By using a predictive habitat model in 2007, surveys were able to specifically target areas with a high likelihood of use by pygmy rabbits; conversely, in 2010 and 2013, sample plots were randomized throughout the JIDPA. As a result, the majority of plots sampled in 2013 did not contain typical pygmy rabbit habitat (e.g. draws containing stands of tall, dense sagebrush and rock outcroppings with adjacent tall sagebrush). Additionally, many of the plots contained large areas of bare and/or developed ground (e.g. well pads and roads).

Most pygmy rabbit presence in 2013 was detected in the northern portion of the JIDPA, where the sagebrush cover tends to be greater than in the drier, high relief

portions to the south. Nevertheless, based on 2007 data and the high site fidelity of pygmy rabbits, a large portion of the pygmy rabbit population in the JIDPA, including population segments in the central and southern regions, was not documented in 2013. In the future, the use of a sampling methodology based on previously-developed habitat models (Aster Canyon 2007) or stratification using shrub cover/height and soil layers would greatly improve detection rates and thus be more cost effective than current methods.

Efforts to identify and preserve extant and potential pygmy rabbit habitat in the JIDPA are important for sustaining a viable population in the area. Most critical are large patches of habitat containing significant cover (especially of tall sagebrush e.g. draws) and loamy soils; if possible, development should be avoided in such areas. Corridors between key habitat patches are also critical for dispersal and gene flow between population units. For example, culverts beneath roads may act as movement corridors while also providing cover from predators. Limiting the number of artificial perches available for avian predators (e.g. by installing anti-perching devices on power poles and well pads) would likely also benefit pygmy rabbits.

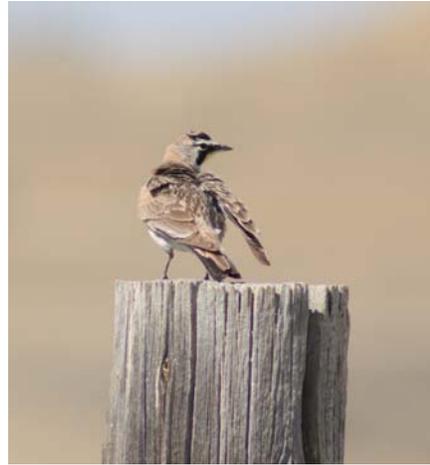
8.0 LANDBIRDS

All birds discussed in this section are protected under the MBTA. The BLM and its leaseholders have a legal obligation to protect species of migratory birds, which occur on lands under federal jurisdiction. Executive Order (EO) No. 13186, ordered in 2001, directs agencies to take additional actions to execute the MBTA. To comply with the EO, the BLM, in cooperation with the USFWS, has developed principles and practices that minimize the amount of unintentional take of migratory birds, focusing particularly on species of concern. Their goals are to conserve, enhance and restore habitats and assess potential risks to migratory birds. The objective of the point count surveys was to calculate relative abundance and diversity of landbird species within the JIDPA. Surveys primarily targeted the group of birds known as Passeriformes, commonly referred to as perching birds, half of which are songbirds.

8.1 Landbird Methods

In 2010, 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), was used to design a landbird survey protocol for the JIDPA. Thirty-four points were systematically established at the corners of each section within the JIDPA boundary, to be surveyed once per season. This protocol was utilized in 2010, 2011, 2012 (distance estimations were omitted) and 2013.

Point counts were performed within a half hour of sunrise until 9:00 a.m., with each point consisting of 2 consecutive 3-minute intervals where all birds heard or seen, including flyovers, were recorded. Temperature, wind speed, precipitation and cloud cover were also recorded at each point (Cariveau 2007). Surveys were not conducted in conditions of low visibility (i.e. rain, snow, fog) or in winds over 15 mph.



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

8.2 Landbird Results

The results presented here include relative abundance and diversity of landbirds detected in 2013, along with species detections over time. Three-hundred and one individual birds, comprising 10 species were detected within the JIDPA in 2013 (Figure 1; Table 7). Four species were predominant: horned lark, sage sparrow, sage thrasher, and Brewer's sparrow. The average number of birds detected per point in a given year was 7.4 birds/point in 2007, 4.1 birds/point in 2008, 7.6 birds/point in 2010, 8.2 birds/point in 2011, 10.8 birds/point in 2012 and 8.9 birds/point in 2013.

Table 7. Landbird species detected in the JIDPA during 2013 point count surveys

COMMON NAME	FOUR-LETTER CODE	SCIENTIFIC NAME
Brewer's sparrow	BRSP	<i>Spizella breweri</i>
Common raven	CORA	<i>Corvus corax</i>
Golden eagle	GOEA	<i>Aquila chrysaetos</i>
Horned lark	HOLA	<i>Eremophila alpestris</i>
Loggerhead shrike	LOSH	<i>Lanius ludovicianus</i>
Mourning dove	MODO	<i>Zenaida macroura</i>
Northern harrier	NOHA	<i>Circus cyaneus</i>
Sage sparrow	SAGS	<i>Artemisiospiza belli</i>
Sage thrasher	SATH	<i>Oreoscoptes montanus</i>
Yellow-rumped warbler	YRWA	<i>Setophaga coronata</i>

Species composition from 2013 was compared with data from 2007-2012 and the results were reasonably similar. The same 4 species were predominant, even with a smaller sample size in 2013 compared with the intensive studies of 2007 and 2008 (34 points in 2010-13 versus 225 points in 2007 and 2008; Figure 2). The findings for these commonly-detected species are described in detail below:

Brewer's Sparrow (BRSP): Thirty-six BRSP were detected, comprising 12% of total landbirds. This represents an increase in both relative and raw abundance compared to 2012, but a decrease compared to 2011. BRSPs comprised 26% of total birds detected in 2007, 21% in 2008, 6% in 2010, 20% in 2011 and 8% in 2012.

Horned Lark (HOLA): One-hundred and fifty-six HOLA were detected, comprising 52% of total landbirds. This represents a decrease in both relative and raw abundance compared to 2012.

Sage Sparrow (SAGS): Twenty-nine SAGS were detected, comprising 9% of total landbirds detected. This represents a decrease in both relative and raw abundance compared to 2012.

Sage Thrasher (SATH): Thirty SATH were detected, comprising 10% of total landbirds. This represents a slight increase in relative abundance compared to 2012.

Figure 1. Abundance of landbird species detected in the JIDPA during 2013 point count surveys

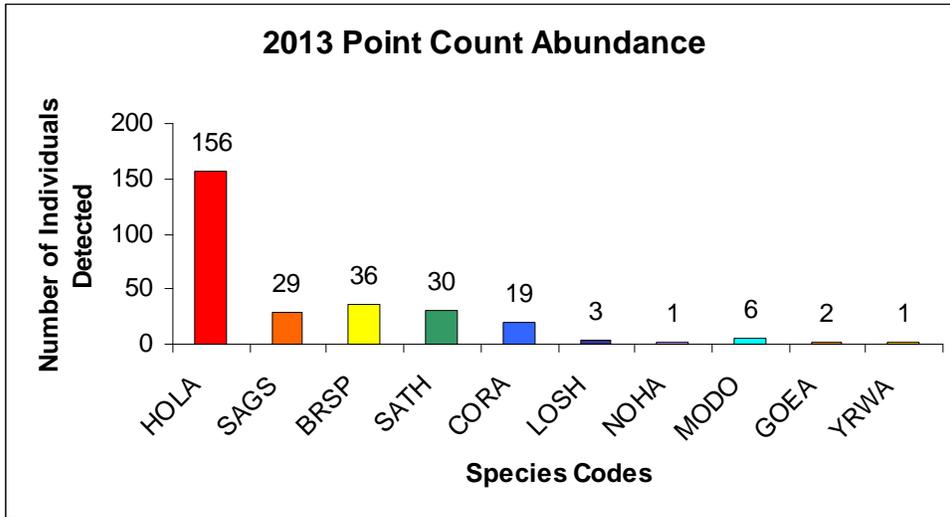
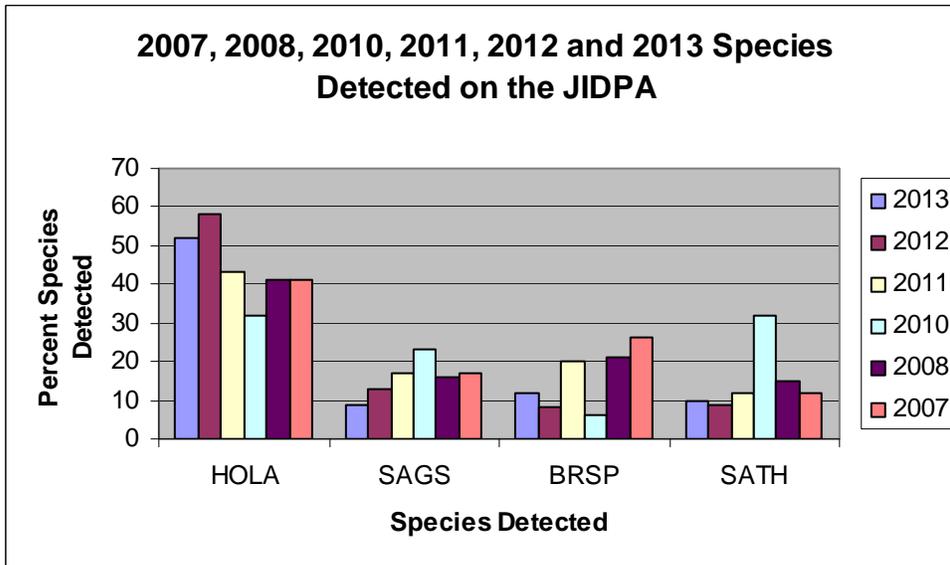


Figure 2. Landbird species detected in the JIDPA in 2007, 2008, 2010, 2011, 2012 and 2013 as a percentage of total birds detected



8.3 Landbird Discussion

It is important to monitor populations of sagebrush-obligate species listed as WSS and SGCN such as Brewer’s sparrow, sage sparrow, sage thrasher, and loggerhead shrike. These species are listed as WSS and SGCN due to population declines throughout their ranges; for example, 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). At present, these species are monitored nationally by breeding bird surveys. 2013 abundance and diversity of landbirds, along with inter-annual trends, are discussed below:

Abundance

Horned larks, Brewer's sparrows and sage thrashers were the most abundant bird species during 2013 surveys, comprising 52%, 12%, and 10% of all detections, respectively. Relative abundances of common species were reasonably similar in 2013 as compared to previous years, with horned larks the most common and sage sparrow slightly less common.

Overall, more birds were detected this year (8.9/point) than all previous years minus 2012 (10.8/point). In large part, this is due to a few points containing very high abundances of horned larks (as many as 46 at one point). Horned larks prefer habitat of sparse, short vegetation and bare ground, so the JIDPA road right-of-ways, well pads, and pipelines serve as ideal habitat (Beason 1995).

Diversity

Ten bird species were detected during 2013 point count surveys. This represents a similar level of diversity as compared to 2010- 2012, but a lower level as compared to 2007 and 2008. This is likely due to less intensive survey methods being used in 2010-12, whereas more points and larger areas were surveyed in 2007 and 2008, including significant areas outside of the JIDPA. Two species of raptor were documented in 2013, compared to 4 in 2012, 1 in 2011 and 0 in 2010. Also, yellow-rumped warbler, which has never been recorded during point count surveys, was documented in 2013.

9.0 FENCE MONITORING

In 2010, Aster Canyon inventoried all non-industrial fences within the JIDPA and 3-mile buffer, excluding the area that overlaps with the PAPA buffer. In 2011, Aster Canyon inventoried all non-industrial fences in the PAPA-JIDPA 3-mile buffer overlap, as well

as newly-discovered fences. Fence inventories for JIDPA and 3-mile buffer are now complete.

In the spring of 2011, fence markers were placed along the northern border of the JIDPA in places where sage-grouse strikes had been recorded in 2010. The same was done in the spring of 2012 for all sage-grouse strikes recorded in 2011. Fence markers were placed at all strikes recorded during 2013.

The objective of 2013 fence monitoring was to document all locations of fence strikes on 11.9 miles of designated fence in the northern JIDPA and also on 78.2 miles of previously inventoried fence during sage-grouse lekking season.

9.1 Fence Monitoring Methods

Fence monitoring was required and completed as per the *Wildlife Monitoring Plan for the Jonah Infill and Drilling Project*. Data was recorded using a Trimble GEO XT 2005 Series with a data dictionary, which was provided by the Pinedale BLM.

Fence monitoring was conducted during the sage-grouse lekking season (March – May). For the designated fence line in the northern portion of the JIDPA (11.9 miles), fences were monitored once per week during the last two weeks in March, once per week during the month of April, and twice during the month of May (at least 14 days apart), with surveys being conducted between the hours of 9 a.m. - 7 p.m. For all previously-inventoried fences within the JIDPA and 3-mile buffer (78.2 miles), fences were monitored once in April and once again in May (at least one month apart).

All fence strikes by any species were recorded during 2013 fence monitoring. When a strike was located it was determined whether it was a simple strike (the animal was not killed) or if it was a mortality strike (the animal was killed). Feathers, fur, or carcasses were removed from the fence and close vicinity so that the strike would not be recorded in subsequent surveys. Fence monitoring was either conducted on foot or from a slow-moving vehicle (when an existing two-track followed the fence line).

9.2 Fence Monitoring Results

Designated fence monitoring

11.9 miles of fence along the northern portion of the JIDPA was monitored a total of 8 times in March, April and May, 2013. During these monitoring surveys a total of 22 greater sage-grouse strikes, or 1.85 strikes per mile, were recorded. Nineteen of these were simple strikes, while the other 3 were mortality strikes (Table 8). Some of these strikes were located in areas where strike deterrents had already been placed on the fence.

Table 8. Fence strikes recorded on 11.9 miles of fence in the northern portion of the JIDPA 3-mile buffer during sage-grouse lekking season

Species	Simple Strikes	Mortality Strikes	Total
Greater sage-grouse	19	3	22
Total	19	3	22

Inventoried fence monitoring

All previously-inventoried fences (78.2 miles) within the JIDPA and 3-mile buffer were monitored once in April and once in May, 2013. During these monitoring surveys a total of 7 greater sage-grouse strikes, or 1.85 strikes per mile, were recorded. Four of these were simple strikes, while the other 3 were mortality strikes (Table 9).

Table 9. Fence strikes recorded on 78.2 miles of previously inventoried fence in the JIDPA and 3-mile buffer during sage-grouse lekking season

Species	Simple Strikes	Mortality Strike	Total
Greater sage-grouse	4	3	7
Total	4	3	7

Map 3 displays all strike locations from 2013 fence monitoring. All BLM-required shapefiles are located in Appendix G.

9.3 Fence Monitoring Discussion

Overall, 29 fence strikes (6 mortalities) were recorded during 2013 fence monitoring. All of these strikes were by greater sage-grouse. Since the greater sage-grouse has been declining throughout its range (USFWS 2006), any source of unnatural mortality may have negative consequences on their population persistence.

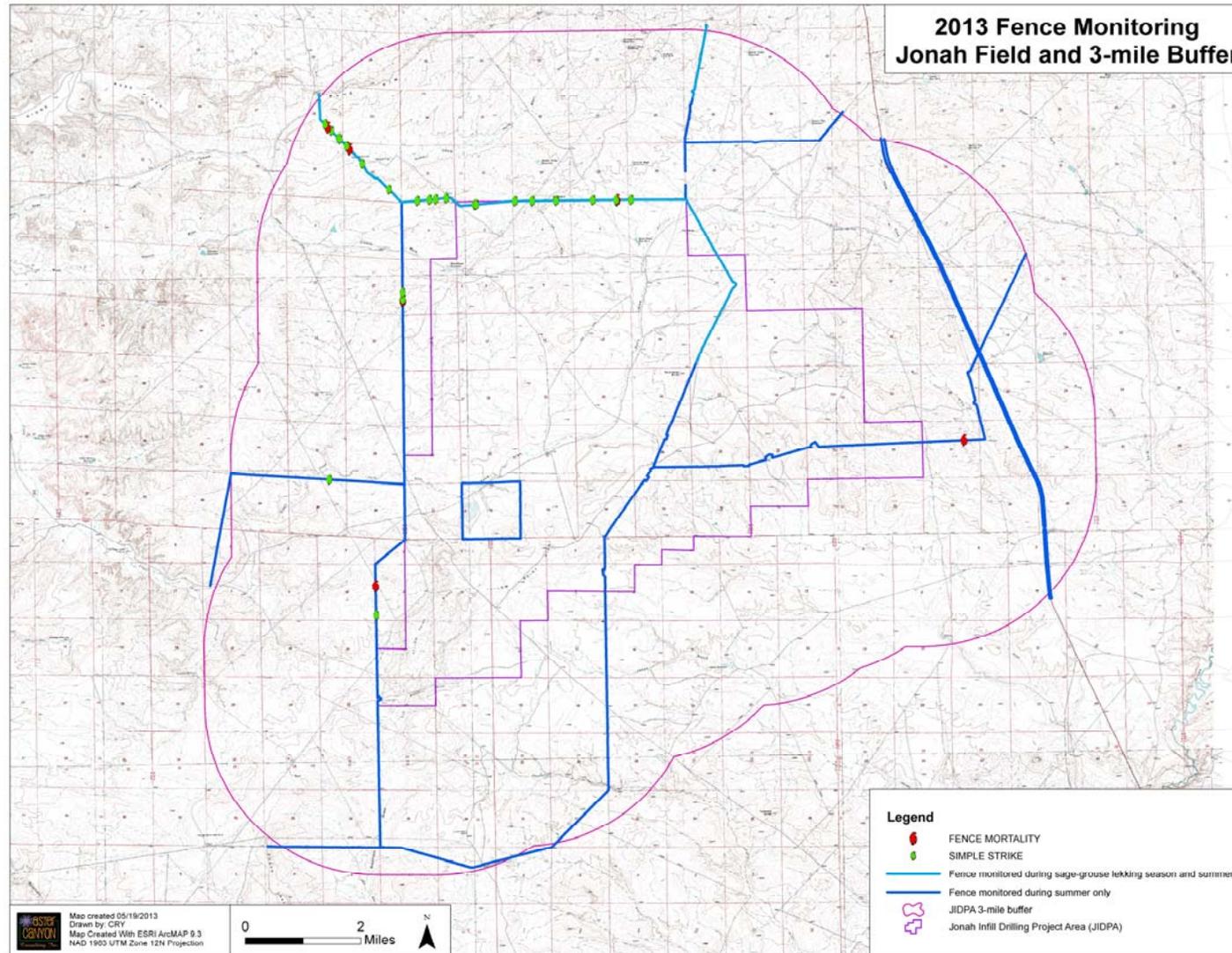
Five sage-grouse strikes (2 mortalities and 3 simple) recorded during the 2013 fence monitoring were located on a stretch of fence where strike deterrents had previously been placed. This suggests that these may not be totally effective in preventing sage-grouse fence strikes. Nevertheless, fence deterrents have proven effective in other locations where sage-grouse occur (WGFD 2011). Aster Canyon recommends that reflective fence deterrents, and not flagging tape, continue to be placed in areas of newly-recorded sage-grouse strikes. Future monitoring should help to provide further insight on the effectiveness of reflective fence markers in the JIDPA.

Fences create a barrier to movement as animals seek to meet their daily needs (Jackson Hole Wildlife Foundation 2011). When fences are not in use, the gates should be opened to allow wildlife to travel through more freely, resulting in a lesser chance of causing harm to wildlife crossing the fence. Efforts should be made to decrease the impediment of fences within the JIDPA and 3-mile buffer to allow for easier travel of all species that inhabit the JIDPA.



A view of the habitat in the northwestern portion of the 3-mile buffer

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



10.0 GENERAL WILDLIFE

Aster Canyon biologists recorded general wildlife observations in the JIDPA and 3-mile buffer from August 16th, 2012 – August 15th, 2013. Incidental observations were documented while traveling in the study area or while conducting field surveys for focal species. Common species, such as ravens and horned larks, were not documented. General wildlife observation data can be used to assess the local, or statewide, distribution of these species.

10.1 General Wildlife Methods

General wildlife observations were recorded according to the WGF^D's Wyoming Observation System (WOS), as specified in the WMP. Focal species documented during surveys were not recorded under general wildlife observations. For example, raptors observed during raptor monitoring were not included in the WOS data; however, raptors observed during surveys for other species were recorded.

10.2 General Wildlife Results

Common species which were routinely observed in the JIDPA and 3-mile buffer in 2013 include: pronghorn antelope, white-tailed jackrabbit, cottontail rabbit, white-tailed prairie dog, ground squirrel, common raven, horned lark, Brewer's sparrow, sage sparrow, vesper sparrow, mourning dove, and sage thrasher; observations of these species were not recorded as part of WOS. Among other species, a total of 174 individuals comprising 30 species (26 birds, 3 mammals, 1 reptile) were recorded in the JIDPA and 3-mile buffer in 2013 (Table 10; Map 4). Species of note include Wilson's snipe (*Gallinago delicata*) and greater sage-grouse. The WOS spreadsheet of all general wildlife observations can be found in Appendix F.

Birds

A total of 26 bird species were observed in the JIDPA and 3-mile buffer in 2013. Wilson's snipe (*Gallinago delicata*) occurred in the north JIDPA along Sand Draw.

Sightings of rock wren and American kestrel were primarily associated with the rock outcrops east of North Jonah Road.

Mammals

American badger (*Taxidea taxus*), coyote (*Canis latrans*), and wild horse (*Equus ferus*) were observed in the JIDPA and 3-mile buffer in 2013. Wild horses were only observed in the 3-mile buffer south of the JIDPA, while American badger was only observed in the 3-mile buffer west of the JIDPA. Coyotes were observed both inside and outside of the JIDPA.

Amphibians and reptiles

Greater short-horned lizards (*Phrynosoma hernandesi*) were frequently observed (6 sightings) in the JIDPA and 3-mile buffer in 2013. The greater short-horned lizard was not recorded as part of WOS prior to last year (2012).



Greater short-horned lizard observed in the JIDPA

Table 10. List of general wildlife observations in the JIDPA and 3-mile buffer

Species	Number of Observations	Number of Individuals Observed
Birds		
American kestrel	5	5
Barn swallow	1	1
Burrowing owl	3	3
Canada goose	1	1
Chipping sparrow	4	9
Common nighthawk	6	7
Eastern kingbird	1	1
Ferruginous hawk ^{1,3}	9	12
Golden eagle ⁴	9	10
Greater sage-grouse ^{1,2,3}	2	2
Lark bunting	3	6
Loggerhead shrike ¹	19	22
Mountain bluebird	7	17
Northern flicker	1	1
Northern harrier	5	5
Osprey	1	1
Prairie falcon	8	8
Red-tailed hawk	2	2
Rock wren	5	7
Say's phoebe	2	2
Swainson's hawk	3	3
Violet-green swallow	3	8
Western kingbird	2	2
White-crowned sparrow	1	1
Wilson's snipe	1	1
Yellow-rumped warbler	2	2
Mammals		
American badger	1	1
Coyote	6	7
Wild horse	3	6
Reptile		
Greater short-horned lizard	6	6

1 = BLM Sensitive Species

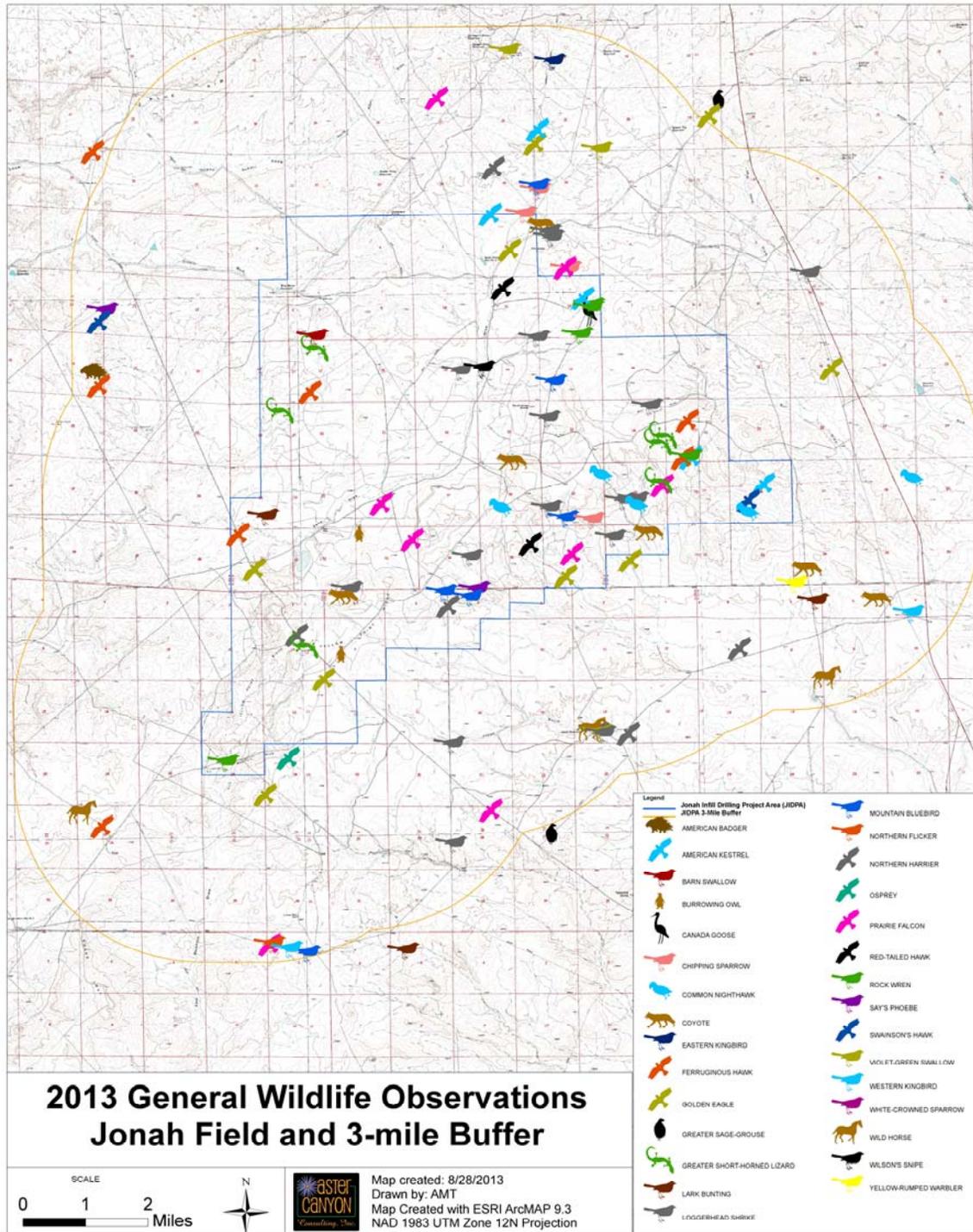
3 = WGFD Species of Greatest Conservation Need

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

4 = Protected under Bald eagle and Golden eagle Protection Act



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



10.3 General Wildlife Discussion

Many species utilize the sagebrush-steppe habitat of the study area for breeding, migration, wintering, or all of the above. Some of the species observed in 2013 are of conservation concern and could potentially become of regulatory concern in the future.

The JIDPA is home to a diversity of wildlife which is worthy of preservation and protection. Still, it is important to recognize that mitigation measures which may benefit one species may be detrimental to others (i.e. installation of raptor platforms may negatively affect nearby songbird and pygmy rabbit populations). Therefore, it is important to take all species into consideration when weighing wildlife management options. Mitigation measures that will likely benefit all wildlife in the JIDPA include: 1) avoiding disturbance to critical habitats (e.g. draws, rocky outcrops), 2) protecting all water resources, restoring habitat to a pre-construction state, and 3) applying restriction buffers around active nests, breeding areas and critical winter habitat. In addition, continued awareness among gas field workers regarding the presence of wildlife (particularly sensitive species) should form a key component of the JIDPA's Wildlife Management Plan.

11.0 CONCLUSION

The data presented in this report will assist land managers in maintaining wildlife resources in the JIDPA and 3-mile buffer at appropriate levels. Trends in local wildlife populations were presented where available; however, for most species, the ability to evaluate trends has been affected by changes in study area boundaries (namely the reduction of the 3-mile buffer) and study design (i.e. for pygmy rabbits and landbirds). When wildlife population trend data in the JIDPA becomes more reliable, the effects of disturbance on wildlife will become more apparent and, henceforth, mitigation efforts can be improved.

Ongoing mitigation efforts, such as the avoidance of raptor nests and sage-grouse leks during critical time periods, along with the addition of more artificial nesting structures, should continue. It is also recommended that all non-industrial fences be removed or

replaced with wildlife-friendly fences to allow wildlife in the JIDPA to move more freely and avoid unnecessary injuries or mortalities. In addition, educating workers in the JIDPA about the importance of protecting wildlife should continue to be a high priority.



A wild horse observed south of the JIDPA within the 3-mile buffer

LIST OF ACRONYMS

Agencies and Companies

BLM = Bureau of Land Management
JIO = Jonah Interagency Reclamation and Mitigation Office
PFO – Pinedale Field 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 kestrel	<i>Falco sparverius</i>
Barn swallow	<i>Hirundo rustica</i>
Brewer's sparrow	<i>Spizella breweri</i>
Burrowing owl	<i>Athene cunicularia</i>
Canada goose	<i>Branta canadensis</i>
Chipping sparrow	<i>Spizella passerina</i>
Common nighthawk	<i>Chordeiles minor</i>
Common raven	<i>Corvus corax</i>
Eastern kingbird	<i>Tyrannus tyrannus</i>
Ferruginous hawk	<i>Buteo regalis</i>
Golden eagle	<i>Aquila chrysaetos</i>
Greater sage-grouse	<i>Centrocercus urophasianus</i>
Horned lark	<i>Eremophila alpestris</i>
Lark bunting	<i>Calamospiza melanocorys</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Mountain bluebird	<i>Sialia currucoides</i>
Mountain plover	<i>Charadrius montanus</i>
Mourning dove	<i>Zenaida macroura</i>
Northern flicker	<i>Colaptes auratus</i>
Northern harrier	<i>Circus cyaneus</i>
Osprey	<i>Pandion haliaetus</i>
Prairie falcon	<i>Falco mexicanus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Rock wren	<i>Salpinctes obsoletus</i>
Sage sparrow	<i>Amphispiza belli</i>
Sage thrasher	<i>Oreoscoptes montanus</i>
Say's phoebe	<i>Sayornis saya</i>
Short-eared owl	<i>Asio flammeus</i>
Swainson's hawk	<i>Buteo swainsoni</i>
Vesper sparrow	<i>Pooecetes gramineus</i>
Violet-green swallow	<i>Tachycineta thalassina</i>
Western kingbird	<i>Tyrannus verticalis</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>
Wilson's snipe	<i>Gallinago delicata</i>
Yellow-rumped warbler	<i>Dendroica coronata</i>

Mammals

American badger	<i>Taxidea taxus</i>
Black-footed ferret	<i>Mustela nigripes</i>



2013 Jonah Infill Drilling Project Area Wildlife Monitoring Final Report

Coyote	<i>Canis latrans</i>
Ground squirrel	<i>Spermophilus spp.</i>
Cottontail rabbit	<i>Sylvilagus spp.</i>
Pronghorn antelope	<i>Antilocapra americana</i>
Pygmy rabbit	<i>Brachylagus idahoensis</i>
White-tailed jackrabbit	<i>Lepus townsendii</i>
White-tailed prairie dog	<i>Cynomys leucurus</i>
Wild horse	<i>Equus ferus</i>

Plants

Rabbitbrush	<i>Chrysothamnus spp.</i>
Sagebrush	<i>Artemisia spp.</i>
Saltbush	<i>Atriplex spp.</i>
Wyoming big sagebrush	<i>Artemisia tridentata</i> var. <i>wyomingensis</i>



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