Bureau of Land Management
Pecos District
Dune Sagebrush Lizard (*Sceloporus arenicolus*)
Survey Report
Field Season 2011

Introduction

The BLM's objectives for the 2011 dunes sagebrush lizard (DSL - *Sceloporus arenicolus*) field season were to:

- survey for DSLs in areas that had not been previously surveyed;
- resurvey areas which were previously reported to have been occupied, but were determined to be unoccupied in subsequent surveys as cited in the Proposed Rule of December 14, 2010
- Survey the tebuthiuron treatments
- Survey outside the DSL distribution map
- Survey reclaimed pads and roads
- Survey mesquite treatment areas since 2003

The dunes sagebrush lizard is a habitat specialist which utilizes shinnery-oak (*Quercus harvardii)* dune complexes of southeastern New Mexico (Chaves, Eddy, Lee and Roosevelt Counties) and adjacent west Texas (Andrews, Crane, Ward and Winkler counties) (Degenhardt et. al., 1996). The species is known to primarily occupy non-vegetated sand dune blowouts. The associated shinnery oak component provides cover and foraging grounds for the lizard.

The dunes sagebrush lizard was proposed for listing under the Endangered Species Act (ESA) of 1973 on December 14th 2010 by the U.S. Fish and Wildlife Service (USFWS). Within the range of this species there have been varying degrees of anthropogenic impacts. The Proposed Rule cites several of these as being associated with a decline in suitable habitat including, but not limited to oil and gas development, herbicide treatments of shinnery-oak and Off Highway Vehicle Use.

This report describes the methods, results and important observations from the 2011 field season. There was no attempt to replicate previous studies methodologies. BLM's efforts focused on establishing presence or absence and surveying previously unsurveyed habitat. All survey data (GPS points, digital photos, etc.) will be provided to the USFWS as well as Natural Heritage New Mexico for inclusion into a statewide database.

Methods

Surveys were conducted across a broad range of the BLM's Pecos District by biologist and biological technicians from both the Roswell (RFO) and Carlsbad Field Offices (CFO). Surveys were conducted from May 31, 2011 thru August 8, 2011 (Appendix 1). Survey sites included areas ranging from:

- None to heavy use by oil and gas activities;
- Areas previously treated (chemically) for control of shinnery-oak and mesquite (*Prosopis glandulosa*)
- Areas previously surveyed.

Surveys were conducted utilizing pitfall trap arrays set in suitable habitat. Pitfall arrays consisted of five 19 liter (5 gal) buckets buried in the ground such that the bucket rims were level with the ground. Approximately 8 centimeters (3 inches) of sand was placed in the bottom of the buckets to afford cover for any captured lizards. The lids of the buckets were elevated approximately 5 centimeters (2 inches) (using spacers) above the bucket rim to allow ingress by lizards, while providing protection from the sun, precipitation and predators (Figure 1).

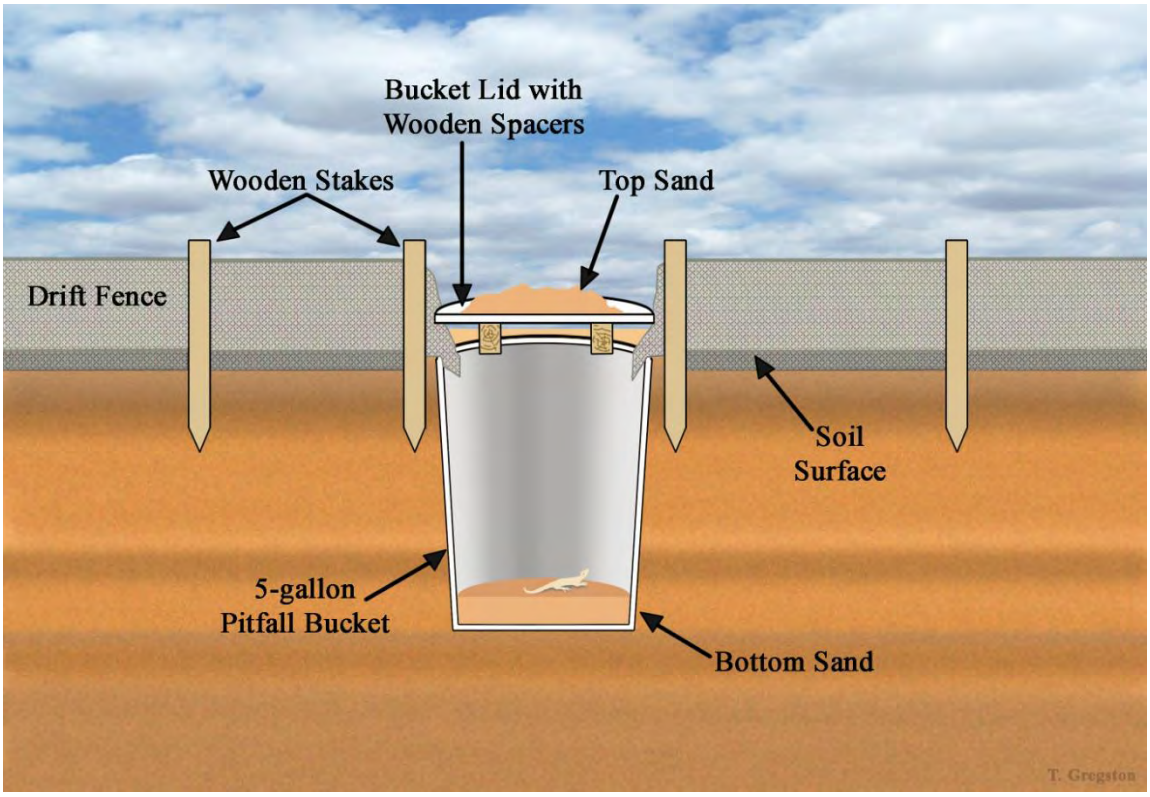

Figure 1. Pitfall trap design diagram.

The arrays consisted of a center pitfall trap with four arms of drift fence approximately 30 centimeters (12 inches) in height extending from the center pitfall trap. Pitfall traps were also placed at the end of each arm of the fencing. Arms of the array varied in length from 3-6 meters (9-18 feet). The drift fence was supported by wooden stakes at necessary intervals to insure the drift fence remained upright. The drift fence functions as a guide for lizards and assisted in increasing the capture rate by reducing the possibility of lizards avoiding the traps (Figure 2).

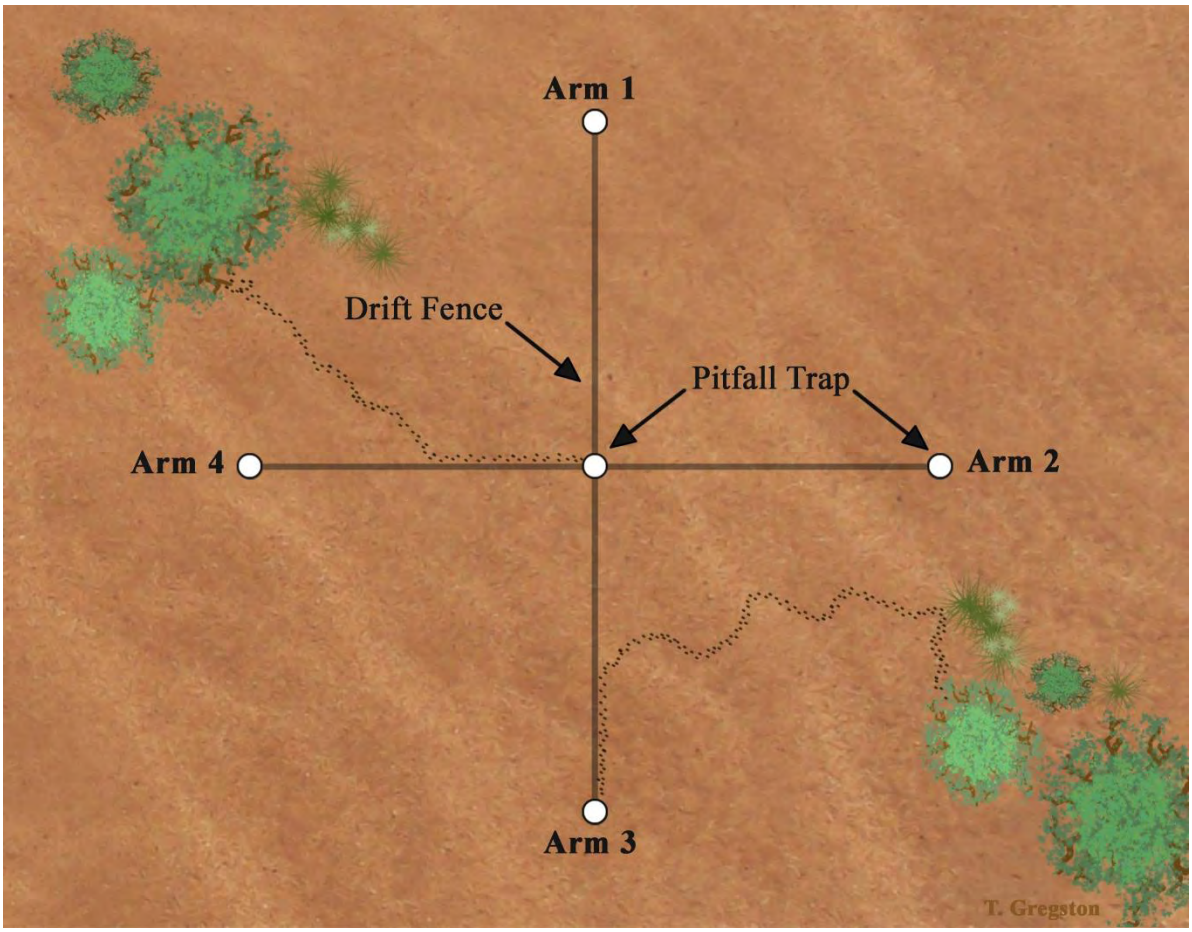

Figure 2. Pitfall trap array, overhead view.

Capture Protocol

Roswell Field Office

Pitfall trap arrays were opened daily between 0615 to 0830 and were checked between 1100 to 1200. If no DSL were caught buckets were securely covered and reopened the next day. If after 3

days no DSL had been captured pitfall arrays were removed from the location. When a DSL was captured and recorded from an array, that array was pulled and moved to a new location.

The procedure for checking pitfall traps was as follows:

- A one meter reptile tong was used to remove the cover lid;
- The pitfall trap was inspected visually;
- If a DSL was present, it was removed and processed (digital photos and GPS point),
- After processing or determining the absence of DSL, the contents of the bucket were gently stirred with large forceps for the purpose of detecting non-target fauna and/or a buried DSL.

In order to reduce the potential problem of predation within the pitfall traps insects, reptiles and mammals were removed upon detection.

Lizard Noosing

As a supplement to pitfall trapping, lizard noosing was also implemented as a capture technique. The procedure for noosing was as follows:

- A free hanging noose constructed from fly backing (smooth string used for fly fishing) was attached to a pole 3-5 meters in length;
- During ingress and egress to the pitfall trap locations, the area was visually surveyed for DSLs. If a DSL was detected, noosing was attempted ;
- After pitfalls were opened, the area was visually surveyed for DSL until buckets were covered for the day;
- All noosing was closely supervised by BLM staff biologists.

Captures

Captured lizards were documented using photographs taken with digital cameras. All cameras used had 12 mega pixel or greater resolution. The location of the capture was recorded using a GPS unit and a paper hardcopy of collected data was also produced (Appendices 2 & 3).

Carlsbad Field Office

Pitfall trap arrays were opened for a maximum of five days in which they were open for a 24 hour time period. Traps were checked twice a day, once in the morning and once at mid-afternoon until a DSL was captured. When a DSL was captured and recorded for an array, that array was pulled and moved to a new location for survey. When not in use, buckets were closed with tight-fitting plastic lids.

The procedure for checking pitfall traps was the same as the Roswell Field Office (see above).

Lizard Noosing

The procedure for DSL noosing was the same as Roswell Field Office (see above).

Captures

Captured lizards were documented using photographs taken with digital cameras. All cameras used had 12 mega pixel or greater resolution. The location of the capture was recorded using a GPS unit and a paper hardcopy of collected data was also produced (Appendices 4 & 5).

Results

Roswell Field Office

A total of 45 pitfall trap arrays were installed throughout DSL habitat in the Roswell Field Office. Of those 45 arrays, six resulted in the presence of DSL. Noosing efforts resulted in an additional 20 documented captures. BLM captured 24 adults and two juveniles. There were no DSL mortalities or injury resulting from either pitfall or noosing associated with BLM's 2011 surveys.

- BLM biologists and technicians surveyed seven vegetation treatment units located within the Texas A&M University (TAMU) DSL habitat polygon (Appendix 6). Three of the seven vegetation units were mesquite and four were shinnery oak. Three of the four shinnery oak treatments and two of the three mesquite treatments had a documented presence of DSL. The years that the treatments were performed are as follows: mesquite 2003, 2008 and 2010, shinnery oak 1969, 1985, 1986, and 1991. Surveys showed DSL presence form 79 meters (259 feet) to 1828 meters (5,997 feet) inside the treatment units. The DSL detected at 1828 meters (5,997 feet) was in the 1969 treatment unit (Table 1).

- A juvenile DSL was captured in the 2003 mesquite treatment unit. The capture point was 137 meters (449 feet) inside the treatment boundary. Another juvenile DSL was captured in the 2010 mesquite treatment unit. This capture point was 79 meters (259 feet) inside the treatment boundary.

- DSL's were considered to be extirpated from site 42 (1997 survey report site) in a 2010 survey report due to loss of habitat from a tebuthiuron application to reduce the amount

of shinnery oak. BLM surveyed this point in 2011 and found occupied dunes as well as a documented DSL capture.

Table 1. DSL presence within vegetation treatment units.

Treatment Type	Year	# of DSL's	Meters/Feet within treatment
Shinnery Oak	1969	2	1675 & 1828 meters / 5495 & 5997 feet
Shinnery Oak	1985	2	231 & 222 meters / 758 & 728 feet
Shinnery Oak	1986	0	166 meters / 544 feet
Shinnery Oak	1991	1	351 meters / 1151 feet
Mesquite	2003	2	146 & 0 (edge) meters / 479 & 0 (edge) feet
Mesquite	2008	0	109 meters / 357 feet
Mesquite	2010	1	79 meters / 420 feet

All capture sites were also within one of the three following soil types:

- Roswell-Jalmar (RPD),
- Roswell fine sand (RoD) and
- Roswell-Jalmar complex (Rn) (Appendix 8).

Surveys of reclaimed oil and gas disturbances (four roads and the four associated well pads drilled in 1986, 1987, 1988, and 1994) were also conducted in T012 R030 Section 11. All of these facilities were reclaimed in 2005. The results of the survey were 8 positive DSL locations on and along reclaimed roads and pads.

The proposed rule of December 14, 2010, stated that OHV areas may be impacting DSL. BLM surveyed Mescalero Sands OHV area and found no presence of DSL in the large open dunal areas. Probability of DSL's along the edges would be high but surveys would have to be conducted to confirm presence or absence.

BLM surveyed 23 of the 24 negative DSL sites in the 1997 survey report for Chavez County. Most of the 24 negative sites are located outside DSL habitat. For example, site 128 is located off Highway 172 east of the Caprock. Although, some sites are located on the edges of DSL habitat, three sites were found to be positive in BLM's 2011 surveys. More surveys are needed determine the full range of the species.

Carlsbad Field Office

A total of 91 pitfall trap arrays were installed throughout the Carlsbad Field Office boundaries. Of those 91 arrays 24 demonstrated the presence of DSL. Some trap arrays had multiple captures. Of the 24 arrays that had DSL captures, 18 were detected during the morning. A total of 27 DSLs were captured, resulting in 24 adults and 3 juveniles. There were no successful noosing captures of DSL. There were no DSL injuries or mortalities from either pitfall or noosing associated with BLM's 2011 surveys.

- BLM biologists and technicians surveyed eight vegetation treatment units (Appendix 7). Of these eight treatment units, five are located within the Texas A&M University (TAMU) DSL habitat polygon.

- BLM was able to document the presence of DSL in four of the five spray units surveyed.

- The years that the treatments were performed are as follows: 1984, 1988, 1992 and 2010. Surveys showed DSL presence form 79 meters (259 feet) to 1220 meters (4,002 feet) inside the treatment units. The DSL detected at 1220 meters (4,002 feet) was in 1984 treatment unit (Table 2).

- A juvenile DSL was captured in the 1992 treatment unit. The capture point was 288 meters (944 feet) inside the treatment boundary.

- The remaining 3 spray units are located outside of the TAMU DSL habitat polygon. Of these 3 units, 1 had a presence for DSL. The DSL was captured 1250 meters (4,101 feet) inside the 1991 treatment unit.

Table 2. DSL presence within vegetation treatment units.

Treatment Type	Year	# of DSL's	Meters/Feet within treatment
Shinnery Oak	1984	4	762-1219 meters /2500-4000 feet
Shinnery Oak	1988	1	91meters /300 feet
Shinnery Oak	1991	1	1250 meters/4101 feet
Shinnery Oak	1992	4	79-609 meters /260-2000 feet
Mesquite	2010	1	883 meters /2900 feet

All capture sites were within one of the two following soil types:

- Kermit-Palomas fine sands (KD)
- Active dune land (AD) (Appendix 9).

BLM biologists and technicians surveyed areas that are experiencing a high degree of oil and gas activity (Appendix 10). As an example, Section 31 of Township 17 Range 32 was digitized using 2009 aerial photography to be at seven percent disturbance. This section is managed by the BLM's CFO. A total of 13 pitfall trap arrays were placed within this section. Of the 13, a total of three had documented captures of DSL. One of the captures was on a pipeline. The area was disturbed for the installation of the pipeline but no caliche was applied to the surface. A pitfall trap array location approximately 850 meters (2,788 feet) to the northeast within the same pipeline corridor had no presence of DSL. The other two captures where within close proximity to disturbed areas, but the dune where the DSL were captured was not impacted by activity.

Section 36 of Township 17 Range 31 was digitized using a 2009 aerial photography to be at 17 percent disturbance. Of the five pit fall trap arrays one had shown a presence for DSLs. The capture was in a dune complex that is picketed on three sides by caliche associated disturbance.

BLM surveyed two areas that were located 28 and 45 kilometers (17-30 miles) outside the DSL habitat polygon. These areas were chosen due to similar habitat components found within occupied DSL habitat. Both sites were negative for DSL presence.

Discussion

Presence-Absence surveys are a common method used for determining species distribution. Pitfall trap arrays have been used to trap herpetofauna since the 1940s (Fisher, et. al., 2008). Pitfall traps may be used in combination with time-constrained searches, surveys of wood debris and cover boards, quadrate searches and road cruising (Scott, 1982; Heyer and others, 1994). Time constrained searches, quadrat searches, and road cruising may introduce a significant amount of bias due to the different skill levels of observers. When used with a standardized sampling method pitfall trap arrays can minimize the amount of observer bias while maximizing the number of species documented. A standardized sampling method would also allow for the merging and comparison of data sets. For the purpose of additional site data the collection of sand grain size prior to pitfall trap installation and dune height measurements should be implemented.

The proposed rule of December 14, 2010, states that during 2008, 54 of the 72 positive sites that were surveyed during the 1997 study were re-surveyed. Dune sagebrush lizards were absent from 11 of the 54 sites (20 percent) in which they were recorded during the 1997 study (Painter pers. comm 2008). Not all of the 72 positive sites surveyed during the 1997 study were re-surveyed in 2008 due to poor weather conditions or access issues. Additional surveys were conducted during 2010 to investigate the status of the population of dunes sagebrush lizards at the remaining sites. The total number of historic sites that were surveyed in 1997 was 72, and 17 of those (24

percent) did not establish the presence of lizards. Some of these sites have been sprayed with tebuthiuron (an herbicide used to remove shinnery oak), and some were in areas where the habitat was removed (Painter pers comm 2010).

BLM found the following:

- In 1997, 72 positive sites were surveyed. In 2008, 54 sites were resurveyed. Not all 72 were able to be resurveyed due to poor weather conditions. DSL were absent from 11 of the 54 sites. Of the 11 sites that were absent in 2008, seven of them were found to be positive in 2010 surveys (Mike Hill, pers.comm).

- Additional surveys were conducted during 2010 to investigate the remaining 18 sites. A total of 27 sites were surveyed in 2010, 21 of the 27 were positive (78percent) for a total of 17 absent out of the 72. Of the remaining six absent sites, one was found positive in BLM's 2011 surveys. In conclusion, out of the 17 absent sites cited in the proposed rule, BLM found through communication and BLM's 2011 surveys that nine sites are positive. Therefore, the total number of historic sites surveyed in 1997 was 72 and eight of those (11percent) show no DSL presence. After reviewing the 1997 report there are a total of 75 positive locations, some points may have been lumped together to come up with 72. This could mean that there are 6 to 7 sites showing absence out of the 72 (eight percent).

Capture results showed juvenile DSLs within shinnery oak treatment units. With the understood home range of this species, BLM's results suggest that reproduction of the juveniles were within the boundary of the treatment unit.

DSL locations were found in mesquite treatments as well. A mixture of Reclaim/Remedy is used to treat the encroachment of mesquite into the shinnery oak dunal habitat. Not much is known about the effects of Reclaim/Remedy on the DSL. Speculation, however, has been the DSL is possibly negatively affected by the application of this herbicide. Four of our pitfall arrays were placed within areas treated with Reclaim/Remedy. The results included three documented occurrences, one adult and two juvenile DSL within these treated areas.

There was also five locations of DSLs outside of the Texas A&M University (TAMU) DSL habitat polygon. This suggests that there may not be a complete understanding of the species home range. See Appendix 11.

Survey locations within areas experiencing a high degree of oil and gas activities still showed a presence for DSLs. This may be because BLM Wildlife Biologist and Natural Resource

Specialist work with industry representatives to locate projects away from dune complexes which minimize impacts to habitat.

The presence of DSLs in reclaimed areas associated with oil and gas activities implies reclamation efforts can successfully contribute to the defragmentation of DSL habitat and to some extent, DSLs can inhabit human-altered landscapes.

Negative surveys do not demonstrate the absence of lizards. Absence could be due to the hard freezes we had over the winter and extreme drought this summer. High quality habitat areas with large dunal blowouts had no green up of the shinnery oak for months. This could be the cause of negative DSL localities. Temperatures in February were as low as -12 degrees for several days (Eight-Mile draw NM Remote Automated Weather Station). The NOAA National Climatic Data Center reports that the first eight months of 2011 have been the driest start to any year on record for New Mexico. The 2011 survey season provided the Pecos District with multiple dunes sagebrush lizard locations (Appendix 11). The data collected will be used for the protection of the species and its habitat.

Important Observations

- Negative DSL capture sites for the 1997 Texas A&M University (TAMU) survey conducted by Lee Fitzgerald were resurveyed. Of 20 resurveyed sites, 12 had shown a presence for DSLs.

- Surveys of reclaimed areas that were associated with oil and gas activities also had a presence of DSLs. The reclamation efforts were completed in 2005.

- Protected sand dune complexes within areas experiencing a high level of oil and gas activity had DSL captures.

- DSL captures occurred outside the TAMU habitat poly.

- DSL captures occurred within the boundaries of mesquite and shinnery oak treatment units.

- In total, 53 DSLs were captured during BLM's 2011 surveys.

- If applied incorrectly, tebuthiuron can eliminate DSL habitat. BLM surveyed site 110 and no DSLs were present due to dunes flattened by the wind as a result of teb treatment.

Literature Cited

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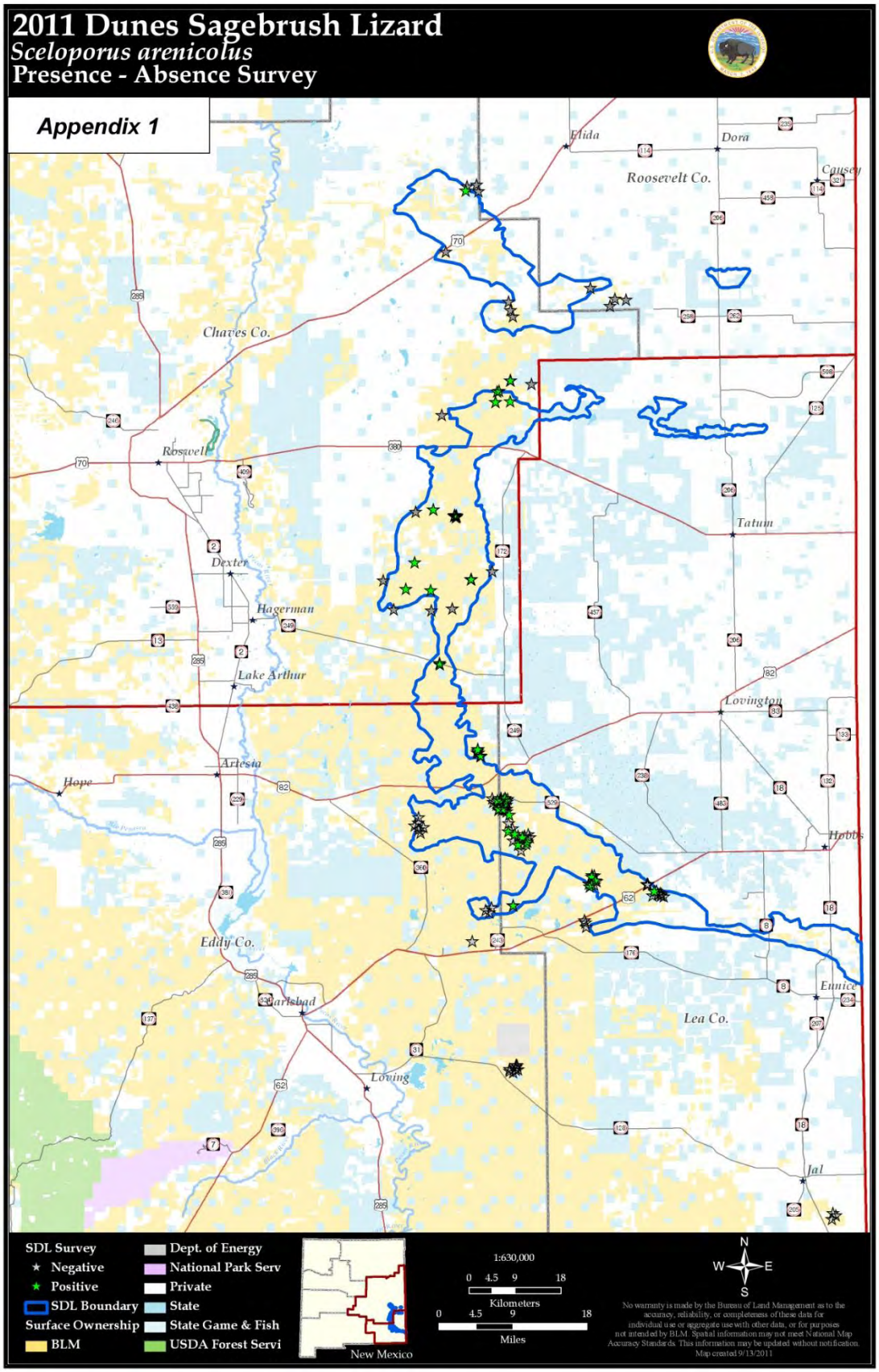
U.S. Fish and Wildlife Service. 2010. Federal Register. Endangered and Threatened Wildlife and Plants; Endangered Status for Dunes Sagebrush Lizard. Federal Register [Proposed Rules] December 14, 2010. 75(239): 77801-77817.


2011 Dunes Sagebrush Lizard
Sceloporus arenicolus
Presence - Absence Survey
Appendix 1
Elida
Dora
Roosevelt Co.
Causey
Chaves Co.
Roswell
Dexter
Hagerman
Lake Arthur
Tatum
Lovington
Artesia
Hope
Hobbs
Eddy Co.
Carlsbad
Lea Co.
Loving
Jal
Eunice
SDL Survey
Negative
Positive
SDL Boundary
Surface Ownership
BLM
Dept. of Energy
National Park Serv
Private
State
State Game & Fish
USDA Forest Servi
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Map created 9/13/2011

Appendix 2. Roswell Field Office Dunes Sagebrush Lizard Pitfall Trap and Noosing Results

LOCATION	DATE	TIME	COMMENTS	LAT	LONG
T05 R29 sec14	7/26/2011	959	Adult male, noosing	33°52'16.8037"N	103°52'16.3708"W
T09 R31 sec16	7/5/2011	928	Adult female, noosing	33°32'05.6379"N	103°46'50.3069"W
T09 R31 sec16	7/5/2011	943	Adult female, noosing	33°32'05.1039"N	103°46'53.4589"W
T09 R31 sec16	7/5/2011	806	Adult male, noosing	33°32'06.0099"N	103°46'51.1169"W
T09 R31 sec19	7/5/2011	825	Adult male, noosing	33°30'55.5999"N	103°48'32.8189"W
T09 R31 sec27	6/8/2011	1200	Adult male, noosing	33°29'52.5639"N	103°46'54.4649"W
T09 R31 sec20	7/05/2011	0900	Adult male, noosing	33°30'59.6679"N	103°48'19.049"W
T09 R31 sec30	7/21/2011	915	Adult male, pitfall trap	33°29'49.1859"N	103°48'48.0889"W
T09 R31 sec30	7/21/2011	919	Adult female, pitfall trap	33°29'49.1979"N	103°48'48.1229"W
T12 R30 sec05	6/21/2011	908	Adult male, pitfall trap	33°18'25.6380"N	103°56'46.0680"W
T12 R30 sec11	6/15/2011	831	Adult male, pitfall trap	33°17'47.3100"N	103°53'50.5560"W
T12 R30 sec11	6/15/2011	839	Adult male, pitfall trap	33°17'47.1840"N	103°53'50.4120"W
T12 R30 sec11	6/15/2011	918	Adult male, noosing	33°17'51.8280"N	103°53'53.7600"W
T12 R30 sec11	6/15/2011	1001	Adult female, noosing	33°17'52.6740"N	103°54'05.5800"W
T12 R30 sec11	6/15/2011	1019	Adult male, noosing	33°17'48.9840"N	103°54'09.3400"W
T12 R30 sec11	6/15/2011	1033	Adult male, noosing	33°17'47.1600"N	103°54'08.7240"W
T12 R30 sec11	6/15/2011	1051	Adult male, noosing	33°17'39.1680"N	103°53'56.3700"W
T12 R30 sec11	6/15/2011	1116	Adult male, noosing	33°17'43.1220"N	103°53'53.6800"W
T13 R29 sec01	6/7/2011	1030	Adult female, noosing	33°12'54.5501"N	103°59'12.4408"W
T13 R31 sec07	6/27/2011	754	Adult male, noosing	33°11'03.4841"N	103°52'07.6169"W
T13 R29 sec23	6/22/2011	907	Adult male, pitfall trap	33°10'05.9502"N	104°00'19.4180"W
T13 R30 sec29	6/22/2011	748	Juvenile male, noosing	33°09'57.4440"N	103°57'13.2540"W
T13 R31 sec07	6/27/2011	803	Adult female, noosing	33°11'05.7881"N	103°52'05.3069"W
T15 R30 sec09	7/13/2011	830	Juvenile female, noosing	33°02'04.6602"N	103°56'08.7689"W
T15 R30 sec09	7/13/2011	1115	Adult female, noosing	33°02'12.7602"N	103°56'09.6569"W
T12 R30 sec05	6/21/2011	931	Adult female, noosing	33°18'30.2081"N	103°56'45.4348"W

Appendix 3. Roswell Field Office Capture Photos

Township: 13 Range: 29 Section: 1

Comments:

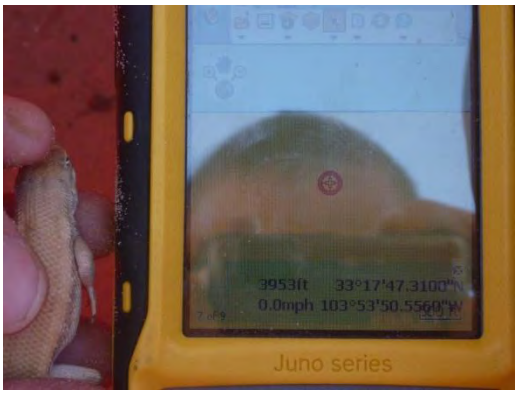
Adult female, caught 6/7/2011 10:30am

Township: 9 Range: 31 Section: 27

Comments:

Adult male, caught 6/8/2011 12:00pm

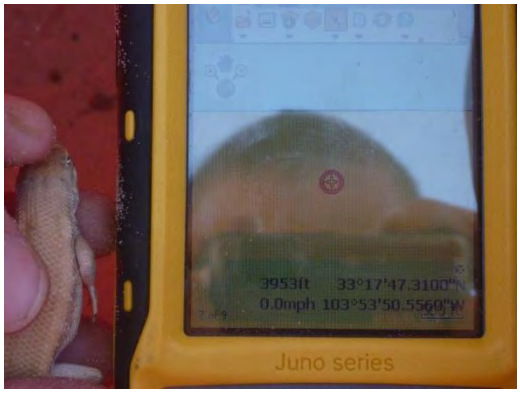
Township: 12 Range: 30 Section: 11

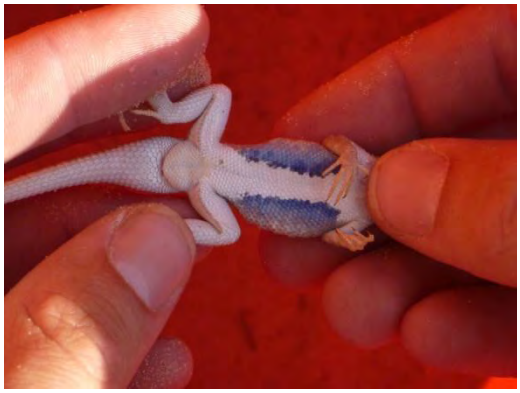


Comments:

Adult male, caught 6/15/2011 8:31am

Township: 12 Range: 30 Section: 11





Comments:

Adult male, caught 6/15/2011 8:39am

Township: 12 Range: 30 Section: 11

Comments:

Adult male, caught 6/15/2011 9:18am

Township: 12 Range: 30 Section: 11

Comments:

Adult female, caught 6/15/2011 10:01am

Township: 12 Range: 30 Section: 11

Comments:

Adult male, caught 6/15/2011 10:19am

Township: 12 Range: 30 Section: 11




Comments:

Adult male, caught 6/15/2011 10:33am

Township: 12 Range: 30 Section: 11

Comments:

Adult male, caught 6/15/2011 10:51am

Township: 12 Range: 30 Section: 11

Comment:

Adult male, caught 6/15/2011 11:16am

Township: 12 Range: 30 Section: 05

Comments:

Adult male, caught 6/21/2011 9:08am

Township: 23 Range: 30 Section: 05

Comments:

Adult female, caught 6/21/2011 9:31am

Township: 13 Range: 30 Section: 29

Comments:

Juvenile male, caught 6/22/2011 7:48am

Township: 13 Range: 29 Section: 23

Comments:

Adult male, caught 6/22/2011 9:07am

Township: 13 Range: 29 Section: 07

Comments:

Adult male, caught 6/27/2011 7:54am

Township: 13 Range: 31 Section: 07

Comments:

Adult female, caught 6/27/2011 8:03am

Township: 09 Range: 31 Section: 19

Comments:

Adult male, caught 7/5/2011 8:25am

Township: 09 Range: 31 Section: 16

Comments:

Adult male, caught 7/5/2011 9:28am

Township: 09 Range: 31 Section: 16

Comments:

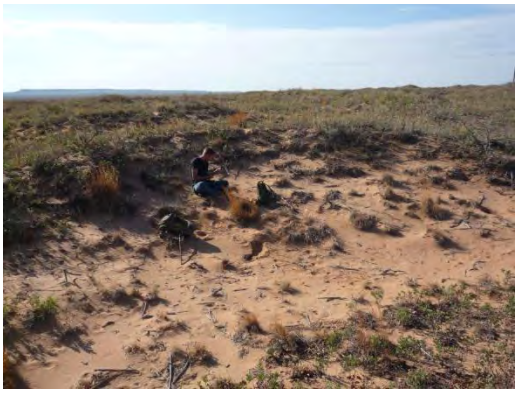
Adult female, caught 7/5/2011 9:43am

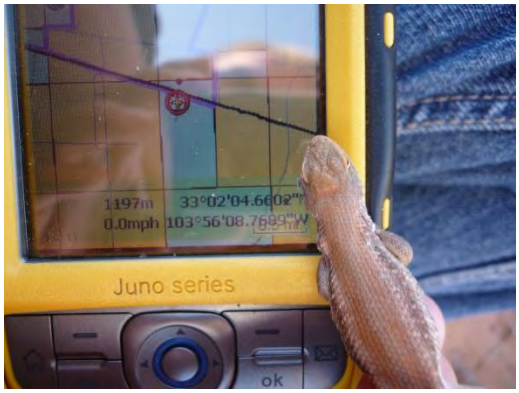
Township: 09 Range: 31 Section: 16

Comments:

Adult male, caught 7/5/2011 8:06am

Township: 15 Range: 30 Section: 09





Comments:

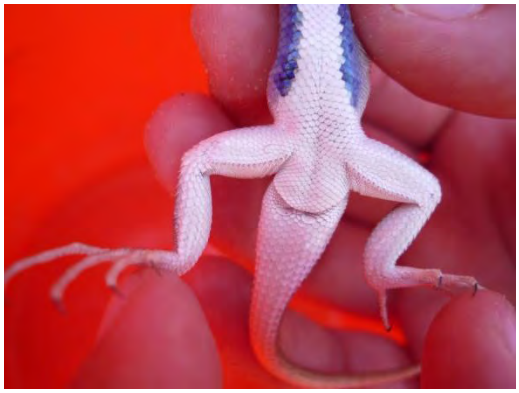
Juvenile female, caught 7/13/2011 8:30am

Township: 15 Range: 30 Section: 09

Comments:

Adult female, caught 7/13/2011 11:15am

Township: 09 Range: 31 Section: 30



Comments:

Adult male, caught 7/21/2011 9:15am

Township: 09 Range: 31 Section: 30

Comments:

Adult female, caught 7/21/2011 9:19am

Township: 05 Range: 29 Section: 14

Comments:

Adult male, caught 7/26/2011 9:59am

Appendix 4. Carlsbad Field Office Dunes Sagebrush Lizard Pitfall Trap Results

LOCATION	DAYS OPEN	DATE	TIME	COMMENTS	LAT	LONG
T16 R31 sec34	2	7/8/2011	1145	Adult female	32°52'21.438"N	103°51'11.643"W
T16 R31 sec34	2	7/12/2011	1415	Adult male (south)	32°53'0.822"N	103°51'30.578"W
T16 R31 sec34	4	7/14/2011	1040	Adult male	32°52'17.112"N	103°51'8.731"W
T17 R31 sec31	1	6/3/2011	1115	Adult male	32°47'50.939"N	103°48'8.345"W
T17 R31 sec36	1	6/28/2011	935	Adult gravid female (north)	32°47'35.207"N	103°49'6.003"W
T17 R32 sec31	1	6/22/2011	1430	Adult male (center), entered manually	32°47'3.976"N	103°48'18.172"W
T17 R32 sec31	2	6/10/2011	1030	Adult male (west), entered manually	32°47'33.524"N	103°48'38.595"W
T17 R32 sec31	4	6/6/2011	1027	Adult female	32°47'33.616"N	103°47'59.157"W
T18 R31 sec01	4	7/15/2011	1019	Adult female (north east), lethargic	32°46'42.369"N	103°48'56.177"W
T18 R32 sec06	2	7/13/2011	1019	Adult gravid female (2nd from north), possibly saw another	32°46'39.151"N	103°48'28.159"W
T18 R32 sec08	4	7/19/2011	1345	Unsexed juvenile (center)	32°46'3.07"N	103°47'28.167"W
T18 R32 sec20	1	7/19/2011	1430	Adult male (north west), caught in 6 hours	32°44'1.02"N	103°46'58.579"W
T18 R32 sec20	5	7/20/2011	1130	Two males caught (north east), one escaped	32°44'18.04"N	103°47'48.032"W
T18 R32 sec21	5	8/2/2011	1356	Adult male (east)	32°43'38.943"N	013°46'2.716"W
T18 R32 sec27	1	8/2/2011	1353	Adult male (north east), on old oil spill	32°42'57.84"N	013°45'33.66"W
T18 R32 sec27	2	8/3/2011	1113	Adult male (center) and unsexed juvenile (south)	32°43'12.605"N	013°45'26.966"W
T18 R32 sec28	4	7/28/2011	1141	Unsexed juvenile (north east)	32°42'51.522"N	103°46'35.439"W
T19 R33 sec13	3	7/20/2011	1015	Adult gravid female, no tail (center)	32°39'21.756"N	103°37'24.641"W
T19 R33 sec23	2	7/20/2011	1112	Adult gravid female (south west)	32°38'20.156"N	103°37'41.813"W
T19 R33 sec24	2	7/19/2011	1020	Adult gravid female (south east)	32°39'0.198"N	103°36'59.973"W
T19 R33 sec24	2	7/19/2011	1100	Adult male (south) and adult gravid female (north)	32°38'31.871"N	103°37'27.297"W
T19 R35 sec30	3	6/22/2011	1000	Adult male	32°37'44.834"N	103°29'36.505"W
T20 R32 sec05	5	6/16/2011	910	Adult female (west), permanent cluster, entered manually	32°36'26.921"N	103°47'16.933"W
T20 R32 sec05	5	6/20/2011	830	Adult male (center), permanent cluster, entered manually	32°36'26.921"N	103°47'16.933"W

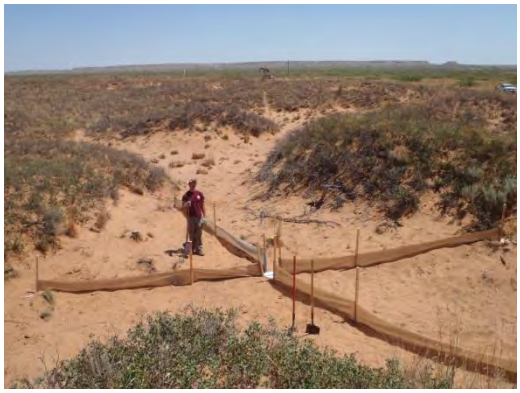
Appendix 5. Carlsbad Field Office Capture Photos

Township: 16 Range: 31 Section: 34

Comments:

Male

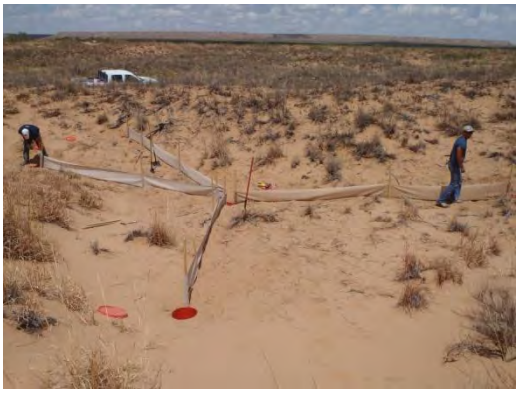
Township: 16 Range: 31 Section: 34



Comments:

Male Capture

Township: 16 Range: 31 Section: 34



Comments:

Male (south)

Township: 17 Range: 31 Section: 36

Comments:

Gravid Female (north)

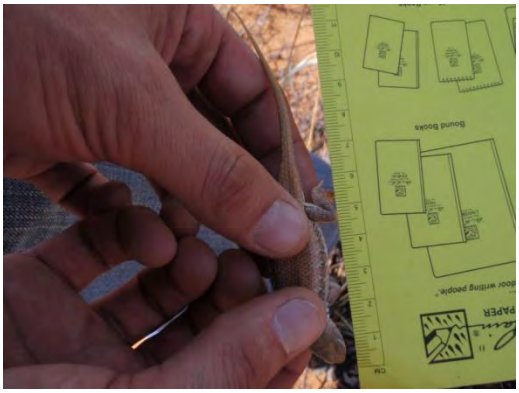
Township: 17 Range: 32 Section: 31

Comments:

Male

Township: 17 Range: 32 Section: 31





Comments:

Gravid Female (north)

Township: 17 Range: 32 Section: 31

Comments:

Male (center)

Township: 17 Range: 32 Section: 31




Comments:

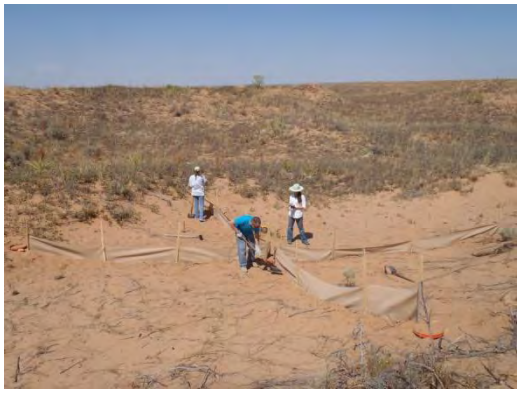
Male

Township: 18 Range: 31 Section: 01

Comments:

Lethargic Female (north east)

Township: 18 Range: 32 Section: 06



Comments:

Female

Township: 18 Range: 32 Section: 08

Comments:

Baby

Township: 18 Range: 32 Section: 20

Comments:

Male

Township: 18 Range: 32 Section: 20

Comment:

2 males captured, one escaped before photos

Township: 18 Range: 32 Section: 21

Comments:

Adult Male

Township: 18 Range: 32 Section: 27

Comments:

Adult male (Top Photos) and Juvenile Male (Bottom Photos)

Township: 18 Range: 32 Section: 27

Comments:

Adult Male

Township: 18 Range: 32 Section: 28

Comments:

Juvenile

Township: 19 Range: 33 Section: 13

Comments:

Gravid Female, no tail

Township: 19 Range: 33 Section: 23

Comments:

Gravid Female

Township: 19 Range: 33 Section: 24

Comments:

Gravid Female

Township: 19 Range: 33 Section: 24

Comments:

Male (Top Photos) and Gravid Female (Bottom Photos)

Township: 19 Range: 35 Section: 30

Comments:

Male

Township: 20 Range: 32 Section: 05

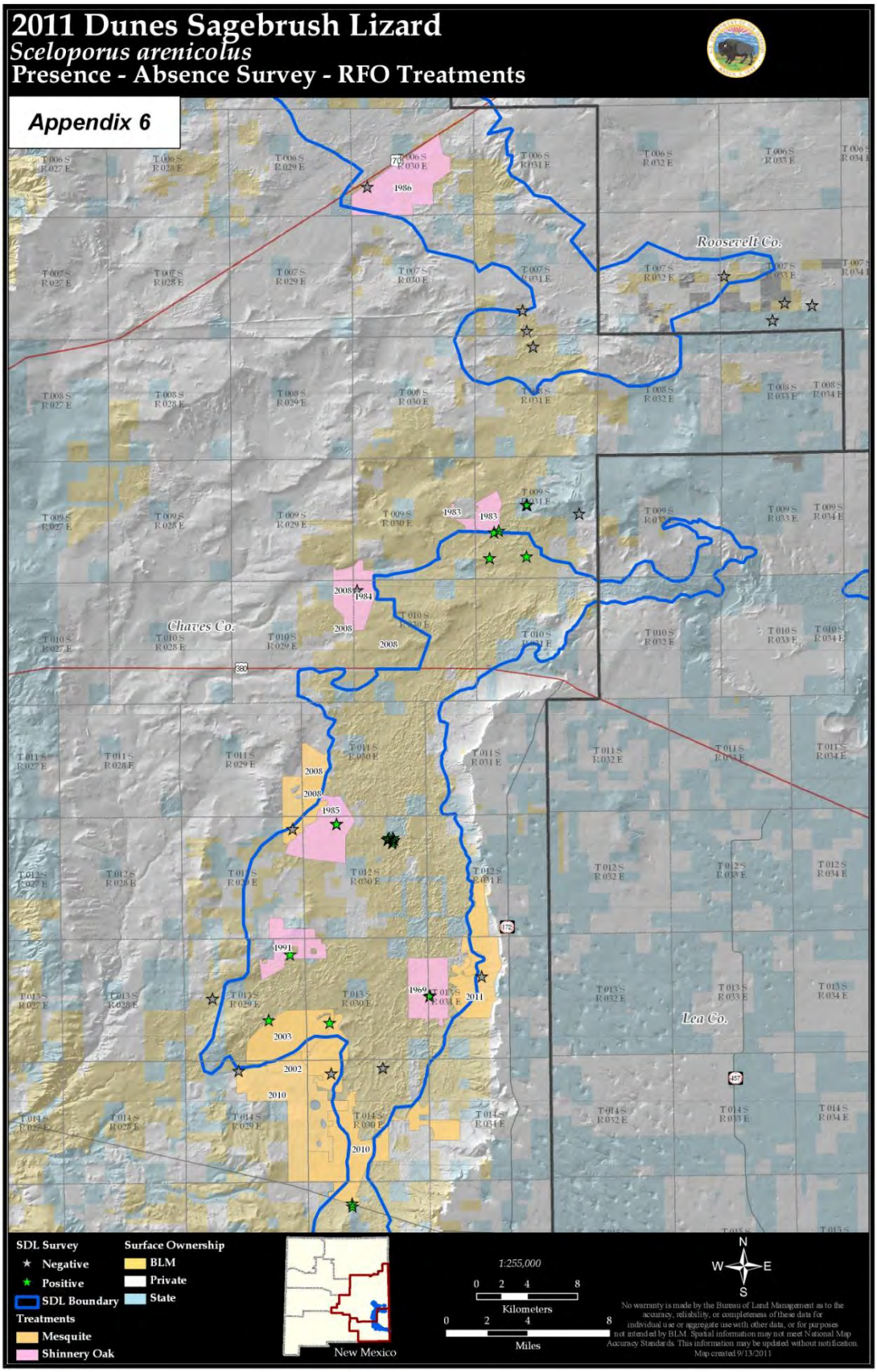
Comments:

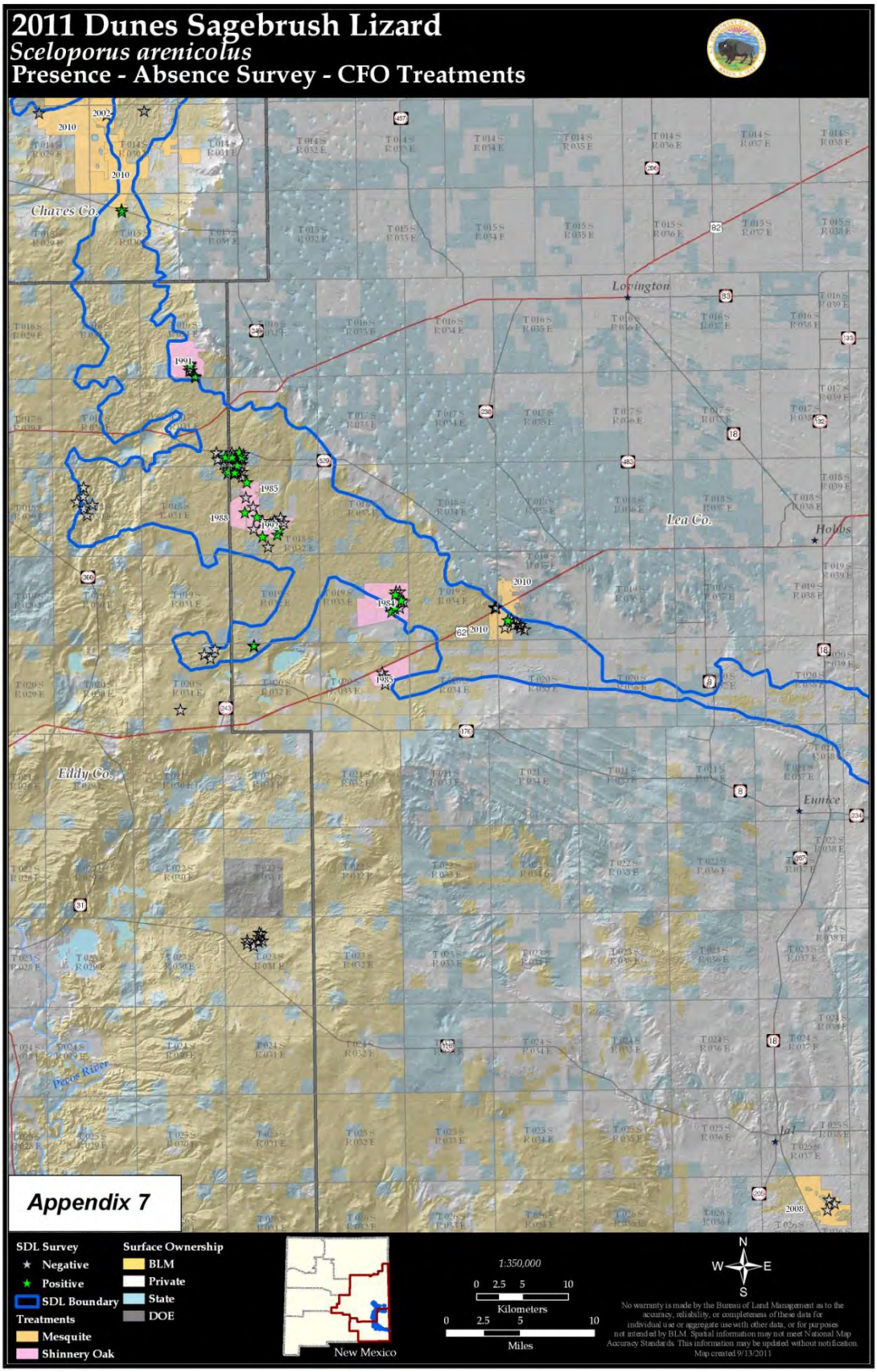
Female

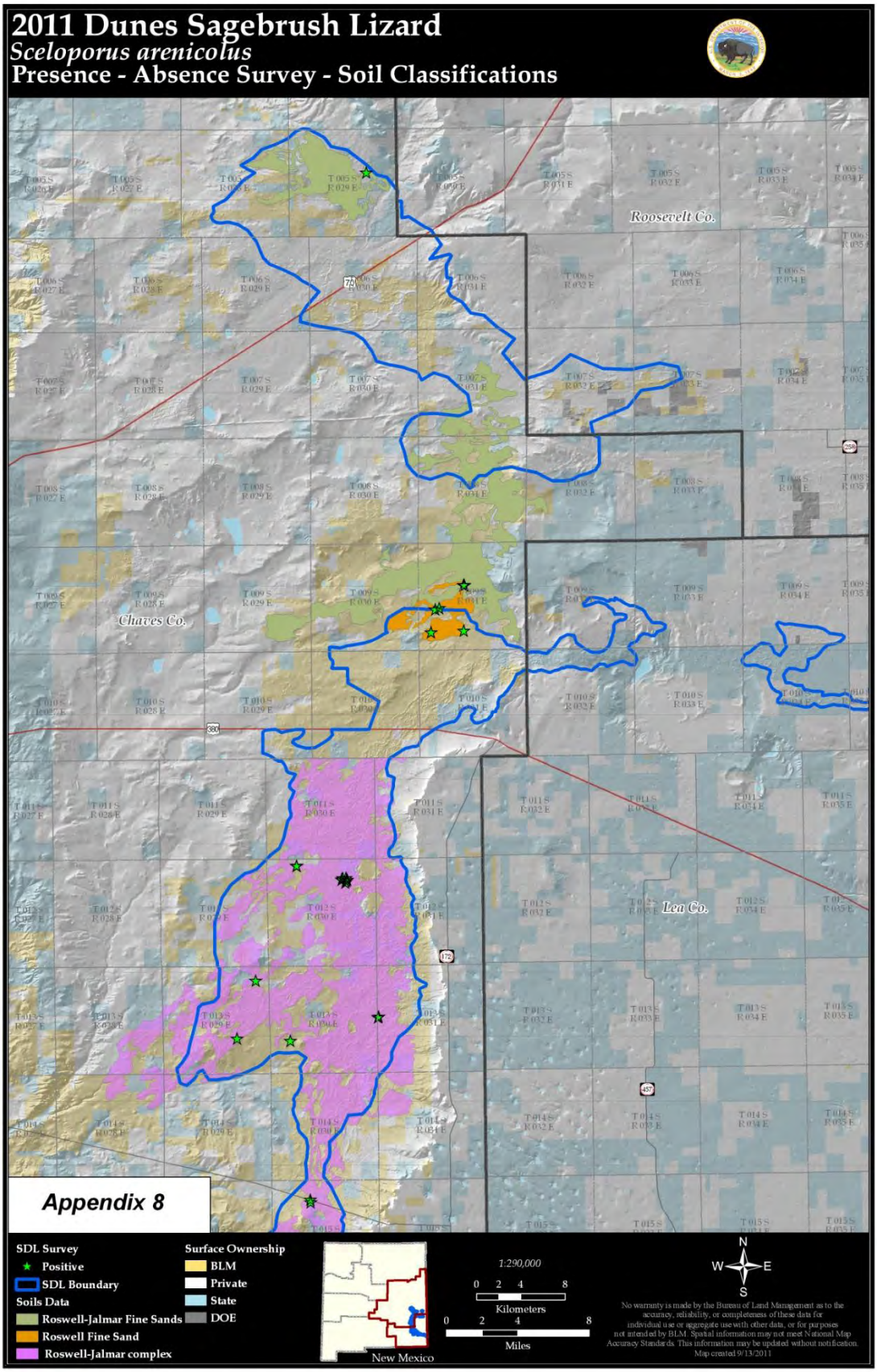
Township: 20 Range: 32 Section: 05

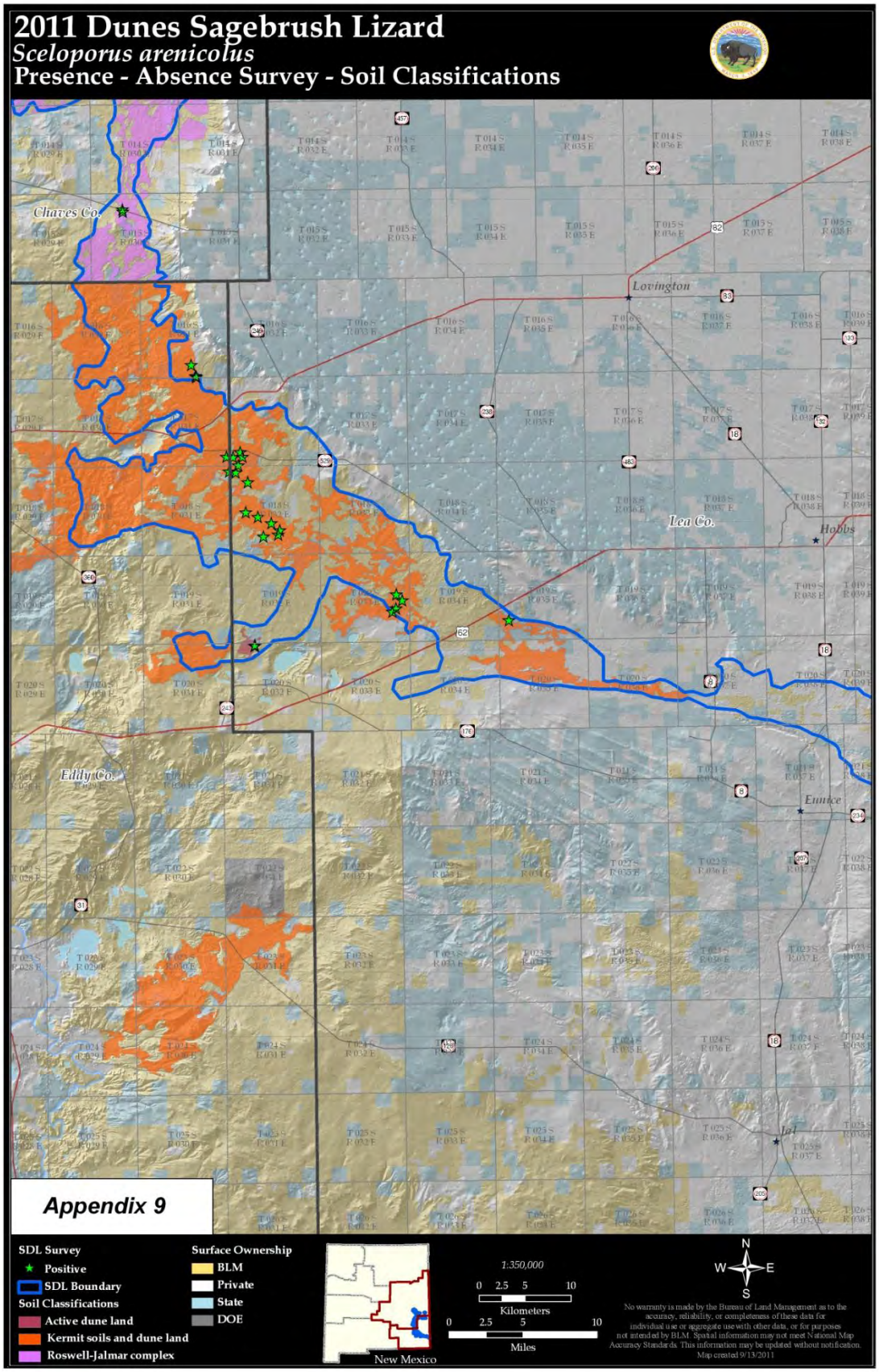
Comments:

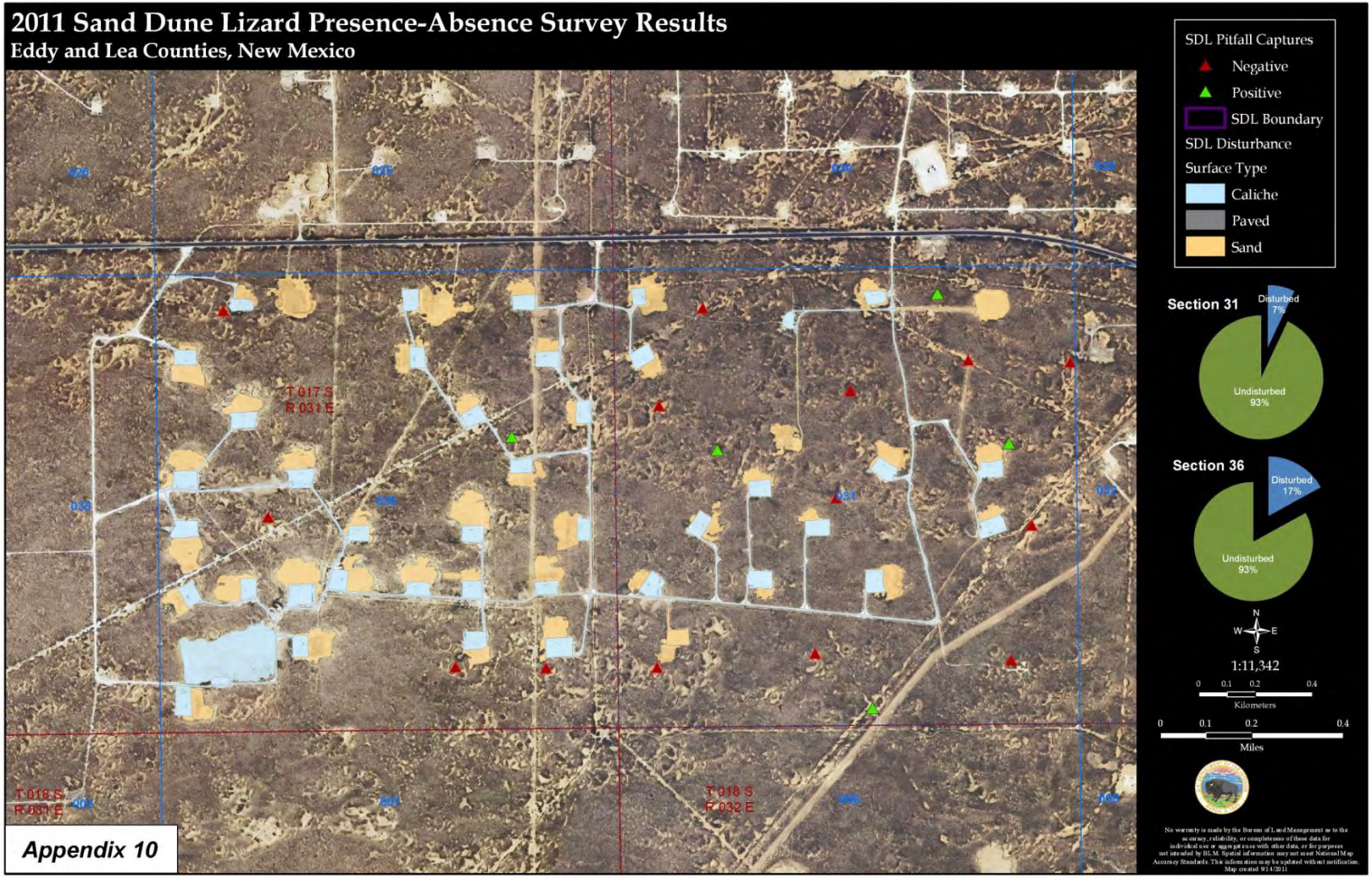
Male

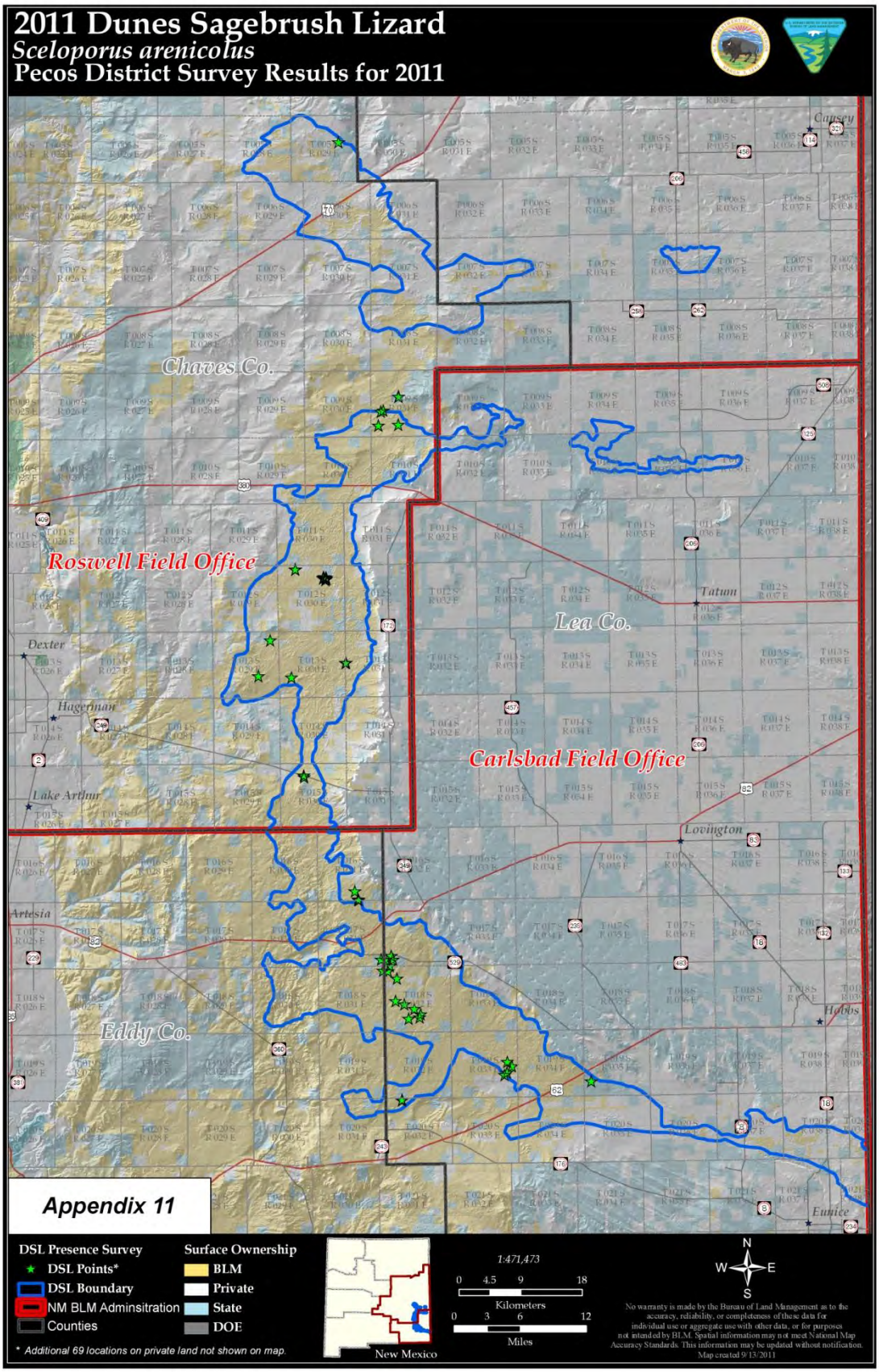

2011 Dunes Sagebrush Lizard
Sceloporus arenicolus
Presence - Absence Survey - RFO Treatments
Appendix 6
Roosevelt Co.
Chaves Co.
Lea Co.
SDL Survey
Negative
Positive
SDL Boundary
Treatments
Mesquite
Shinnery Oak
Surface Ownership
BLM
Private
State
New Mexico
1:255,000
Kilometers
Miles
N
W
E
S
Map created 9/13/2011

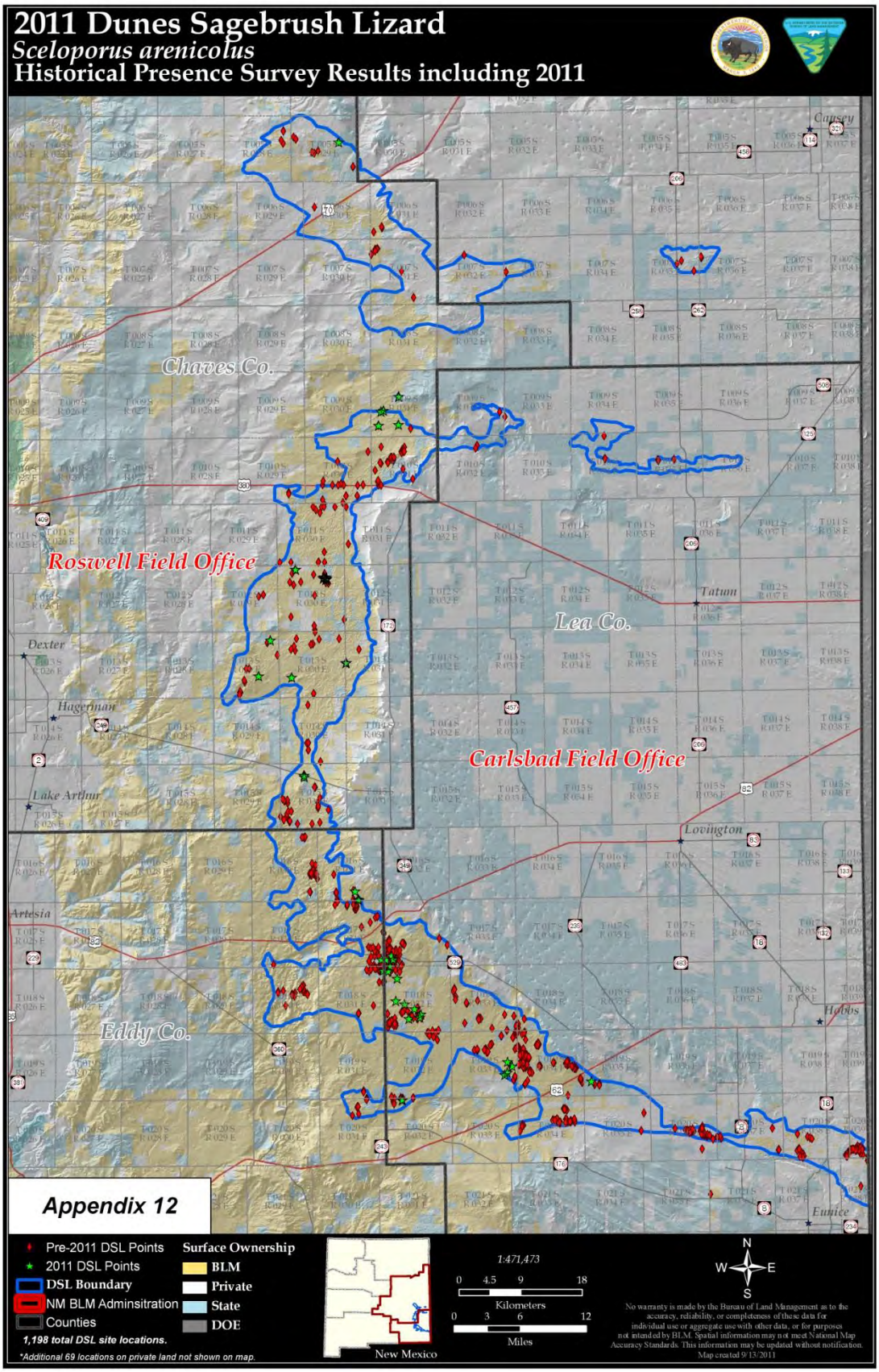

2011 Dunes Sagebrush Lizard
Sceloporus arenicolus
Presence - Absence Survey - CFO Treatments
Chaves Co.
Eddy Co.
Lea Co.
Lovington
Hobbs
Eunice
Pecos River
Appendix 7
SDL Survey
Negative
Positive
SDL Boundary
Treatments
Mesquite
Shinnery Oak
Surface Ownership
BLM
Private
State
DOE
New Mexico
1:350,000
0 2.5 5 10
Kilometers
0 2.5 5 10
Miles
N
W
E
S
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
Map created 9/13/2011


2011 Dunes Sagebrush Lizard
Sceloporus arenicolus
Presence - Absence Survey - Soil Classifications
Roosevelt Co.
Chaves Co.
Lea Co.
Appendix 8
SDL Survey
Positive
SDL Boundary
Soils Data
Roswell-Jalmar Fine Sands
Roswell Fine Sand
Roswell-Jalmar complex
Surface Ownership
BLM
Private
State
DOE
New Mexico
1:290,000
0 2 4 8
Kilometers
0 2 4 8
Miles
N
W
E
S
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
Map created 9/13/2011


2011 Dunes Sagebrush Lizard
Sceloporus arenicolus
Presence - Absence Survey - Soil Classifications
Chaves Co.
Lovington
Lea Co.
Hobbs
Eddy Co.
Eunice
Jal
Appendix 9
SDL Survey
Positive
SDL Boundary
Soil Classifications
Active dune land
Kermit soils and dune land
Roswell-Jalmar complex
Surface Ownership
BLM
Private
State
DOE
New Mexico
1:350,000
0 2.5 5 10
Kilometers
0 2.5 5 10
Miles
N
W
E
S
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
Map created 9/13/2011


2011 Sand Dune Lizard Presence-Absence Survey Results
Eddy and Lea Counties, New Mexico
T 017 S
R 031 E
T 018 S
R 031 E
T 018 S
R 032 E
SDL Pitfall Captures
Negative
Positive
SDL Boundary
SDL Disturbance
Surface Type
Caliche
Paved
Sand
Section 31
Disturbed 7%
Undisturbed 93%
Section 36
Disturbed 17%
Undisturbed 93%
N
W
E
S
1:11,342
0 0.1 0.2 0.4
Kilometers
0 0.1 0.2 0.4
Miles
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
Map created 9/14/2011
Appendix 10


2011 Dunes Sagebrush Lizard
Sceloporus arenicolus
Pecos District Survey Results for 2011
Chaves Co.
Roswell Field Office
Lea Co.
Carlsbad Field Office
Eddy Co.
Dexter
Hagerman
Lake Arthur
Artesia
Tatum
Lovington
Hobbs
Eunice
Caney
Appendix 11
DSL Presence Survey
DSL Points*
DSL Boundary
NM BLM Adminsitration
Counties
Surface Ownership
BLM
Private
State
DOE
* Additional 69 locations on private land not shown on map.
New Mexico
1:471,473
0 4.5 9 18
Kilometers
0 3 6 12
Miles
N
W E
S
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
Map created 9/13/2011


2011 Dunes Sagebrush Lizard
Sceloporus arenicolus
Historical Presence Survey Results including 2011
Chaves Co.
Roswell Field Office
Lea Co.
Carlsbad Field Office
Eddy Co.
Dexter
Hagerman
Lake Arthur
Artesia
Tatum
Lovington
Hobbs
Eunice
Caney
Appendix 12
Pre-2011 DSL Points
2011 DSL Points
DSL Boundary
NM BLM Adminsitration
Counties
1,198 total DSL site locations.
*Additional 69 locations on private land not shown on map.
Surface Ownership
BLM
Private
State
DOE
New Mexico
1:471,473
0 4.5 9 18
Kilometers
0 3 6 12
Miles
N
W E
S
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.
Map created 9/13/2011