2012 Mexican Spotted Owl Study, Final Report, Pinos Altos Range, Gila National Forest, New Mexico

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EXECUTIVE SUMMARY

The Mexican Spotted Owl (*Strix occidentalis lucida*) was listed as a threatened subspecies by the United States Fish and Wildlife Service in 1993. In 2011, the USDA Forest Service contracted Hawks Aloft, Inc. to conduct one year (2012) of inventory surveys and monitoring for the presence and reproductive success of the Mexican Spotted Owl in the Pinos Altos range of the Gila National Forest, Grant County, New Mexico. Prior to the initiation of field work, Gila National Forest biologists provided Hawks Aloft with historic data for the 12 known Spotted Owl PACs in the study area, including all known sites occupied by breeding pairs, individual birds, previously known roost or nest locations, and maps with appropriately located Spotted Owl calling stations. Field work was conducted during 72 day and night visits between 5 April and 12 August 2012. Eleven of the 12 PACs surveyed were occupied by one or more owls in 2012, with seven confirmed pairs. The high occupancy rate was unexpected considering that previous studies have suggested a substantial decline in owl numbers in the greater Gila region between 1990 and 2005. However, we only confirmed one reproductively successful pair in 2012, while three additional pairs were followed with sufficient effort to conclude that they chose to forgo breeding in 2012. We were unable to confirm whether the remaining three documented pairs chose to forgo breeding in 2012 or had failed nests. The low rate of documented reproductive success in 2012 may have been due to reproductive skipping, which is thought to be connected to temporal variations in food resources and weather. In 2012, this was likely the result of a diminished mammalian prey base due to record-setting drought in the region.

INTRODUCTION

The Mexican Spotted Owl (*Strix occidentalis lucida*) is a medium-sized owl that primarily occurs in mixed conifer and pine-oak mountains and canyons in Utah, Colorado, New Mexico, Arizona, western Texas, and south through the Sierra Madre Occidental and Oriental in Mexico (Gutiérrez et al. 1995). Two other subspecies, the Northern (*S. o. caurina*) and California (*S. o. occidentalis*) Spotted Owls, occur from southern British Columbia to northern Baja California.

The minimum population size of the Mexican Spotted Owl in the United States was estimated at between 777 and 1554 individuals between 1990 and 1993 (US Fish and Wildlife Service 1995). The subspecies was listed as threatened in 1993, due primarily to habitat loss and alteration in the form of timber harvest (US Fish and Wildlife Service 1993, 1995). This followed the listing of the northern subspecies as threatened in 1990. A recovery team was formed after the listing and a recovery plan for the Mexican Spotted Owl was developed. This plan made the following four recommendations: (1) protection of habitat (600 acres) around owl nest sites, or roosting areas if nest sites are not known; (2) protection of habitat in wilderness areas, research natural areas, and on steep (i.e. > 22°) slopes; (3) changes in timber extraction policy (primarily to uneven-aged tree management) in other areas; and (4) restoration and greater protection of riparian zones (Gutiérrez et al. 1995).

Mexican Spotted Owls prefer forests dominated by uneven-aged trees with high canopy closure, a multi-layered canopy, and high levels of large snags and downed woody debris

(US Fish and Wildlife Service 1995). Mexican Spotted Owls strongly select forests with a complex structure over neighboring areas with less complexity (Seamans and Gutiérrez 1995), and in contiguous forests the subspecies showed a preference for old-growth forest over younger stands (Ganey and Balda 1989).

In 2011, the USDA Forest Service contracted Hawks Aloft, Inc. to conduct one year (2012) of inventory surveys and monitoring for the presence and reproductive success of the Mexican Spotted Owl in the Pinos Altos range of the Gila National Forest, Grant County, New Mexico. This report summarizes that effort.

STUDY AREA

The Pinos Altos range is located in the extreme southeastern portion of the Upper Gila Mountains Mexican Spotted Owl Recovery Unit (UGMRU), in southwestern New Mexico. The UGMRU supports >50% of the known population of Mexican Spotted Owls, and the central location of the UGMRU within the overall range of the subspecies appears to facilitate gene flow throughout its range. Consequently, the UGM population is viewed as important to stability within the overall range of the owl, and management that impacts owls within the UGMRU likely affects populations throughout the region. Although little information is available regarding populations trends for the entire UGMRU, all populations studied within the RU during the 1990s appeared to be in a worrisome decline (Ganey et al. 2011). The project area for this study was located approximately 10 miles north of Silver City (Figure 1). All field work was conducted within the boundaries of the Silver City Ranger District of the Gila National Forest and

was restricted to an island of high elevation habitat in the south-central portion of the Gila known as the Pinos Altos Range.

The Pinos Altos Range spans the continental divide north of Silver City, feeding the Mimbres River to the east and the Gila River to the west. Much of the Pinos Altos range is dominated by a mixed-conifer forest (primarily Douglas fir [*Pseudotsuga menziesii*] and ponderosa pine [*Pinus ponderosa*]). Gambel's oak (*Quercus gambelii*), the only deciduous oak in the region, grows throughout the range and obtains a particularly large stature in canyon bottoms, where it is a preferred substrate for Mexican Spotted Owls, and provides a variety of important habitat components, including roost sites, nest sites, cache sites, and dense cover. In general, the Pinos Altos range is characteristically rugged and provides the owls with the steep, rocky, moist, and shady canyon habitat that they prefer.

METHODS

Prior to the initiation of field work, Gila National Forest biologists provided Hawks Aloft with historic Spotted Owl data for the approximately ten square mile study area (see Figure 2). These data included all known sites within the study area that historically had been occupied by Spotted Owls, including sites occupied by breeding pairs or individual birds, as well as all previously known roost and nest locations. Previously occupied areas were mapped as Physical Activity Centers (PACs): Polygons drawn by forest biologists that are designed to capture the most critical habitat components surrounding the locality point data. At the beginning of the field season, twelve historic PACs existed within the

study area and were the focus of the current study. Additionally, each PAC was mapped by forest biologists with appropriately located Spotted Owl calling stations. Calling Stations were provided as point data, located approximately 0.4 miles apart, and were located based on topography, projected auditory coverage, access, and the known response distance for the species. Calling stations were utilized during night surveys to determine the presence or absence of owls, and were conducted following federal Mexican Spotted Owl survey protocols (US Fish and Wildlife Service 2003). At each call station, the Mexican Spotted Owl four-note location call (Forsman et al. 1984) was vocally imitated by surveyors or broadcast by a compact disc and speaker system. Night surveys were conducted in each PAC until an owl was detected or until the PAC had been surveyed four times during the breeding season. During survey periods, up to fifteen minutes of hooting and listening were spent at each calling station. If an owl(s) was detected, compass triangulation was used to approximate the location for daytime follow-up surveys. A single detection of an owl(s) during a night-time survey resulted in an occupied designation for the corresponding PAC and no further night-time surveys were conducted in that area. All night surveys were conducted between 30 April and 31 July.

Daytime reconnaissance of all PACs and calling stations was conducted in early April. The Cherry Creek PAC was dropped after the initial daytime reconnaissance period, due its relative inaccessibility, time constraints, and related night-time safety issues for a single researcher. But, a Spotted Owl pair in a newly discovered occupied area (called Lower Cherry Creek in this report) was added to the study. Currently, no PAC boundaries have been set for the newly located pair. Regardless, the total number of surveyed areas in the study remained at twelve.

By the end of June, 10 of 12 PACs were found to be occupied and night surveys were replaced by daytime follow-up visits in search of owl roosts, breeding pairs, nests, and fledglings. Universal Transverse Mercator coordinates (UTM, North American Datum 1927) were recorded for each roost and nest site location (Table 1). Due to time constraints and the logistics associated with access to roost sites, confirmed owl pairs with known roost sites were targeted for further reproductive analysis in late June and July. Those PACs that were found to be occupied but that had unknown pair status and/or unknown roost location data by the end of June received little further effort. Daytime roost checks throughout late June and July were focused primarily on the determination of breeding status, and the mousing of owls was used extensively during this time. The object of mousing, is to present an adult bird with a live prey item – a mouse – and follow its fate. Five outcomes are generally possible: (1) the owl will eat the mouse, (2) the owl (if male) will present the mouse to its mate, (3) the mouse will be cached, (4) the mouse will be taken to a nest, or (5) the mouse will be taken to a fledgling. Mousing was conducted following federal protocol (US Fish and Wildlife Service 2003) as the most efficient way to determine a confirmed pair's reproductive status. Up to four mice were presented to an owl or owl pair during each mousing visit. Mousing continued during each visit until all four mice were taken, positive reproductive data was obtained, or the owls lost interest.

In conjunction with mousing, visits to confirmed pairs with known roost sites included extensive daytime roost area searches for nests and fledglings, as well as night visits in July and early August to listen for juvenile begging calls. By mid-July it became

increasingly apparent that the majority of confirmed pairs were not reproductively active, having either chosen to forgo breeding in 2012 or suffered (undetected) nest failure, possibly due to severe drought conditions prior to the breeding season. But, field visits from mid-July through early August continued to focus on fledgling discovery.

RESULTS

Night surveys conducted from calling stations in May and early June revealed that eleven of the twelve PACs (92%) were occupied in 2012. By the end of July, seven of the eleven occupied PACs under investigation were determine to have confirmed pairs, with six of those PACs having confirmed roost sites.

By the end of the field season, over forty mice had been presented to confirmed pairs with known roost sites. Only two mice, fed in succession to the Lower Cherry Creek female, provided positive reproductive data. Both mice were immediately taken by the female to a nest cavity in a large Gambel's oak. That nest subsequently fledged two young on 25 June. The rest of the mice distributed in 2012 were either eaten immediately or cached, with the former being the most common outcome. No other nests or positive reproductive data were obtained. Specific results for each PAC are summarized below, with a tabular summary of results in Table 1. PAC boundaries, including point data for call stations, active roost sites and nest locations are presented in Figures 3-6.

Black Peak MSO PAC

The Black Peak MSO PAC was visited five times during the study, including an initial reconnaissance of the PAC on 19 April. On 10 May, the first night survey of the PAC,

hooting elicited a response from a male near call point PAC 030607008 CS 1 (Appendix 1). No female was detected. On 11 May, a daytime follow-up visit was conducted, but an extensive search of the response area did not detect any owls. A second night survey was conducted on 29 May, but no MSO responses were obtained. Although this PAC was then excluded from further reproductive analysis, a final night visit on 26 July again documented a male near PAC 030607008 CS 1. The male was very responsive and called repeatedly for approximately 30 minutes, but no female was detected. Although it is possible a breeding MSO pair was present in this area, our results suggest that in 2012 the Black Peak MSO PAC was occupied by a single, non-breeding male.

Cherry Creek MSO PAC

An initial day-time reconnaissance of the Cherry Creek MSO PAC was conducted on 11 April. Because night-time access to this PAC was deemed problematic both in terms of time and safety, and because an additional breeding pair was discovered adjacent to this PAC in lower Cherry Creek, the Cherry Creek PAC was dropped from further analysis. But, calling stations PAC 030607012 CS 1 and PAC 030607012 CS 2 were included in night surveys of the Little Cherry Creek PAC until that PAC was confirmed as occupied and daytime follow-up visits began. No MSO responses were obtain at either call point.

Lower Cherry Creek MSO PAC

On a hunch, a casual evening survey was conducted in lower Cherry Creek on 11 June and a response from a male MSO was documented. The male was followed to a small side canyon on the southeast side of NM 15, about a quarter mile south of the point where

Cherry Creek crosses the highway. A female MSO was discovered in the same side canyon and the pair was targeted for mousing. On 12 June, two mice were presented to the female MSO and both mice were taken to a cavity in a large Gambel's oak growing on the steep hillside just south of the canyon and about 100 m from NM 15 (UTMs [NAD27]: 759018, 3644181) (see Figure 6). The female emerged from the cavity after her second visit with what appeared to be a wood rat carcass and it was assumed this was an active nest. Daytime nest checks conducted on 14 June and 16 June found the female guarding the nest, although no nestlings or fledglings were yet visible. On 25 June, two young and the female were observed in the nest tree, outside the nest cavity. On 2 July, two fledglings were located approximately 15 to 20 meters upslope of the nest tree, roosting in a Gambel's oak with the female. The male was found at the top of the canyon in the primary roost site, which was littered with feathers, whitewash, and pellets (UTMs [NAD27]: 759056, 3644176). On 20 July, both fledglings and both adults were found roosting at the primary roost site. A final night visit was conducted on 1 August to listen for juvenile begging calls, and both fledglings were heard vocalizing continuously just upslope from NM 15, approximately 200 m southwest of the nest site.

Little Cherry Creek MSO PAC

An initial daytime reconnaissance of the Little Cherry Creek MSO PAC was conducted on 10 April. On 14 May no MSO response was detected during a night survey. On 11 June, a male responded during a daytime visit and was visually located in the first 400 m, heading upstream, from where the Little Cherry Creek trail leaves the road and becomes a foot path to the Continental Divide Trail (UTMs [NAD27]: 0761258, 3643622). No

female was detected. On 14 June, another daytime visit resulted in no detections. In late July, a hiker claimed to have just seen a MSO pair in the same area that the male was previously located, but no additional visits were made to confirm that status, as the remainder of the field season was spent at more accessible sites. Although no female was detected during surveys, the possibility remains that Little Cherry Creek is occupied by a MSO pair.

McMillen MSO PAC

During the initial reconnaissance of the McMillen MSO PAC on 9 April, a male MSO was detected approximately 440 m from McMillen campground, roosting in the stream bottom of the canyon that drains into the campground and Cherry Creek from the east (UTMs [NAD27]: 0760676, 3646275). On 11 May, a daytime follow-up visit confirmed a MSO pair and roost site (UTMs [NAD27]: 761778, 3645719). The pair also was documented at the roost site on 23 May. The easy accessibility of the McMillen pair allowed for frequent visits throughout June and July (6, 13, 14 June, and 1, 6, 20 July), with considerable effort spent on mousing, nest searching, fledgling searching, and night-time listening for juvenile begging calls. A total of twelve mice were provided to this pair, with all mice eaten, held, or cached. All visits to this pair resulted in a quick detection of both adults, often roosting together, through early August. No PAC visit resulted in any positive reproductive data. The frequency of visitation, the consistency of adult behavior, the results of mousing, and the lack of detected fledglings strongly suggest that this pair either did not breed in 2012, or suffered an early-season, undetected nest failure.

Redstone #1 MSO PAC

An initial reconnaissance of the Redstone #1 MSO PAC was conducted on 12 April. On 17 May, the first night survey resulted in no MSO detections. On 28 June, a night survey detected a MSO pair in the canyon immediately to the west of PAC 030607001 CS 1. A daytime follow-up visit on 29 June did not detect any owls, but on 2 August an evening/night visit resulted in the visual detection of the male at a confirmed roost site in the canyon bottom (UTMs [NAD27]: 765752, 3647308) and the auditory detection of a female on the slope above him, approximately 100 m to the west. The male was moused during this visit, with one mouse eaten and one mouse held until after dark. A search of the roost area did not detect any fledglings. Although no juvenile begging calls were heard and no mice was taken to a nest or fledgling during this visit, insufficient time was spent with this pair to make a reliable conclusion regarding their breeding status. Due to budget and time constraints this pair and their roost area were discovered too late in the season for multiple observations to be made.

Redstone #2 MSO PAC

An initial daytime reconnaissance of the Redstone #2 MSO PAC was conducted on 16 April. On 15 May, a night survey detected a male MSO near call station PAC 030607002 CS 1. Daytime visits on 31 May and 23 July, including an extensive search of the PAC for possible roost areas, failed to locate any birds. Much of the PAC also appeared to be unsuitable for Spotted Owls due to recent fire activity. No pair confirmation was established.

Redstone #3 MSO PAC

An initial reconnaissance of the Redstone #3 MSO PAC was conducted on 5 April. The first night survey of the PAC was conducted on 30 April and detected a male MSO. On 8 June, a daytime follow-up visit resulted in pair and roost site confirmation (UTMs [NAD27]: 763462, 3649074). Mousing was conducted on 9 June, 15 June, and 4 July, with all mice eaten, refused, or cached. Daytime roost checks, including nest and fledglings searches, were conducted on 7 July and 24 July, with no positive reproductive results. A final night visit was conducted on 1 August to listen for juvenile begging calls, but none were detected. Seven visits to the PAC resulted in the detection of owls, usually in the primary roost area, and on five occasions the pair was either near one another or perched together. This behavior was consistent through early August and suggests, along with the results of mousing, and the lack of detected fledglings, that this pair either chose to forgo breeding or failed in 2012.

Redstone #4 MSO PAC

An initial daytime reconnaissance of the Redstone #4 MSO PAC was conducted on 5 April. On 30 April, a night survey detected a male at PAC 030607004 CS 1. On 26 May, with the help of mobbing Steller's Jays (*Cyanocitta stelleri*), a male MSO was visually confirmed and followed to a roost site about 400 m up Jaybird Canyon (UTMs [NAD27]: 761895, 3652354). On 30 May, a male and female were located at the roost site and subsequently moused. Mousing also occurred on 9 June, 15 June, and 3 July. A total of 14 mice were provided to this pair, with all mice either eaten or cached. Mousing resulted in no positive reproductive data. Additional visits to the roost area occurred on

21 July and 2 August in an attempt to confirm breeding status. Although the pair was consistently found together in the roost area, extensive searches failed to detect any evidence of breeding. The combination of extensive site visits, mousing, and consistent pair encounter without fledgling detection suggests this pair did not breed in 2012.

Sheep Corral MSO PAC

An initial daytime reconnaissance of the Sheep Corral PAC was conducted on 6 April. On 7 May, the first night survey detected a male MSO near call station PAC 030607009 CS 1. A follow-up visit on 8 May resulted in no detections. On 5 June, a night survey provided pair confirmation. The following morning, the pair was visually located and moused in a newly-confirmed roost area (UTMs [NAD27]: 751172, 3652604). Three mice were presented to the pair and all three were eaten. Logistically, the Sheep Corral MSO PAC was difficult to access both in terms of time spent and road conditions, so little further effort was spent toward the acquisition of reproductive data. An additional evening/morning site visit on 30-31 July to search for fledglings and listen for juvenile begging calls detected the male in the roost area and the female north of the roost area, high on the canyon slope making contact calls after dark. No fledglings were detected, although one downy feather was acquired that may have been juvenal. No reliable conclusion regarding the reproductive status of this pair in 2012 can be made.

Tadpole #1 MSO PAC

An initial daytime reconnaissance of the Tadpole #1 MSO PAC was conducted on 18 April. On 20 May, a night survey detected a male MSO near call station PAC 030607005

CS 5. As per USFWS (2003) protocol, no additional night surveys were required due to the initial detection on 20 May. A daytime visit on 6 June resulted in no further detections. Due to the lack of a confirmed pair or a confirmed roost site, the PAC was not chosen for further reproductive analysis throughout July and early August.

Tadpole #2 MSO PAC

An initial daytime reconnaissance of the Tadpole #2 MSO PAC was conducted on 18 April. Night surveys conducted on 22 May, 3 June, 19 July, and 31 July resulted in no MSO detections. This was the only PAC surveyed where no owls were detected.

Tadpole #3 MSO PAC

An initial daytime reconnaissance of the Tadpole #3 MSO PAC was conducted on 17 April. On 18 May, the first night survey resulted in the confirmation of a MSO pair near call station PAC 030607007 CS 1. Daytime visits on 19 and 27 May produced no further detections. Time constraints prevented further visits to this site. This was the only confirmed pair where no confirmed roost site or reproductive information was obtained.

DISCUSSION

In 2012, Mexican Spotted Owls in the Pinos Altos range of the Gila National Forest exhibited a high occupancy rate and a low rate of reproductive success. This outcome is not uncommon for Spotted Owls, who have a high rate of annual adult survivorship and a low rate of fecundity due to a strong sensitivity to temporal variations in climate and prey abundance. The high occupancy rate was somewhat unexpected (A. Ybarra, personal comm.) given documented declines in targeted populations regionally between 1990 and 2005 (Ganey et al. 2011). However, because populations of Mexican Spotted Owls appear to track reproduction with a short "lag period" (Seamans and Gutiérrez 1999), and because regional reproduction improved in 2004 and 2005, with numerous young fledged in those years (Air Combat Command 2006), the hypothesis by Ganey et al. (2008) that occupancy rates might have increased in 2006 and subsequent years in the Gila region is supported by this study.

The most surprising result of the current study is the apparent fact that the majority of confirmed pairs in the study area with known roost sites were either unsuccessful very early on, or chose to forgo breeding entirely in 2012. Although it is difficult to prove a negative, the consistency of visitation, the consistent presence of both males and females at roost sites throughout the breeding season (often perched together), the negative results of mousing, and the extreme drought conditions present throughout the spring and early summer of 2012 suggest that breeding activities were significantly curtailed this year.

According to the National Oceanographic and Atmospheric Administration (NOAA) weather service, the water year (October 2010 to September 2011), that preceded the

survey period was the second driest on record for New Mexico, with a precipitation average for the state that was 60% of normal levels. Drought conditions can limit populations of small mammals, the primary prey base for Mexican Spotted Owls. Decreased prey availability can lead to owl breeding failures or reproductive skipping, a well-known behavioral trait of the Mexican Spotted Owl, where much of the population will nest during good years and only a small proportion of pairs will nest in bad years (Gutiérrez et al. 1995). Reasons for reproductive skipping are still poorly understood but are thought to be connected to temporal variations in food resources and weather. But, we cannot rule out the possibility of undetected nest failure or even undetected breeding in some PACs.

Mexican Spotted Owls are known to consume a wide variety of animals, but diet biomass in the Gila region is dominated by a relatively few types of nocturnally active small mammals, including wood rats, mice, rabbits, voles, and pocket gophers, with Mexican Woodrat (*Neotoma mexicana*) being the dominant prey in most studies (Ganey 1992). The environmental factors influencing variations in the total available biomass of prey species for Mexican Spotted Owls are not well understood, but because climate and resulting weather patterns drive most ecological processes, the persistent, ongoing drought in the study area and throughout the region is likely affecting the vital rates of many desired prey species. Rapid changes in coevolved interactions, such as predator-prey relationships, are one of the primary threats of the emerging phenomenon of climate change to the Mexican Spotted Owl. In fact, climate change may be the biggest issue facing this species in years to come (see Ganey et al. 2011). So far, no empirical data are

available on the effects of climate change on Mexican Spotted Owls, although the lack of breeding documented in this study may be an early indicator of future management challenges.

Mexican Spotted Owls in the Pinos Altos range of the Gila National Forest provide a unique opportunity for further study. One of the primary benefits of the current study is that at least five of the PACs that have newly confirmed pairs, as well as roost and/or nest sites. These are some of the most easily accessible owls in the Gila and are ideal for more rapid assessment. Time taken for initial reconnaissance, night-time survey effort, and roost identification represented a considerable portion of this study's total time budget. With that effort already completed, longer-term, more focused research is possible. Understanding the effects of climate change on owl habitat and owl/prey vital rates might require, for instance, multi-year data from repeated localities at a temporal scale that provides high correlation between temperature, precipitation, prey-base biomass, and reproductive success. If climate change is, indeed, the biggest issue facing Mexican Spotted Owls in years to come, then consistent monitoring of known pairs and known roost sites in an area as easily accessible as the Pinos Altos range would be both efficient and valuable.

Although Spotted Owl pairs were confirmed at seven PACs in 2012, the number of visits was insufficient to determine breeding status at three of those sites (Redstone #1, Sheep Corral, Tadpole #3). In retrospect, additional visits should have been made to these three

sites. Time and budgetary limitations were the overriding factors that led to the decision to limit visits to these sites. In the event of future monitoring of this study area, we recommend an increased budget that will allow for additional field time to more completely determine the breeding status at all occupied PACs. Because Spotted Owls may begin nesting by early March (Gutierrez et al. 1995) we also recommend that field work be initiated in March (or as early as accessible at higher elevations). An earlier start to the field season might increase the likelihood of nest documentation as well as early-season nest failure.

ACKNOWLEDGEMENTS

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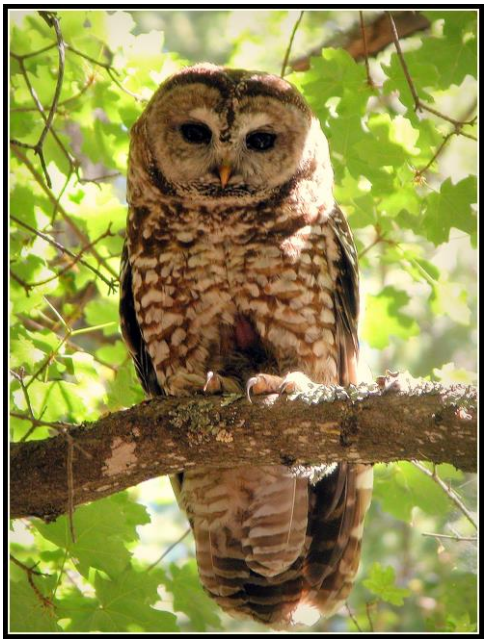

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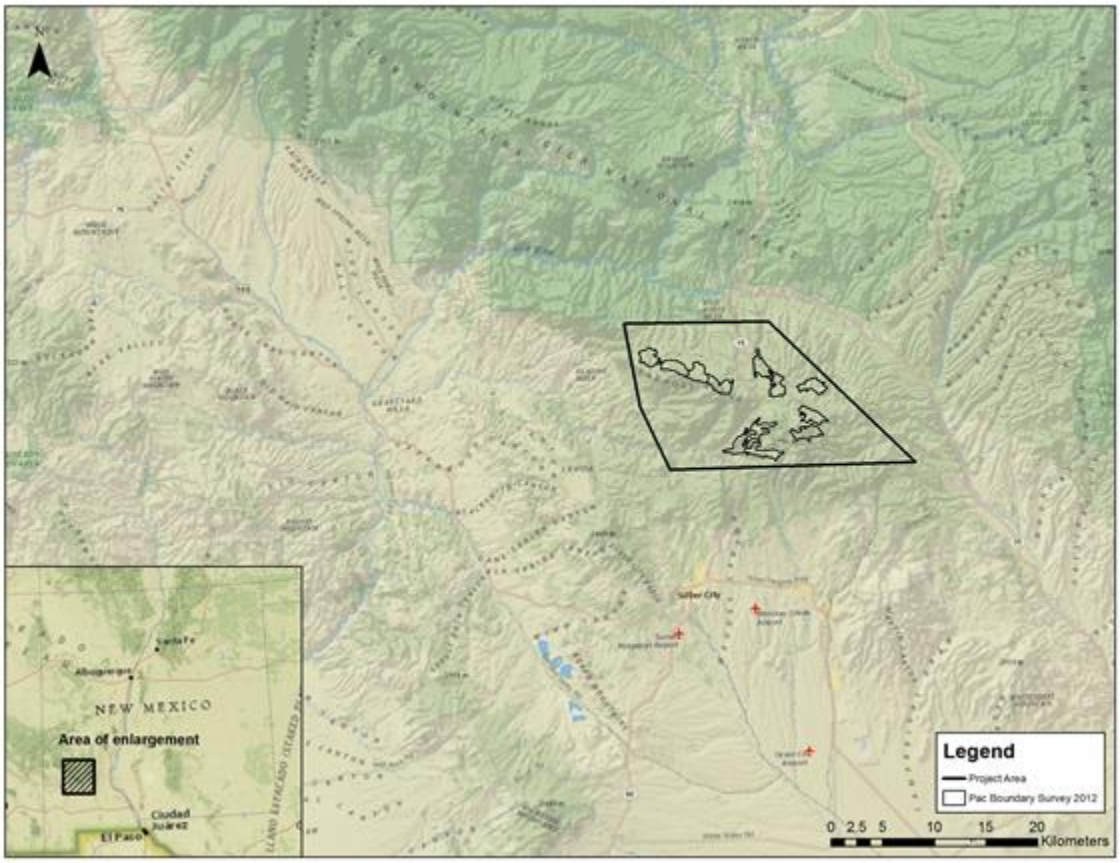

Figure 1. Location of the 2012 Mexican Spotted Owl inventory study site in the Pinos Altos range, Gila National Forest, New Mexico.

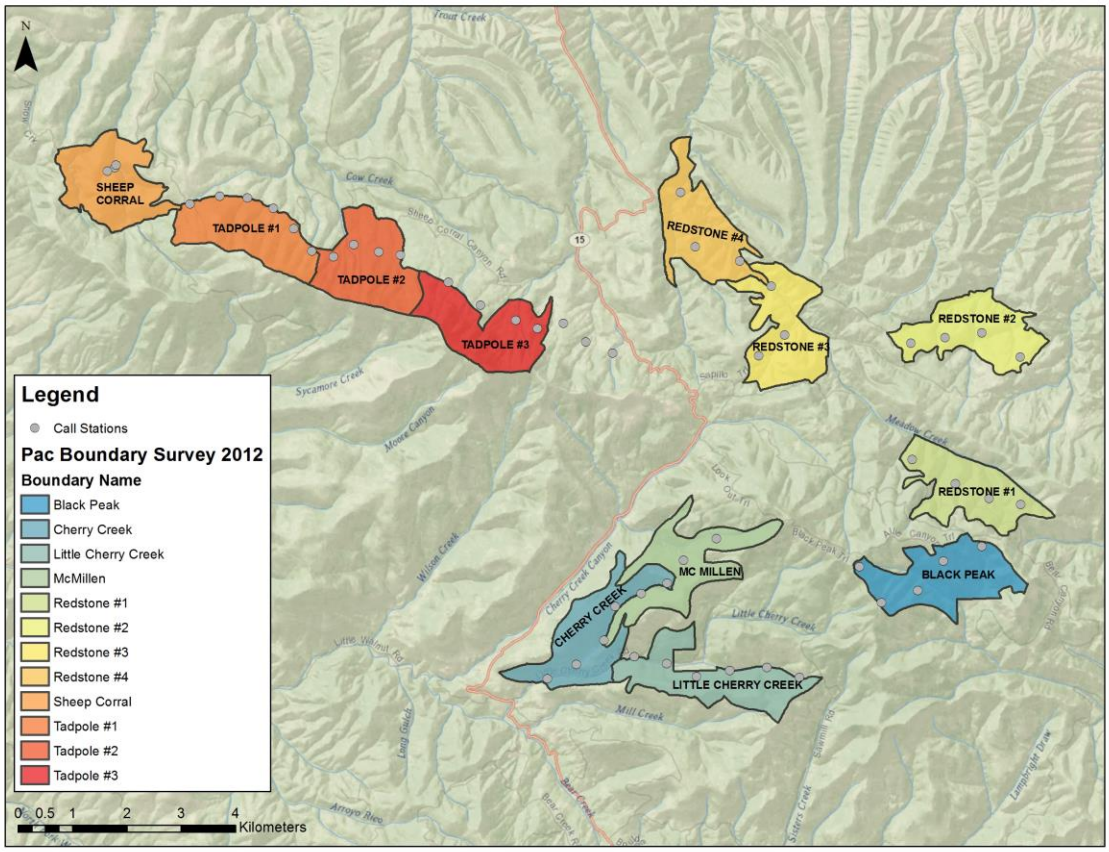

Figure 2. Location of 2012 Mexican Spotted Owl PAC boundaries in the Pinos Altos range, Gila National Forest, New Mexico.

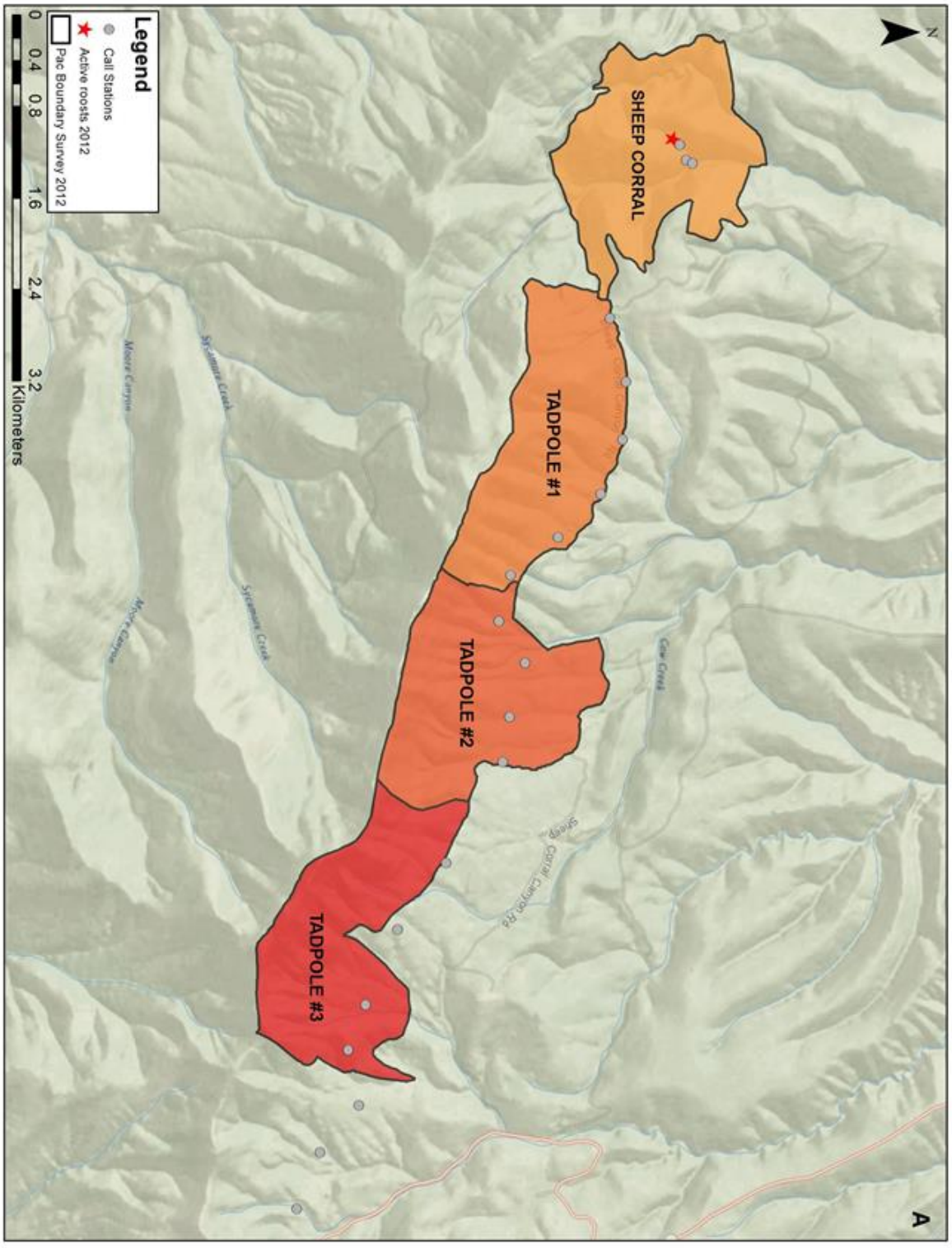

Figure 3. Locations of 2012 call stations and active Mexican Spotted Owls roosts in the Sheep Corral, Tadpole #1, Tadpole #2 and Tadpole #3 PACs, Pinos Altos Range, Gila National Forest, Grant County, New Mexico.

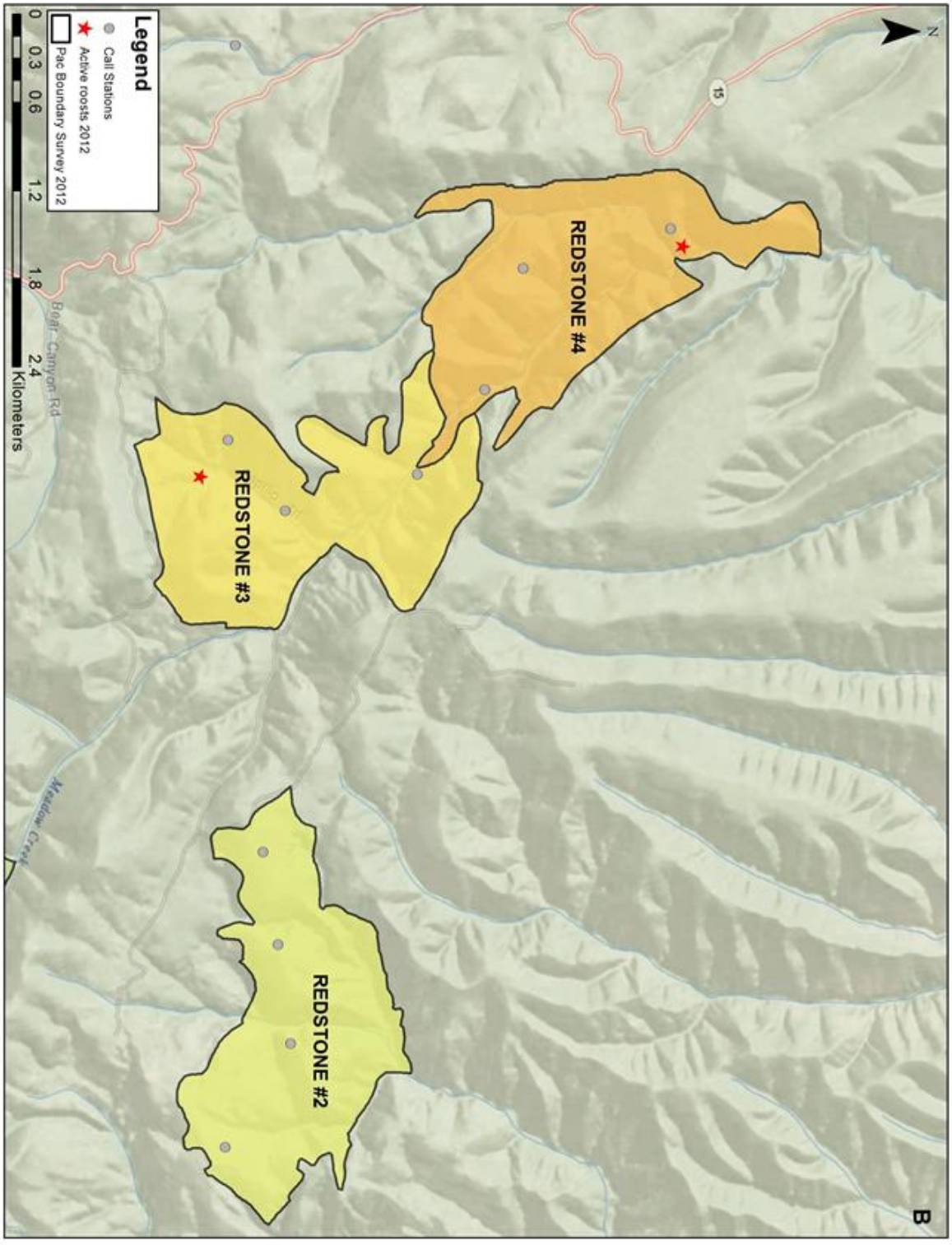

Figure 4. Locations of 2012 call stations and active Mexican Spotted Owls roosts in the Redstone #2, Redstone #3 and Redstone #4 PACs, Pinos Altos Range, Gila National Forest, Grant County, New Mexico.

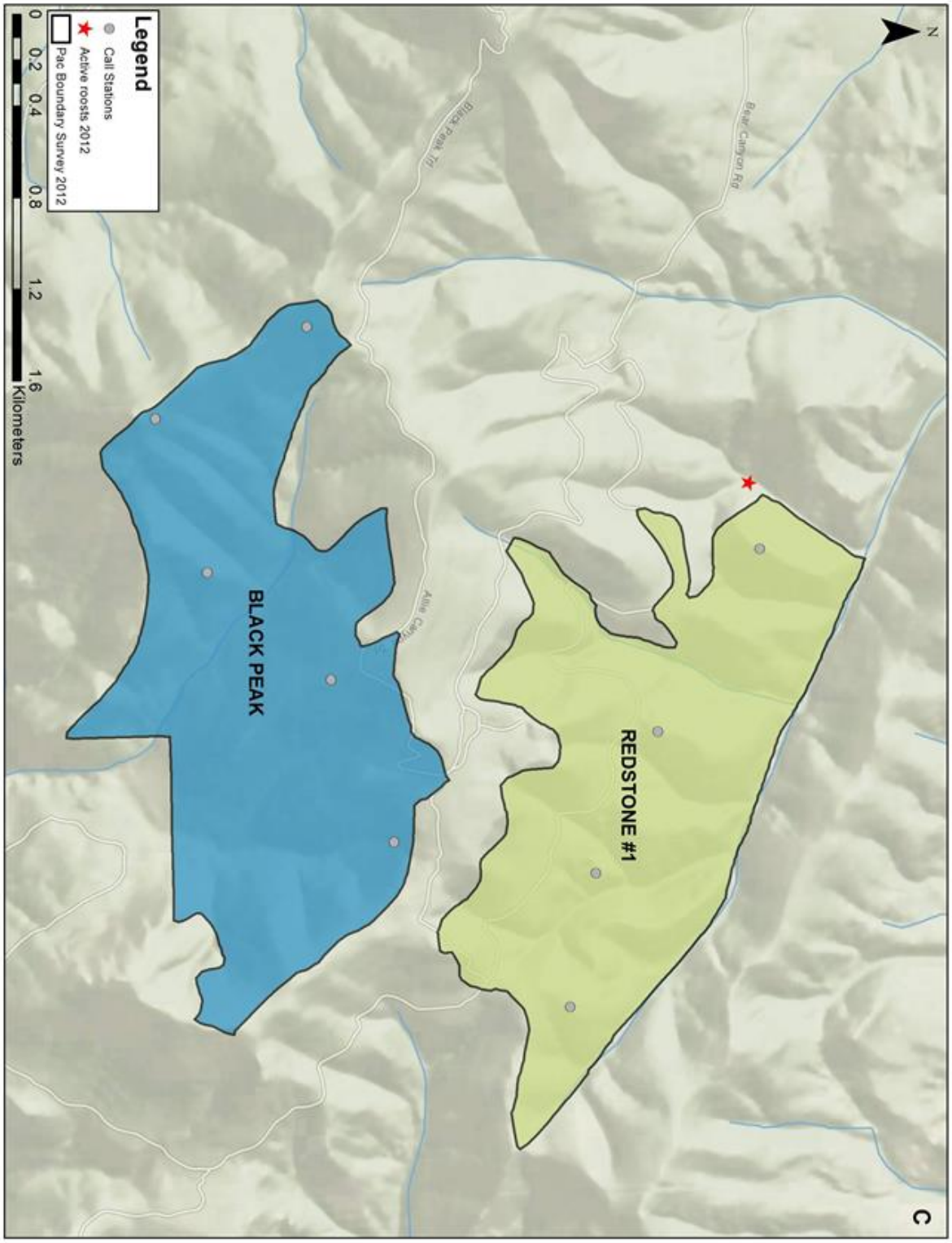

Figure 5. Locations of 2012 call stations and active Mexican Spotted Owls roosts in the Redstone #1 and Black Peak PACs, Pinos Altos Range, Gila National Forest, Grant County, New Mexico.

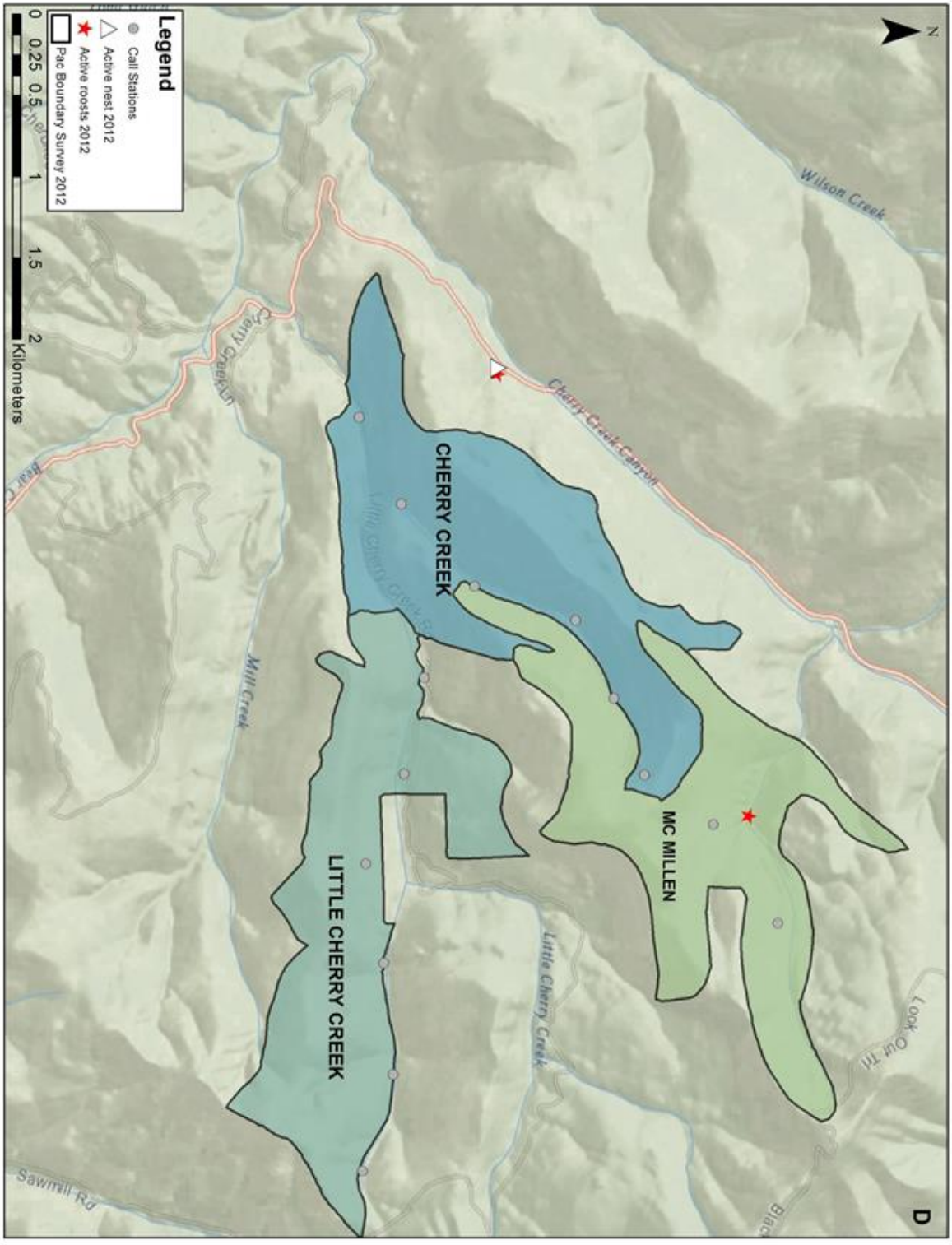

Figure 6. Locations of 2012 call stations and active Mexican Spotted Owls roosts in the Cherry Creek, Little Cherry Creek and McMillan PACs, Pinos Altos Range, Gila National Forest, Grant County, New Mexico.

Table 1. Summary of 2012 occupancy status, roost locations and breeding activity for Mexican Spotted Owl PACs, Pinos Altos Range, Gila National Forest, Grant County, New Mexico.

PAC Name	Confirmed Occupancy	Confirmed Pair	Roost UTMs (NAD 27)	Nest UTMs (NAD 27)	# Fledged
Black Peak	Yes	-	-	-	-
Cherry Creek	N/A	N/A	N/A	N/A	N/A
Little Cherry Creek	Yes	-	-	-	-
Lower Cherry Creek	Yes	Yes	759056, 3644176	759018, 3644181	2
McMillen	Yes	Yes	761778, 3645719	-	-
Redstone #1	Yes	Yes	765752, 3647308	-	-
Redstone #2	Yes	-	-	-	-
Redstone #3	Yes	Yes	763462, 3649074	-	-
Redstone #4	Yes	Yes	761895, 3652354	-	-
Sheep Corral	Yes	Yes	751172, 3652604	-	-
Tadpole #1	Yes	-	-	-	-
Tadpole #2	-	-	-	-	-
Tadpole #3	Yes	Yes	-	-	-
TOTALS	**11**	**7**	**6**	**1**	**2**

Appendix 1. UTM Coordinates (Zone 12, NAD83) of Mexican Spotted Owl call stations in the Pinos Altos Range, Gila National Forest, Grant County, New Mexico.

Call Station	Northing NAD 83	Easting NAD 83	Call Station	Northing NAD 83	Easting NAD 83
PAC 030607001 CS 1	3647550	765978	PAC 030607007 CS 3	3650060	759559
PAC 030607001 CS 2	3647110	766775	PAC 030607007 CS 4	3649960	759076
PAC 030607001 CS 3	3646840	767394	PAC 030607007 CS 5	3650110	758682
PAC 030607001 CS 4	3646730	767977	PAC 030607007 CS 6	3650390	758025
PAC 030607002 CS 1	3649700	765953	PAC 030607007 CS 7	3650820	757440
PAC 030607002 CS 2	3649800	766583	PAC 030607008 CS 1	3645580	765009
PAC 030607002 CS 3	3649890	767258	PAC 030607008 CS 2	3644920	765411
PAC 030607002 CS 4	3649440	767963	PAC 030607008 CS 3	3645140	766080
PAC 030607003 CS 1	3649460	763151	PAC 030607008 CS 4	3645680	766549
PAC 030607003 CS 2	3649850	763632	PAC 030607008 CS 5	3645960	767259
PAC 030607003 CS 3	3650750	763383	PAC 030607009 CS 1	3652980	751319
PAC 030607004 CS 1	3652470	761712	PAC 030607010 CS 1	3645700	761767
PAC 030607004 CS 2	3651470	761981	PAC 030607010 CS 2	3646100	762374
PAC 030607004 CS 3	3651200	762805	PAC 030607011 CS 1	3643920	760861
PAC 030607005 CS 1	3651390	754922	PAC 030607011 CS 2	3643800	761455
PAC 030607005 CS 2	3651800	754589	PAC 030607011 CS 3	3643560	762009
PAC 030607005 CS 3	3652170	754212	PAC 030607011 CS 4	3643670	762621
PAC 030607005 CS 4	3652360	753739	PAC 030607011 CS 5	3643730	763306
PAC 030607005 CS 5	3652400	753232	PAC 030607011 CS 6	3643540	763901
PAC 030607005 CS 6	3652250	752676	PAC 030607012 CS 1	3643520	759261
PAC 030607006 CS 1	3651320	756559	PAC 030607012 CS 2	3643780	759794
PAC 030607006 CS 2	3651370	756161	PAC 030607012 CS 3	3644230	760300
PAC 030607006 CS 3	3651510	755692	PAC 030607012 CS 4	3644850	760510
PAC 030607006 CS 4	3651280	755325	PAC 030607012 CS 5	3645090	760990
PAC 030607007 CS 1	3649510	760464	PAC 030607012 CS 6	3645270	761462
PAC 030607007 CS 2	3649720	759971			