Surveys for Mexican Spotted Owls in Rocky Mountain National Park: Preliminary Report

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In Cooperation With:
The National Park Service

ROCKY MOUNTAIN BIRD OBSERVATORY

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EXECUTIVE SUMMARY

Rocky Mountain Bird Observatory conducted surveys for Mexican Spotted Owls and other owl species in Rocky Mountain National Park in April and May, 2007. Surveys were accomplished by broadcasting owl calls at designated points along roads and trails within potentially suitable Spotted Owl habitat in the Park.

We completed 342 point surveys of at least 10 minutes duration (4210 total survey minutes). We surveyed the majority of the established broadcast locations on two occasions, separated by at least 7 days. We completed only one visit to 45 broadcast locations. I recommend that the 45 broadcast stations which received only one visit in 2007 be visited a second time in April or May of 2008.

We did not detect any Spotted Owls. We had 3 detections of Long-eared Owls, 31 detections of Great-horned Owls, 53 detections of Northern Saw-whet Owls, 16 detections of Flammulated Owls, and 1 detection of a Northern Pygmy Owl. It appears unlikely that Mexican Spotted Owls were present in Rocky Mountain National Park in the area surveyed in 2007.

ACKNOWLEDGEMENTS

This project was funded by the National Park Service (NPS), through a cooperative agreement between the NPS and Rocky Mountain Bird Observatory. NPS personnel were extremely helpful in implementing this project: Jeff Connor originally approached us with the idea for this project and provided GIS coverages of Rocky Mountain National Park. Judy Visty procured research permits. Cheri Yost made our stay at McGraw Ranch Research Center extremely comfortable, and provided invaluable logistical assistance.

I thank Angela Johnson and Beth Stallman for conducting owl surveys in cold and snowy conditions. Thanks to the many individuals at RMBO who contributed to this project. I especially thank Rob Sparks for using GIS to provide field maps and the figures in this report.

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INTRODUCTION

The Mexican Spotted Owl (*Strix occidentalis lucida*) is a medium-sized nocturnal owl found in mixed coniferous forests and canyons of the southwestern United States and northern Mexico. In the Rocky Mountains of Colorado and elsewhere, the Mexican Spotted Owl is found in mixed coniferous forest composed of Douglas-fir, white fir, limber pine, ponderosa pine, and other codominant tree species (Rinkevich 1995). The Mexican Spotted Owl was listed as Threatened under the Endangered Species Act in 1993. Historic observations of Mexican Spotted Owls were reported as far north as Larimer County, Colorado (Webb 1983, Kingery 1991). Rocky Mountain National Park (ROMO) contains potentially suitable Spotted Owl habitat. Although there are no recent records of Spotted Owls in ROMO, the Park had not been systematically surveyed for Spotted Owls before our survey in 2007. Furthermore, few surveys for Mexican Spotted Owls in Colorado outside of canyons have taken place in spring, the time during which Spotted Owls are most responsive to surveying.

In consultation with the US Fish and Wildlife Service, the National Park Service (NPS) was asked to identify and manage potential Mexican Spotted Owl habitat (Jeff Connor, National Park Service, personal communication). In addition, NPS was asked to establish whether Mexican Spotted Owls are present or absent within areas scheduled for fuels treatments. Rocky Mountain Bird Observatory (RMBO) surveyed ROMO for Spotted Owls in the spring of 2007. Because it required little additional effort, we also surveyed for other owl species potentially present in the Park.

METHODS

Study Area

Potentially suitable spotted owl habitat was identified by ROMO personnel and transmitted to RMBO. The original map on which our study proposal was based was in the form of a figure in a document. The final map of potentially suitable habitat was in the form of Geographical Information System (GIS) files (Figure 1). The final map indicated substantially more habitat to be surveyed than the original map. Forest cover types identified as potentially suitable Spotted Owl habitat in ROMO included Aspen (*Populus tremuloides*), Cottonwood (*Populus spp.*), Riparian, Mixed Conifer, montane Douglas Fir (*Pseudotsuga menziesii*), and Ponderosa Pine (*Pinus ponderosa*).

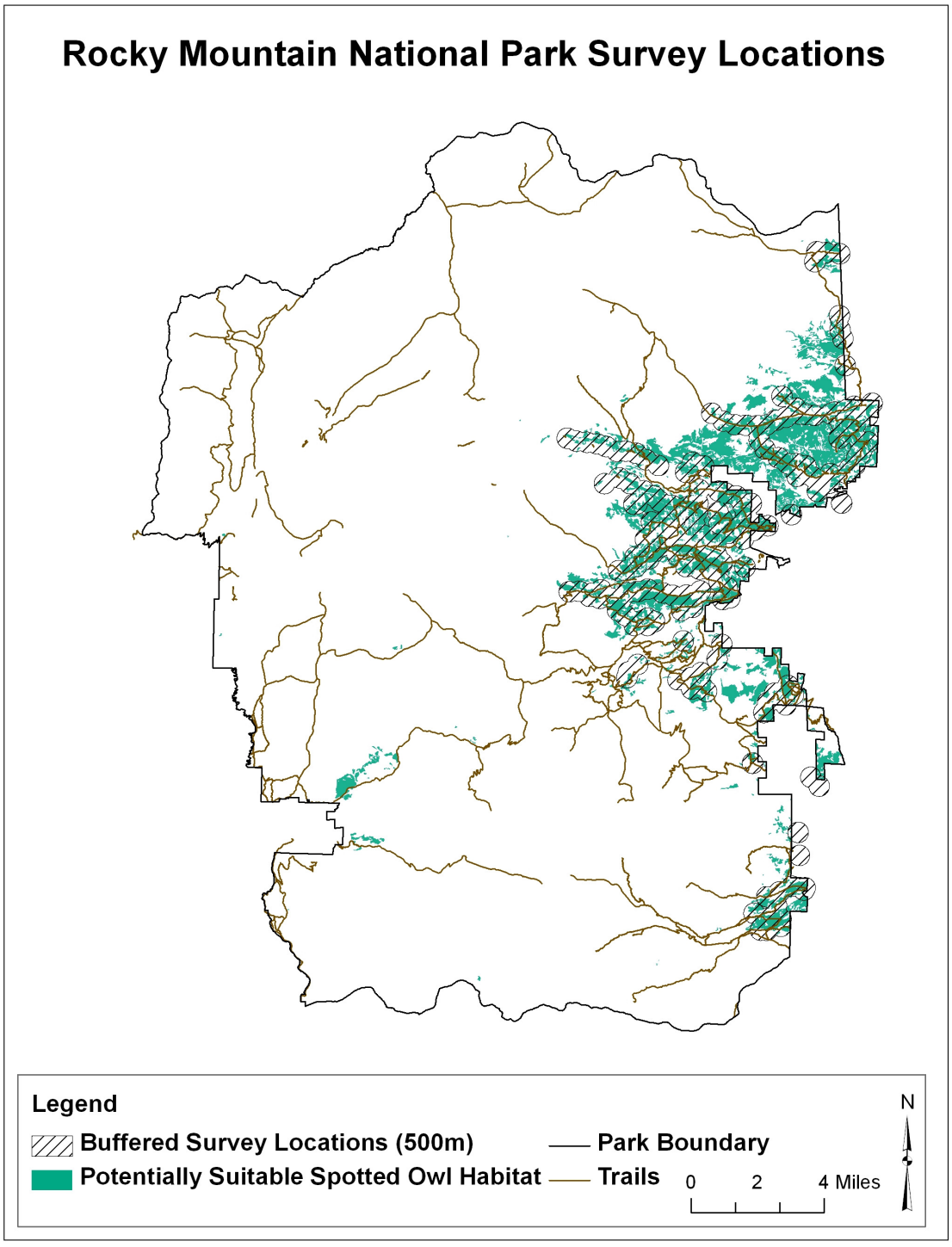

Figure 1. Potentially suitable Mexican Spotted Owl habitat and locations of owl broadcast surveys in 2007.

Field Methods

Rocky Mountain Bird Observatory surveyed portions of Rocky Mountain National Park identified by ROMO as composed of potentially suitable for Mexican Spotted Owls, as described above. The portion of the habitat surveyed was restricted to areas accessible via established roads and trails. Although we had originally proposed surveying off-trail in less accessible areas, we found this was too dangerous to undertake on the spring snow pack in the dark.

Owls are strongly territorial during their breeding season, and readily respond to perceived conspecific intruders. Consequently, when a person imitates an owl's calls within the owl's territory, the owl usually responds by calling back and often flying closer to the person. We took advantage of this behavior by broadcasting recorded owl calls at 197 fixed broadcast locations (survey points). We established survey points approximately 0.5 km (0.3 miles) apart, depending on local topography.

RMBO conducted surveys from 5 April to 1 June 2007, between dusk and dawn. We timed the surveys to target the peak of the breeding season of Spotted Owls (April-May), during which the owls are most responsive to broadcast calls. In addition to surveying for Mexican Spotted Owls, we also broadcast recorded calls of other owl species known to occur within ROMO: Long-eared Owl (*Asio otus*), Boreal owl (*Aegolius funereus*), Northern Saw-whet Owl (*Aegolius acadicus*), Flammulated Owl (*Otus flammeolus*) and Northern Pygmy Owl (*Glaucidium gnoma*). Although the Pygmy Owl is diurnal, it can sometimes be heard calling at dusk. We did not broadcast calls of Great Horned Owls (*Bubo virginianus*) because Great Horned Owls are known to prey on smaller owl species. We did, however, record the locations of all Great Horned Owls detected during our surveys.

Each survey was at least 10 minutes in duration, and consisted of alternating periods of broadcasting owl calls and listening for responses. We recorded the UTM location of every survey point using a hand-held global positioning system (GPS). For each owl detected, we took a compass bearing to the owl, estimated the distance to the owl, and plotted its location on a topographic map. We recorded the sex of the owl whenever it could be determined (usually distinguished by the pitch of the owl's call). Most individual responses were probably male owls, based on owl behavior. On several occasions we detected a male and female owl of the same species in proximity to each other.

As call points were surveyed, the observer also recorded the date, time, and weather data (temperature, percent cloud cover, windspeed). We were prepared to capture, band, and determine the reproductive status of any Spotted Owls located during the surveys (Blakesley 2007).

RESULTS

We completed 342 point surveys of at least 10 minutes duration (4210 total survey minutes). We surveyed the majority of the established broadcast locations on two occasions, separated by at least 7 days. We completed only one visit to 45 broadcast locations.

We did not detect any Spotted Owls. We had 3 detections of Long-eared Owls (Figure 2), 31 detections of Great-horned Owls (Figure 3), 53 detections of Northern Saw-whet Owls (Figure 4), 16 detections of Flammulated Owls (Figure 5), and 1 detection of a Northern Pygmy Owl (Figure 6). Although we attempted to avoid recording detections of an individual owl more than once per survey night, the same individual may have been detected on multiple survey occasions. Therefore, the number of detections cannot be converted to the total number of owls present. However, the Long-eared Owls probably represent 3 individuals. A pair was detected together on one occasion, and a single individual was seen on another occasion approximately 8 km from the location of the pair.

In the Sacramento Mountains of New Mexico, the per-visit probability of detecting a pair of Mexican Spotted Owls at a site, given that an owl pair was present, ranged from 0.49 to 0.81 among studies, with an average = 0.62 (Lavier 2006). Presumably, the probability of detecting a single owl at a site would be higher (less effort is required to detect an individual owl than to detect an owl pair). Given a per-visit detection probability of 0.62, the probability of detecting an owl after 2 visits = 86%. Therefore, for all areas surveyed twice, it is unlikely that Spotted Owls were present in Rocky Mountain National Park during the survey period.

Flammulated Owls are migratory, and were not present in ROMO until May. We broadcast Flammulated Owl calls throughout our field season (beginning 5 April) and recorded our first Flammulated Owl detection on 3 May.

In addition to the broadcast surveys, I followed up on an observation of a juvenile owl that was observed in Rocky Mountain National Park on 16 October 2007 by a ROMO employee. The employee thought it may have been a spotted owl. I went to the same location (Sprague Lake parking lot area) on 28 October and observed (heard and saw) a juvenile Great Horned Owl as well as an adult male and an adult female Great Horned Owl. Presumably, the juvenile owl was the same one seen on 16 October.

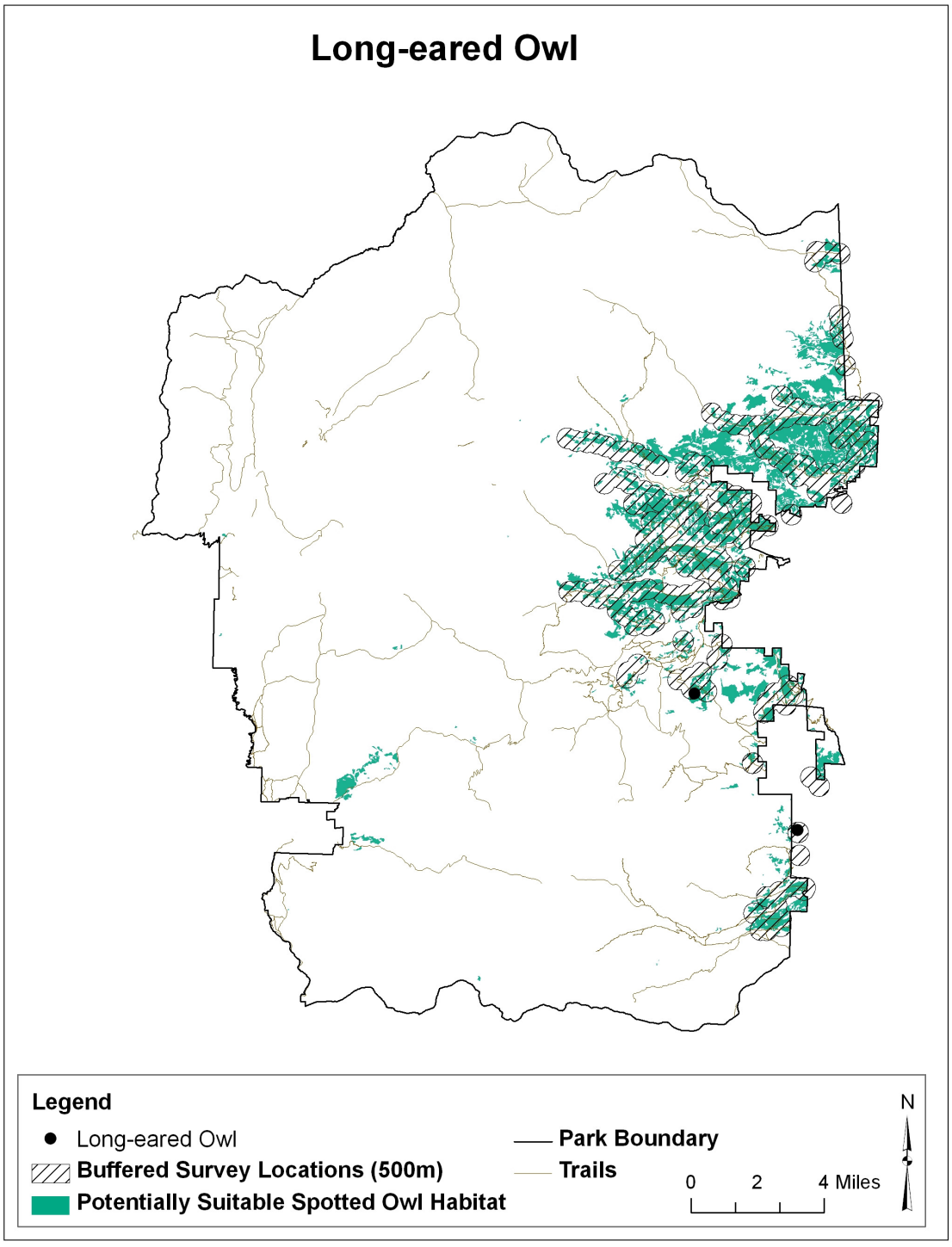

Figure 2. Locations of Long-eared Owl detections in Rocky Mountain National Park, 2007.

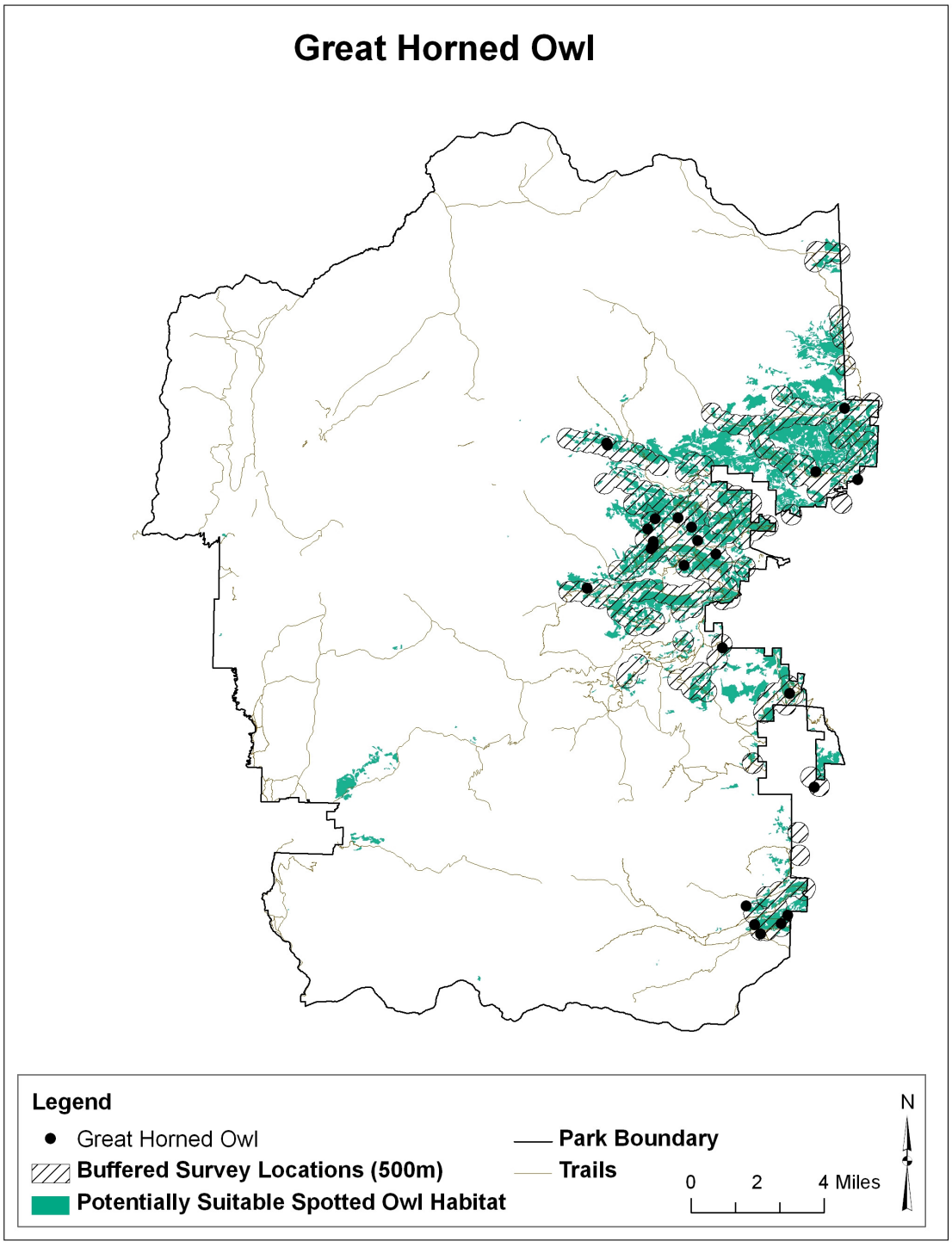

Figure 3. Locations of Great Horned Owl detections in Rocky Mountain National Park, 2007.

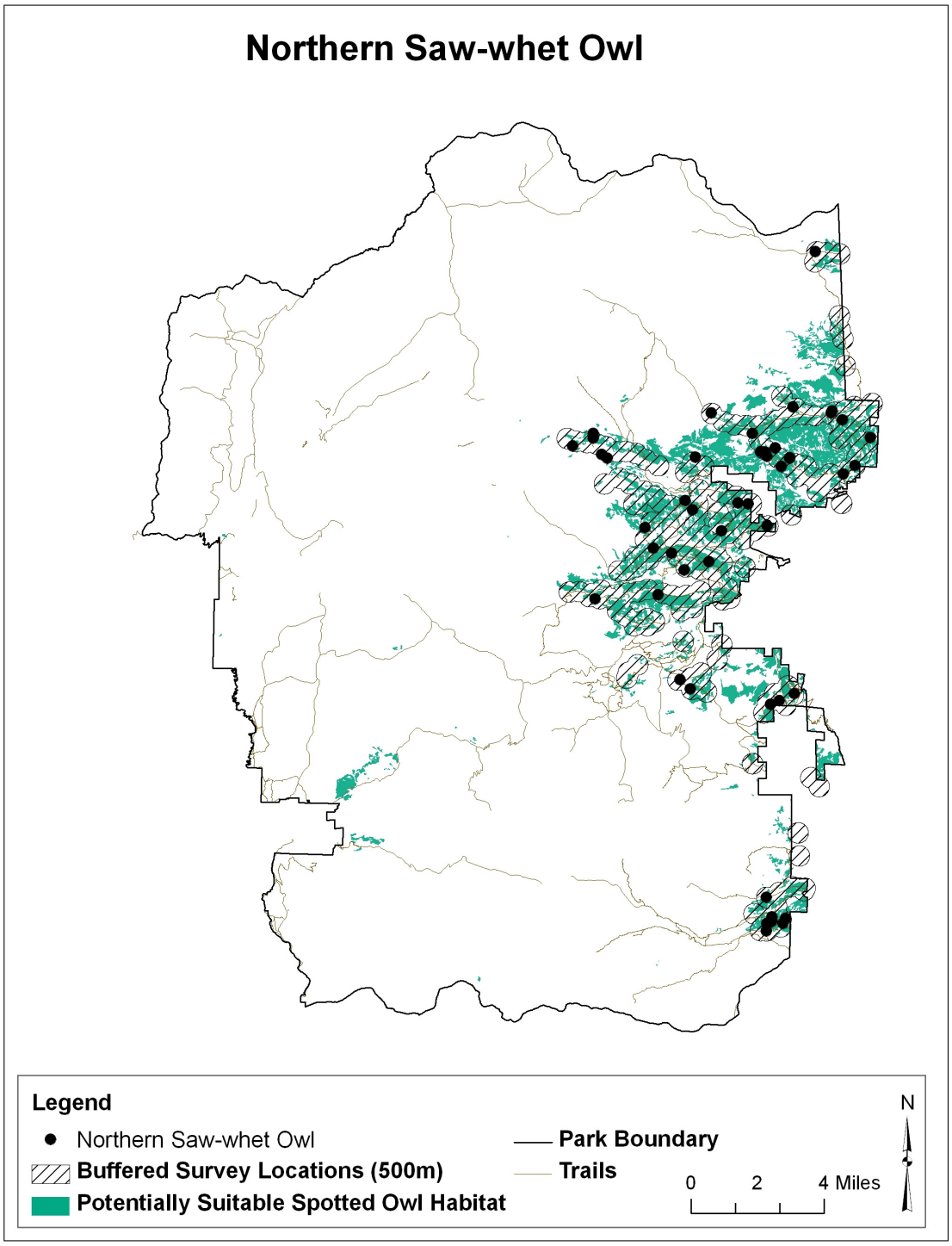

Figure 4. Locations of Northern Saw-whet Owl detections in Rocky Mountain National Park, 2007.

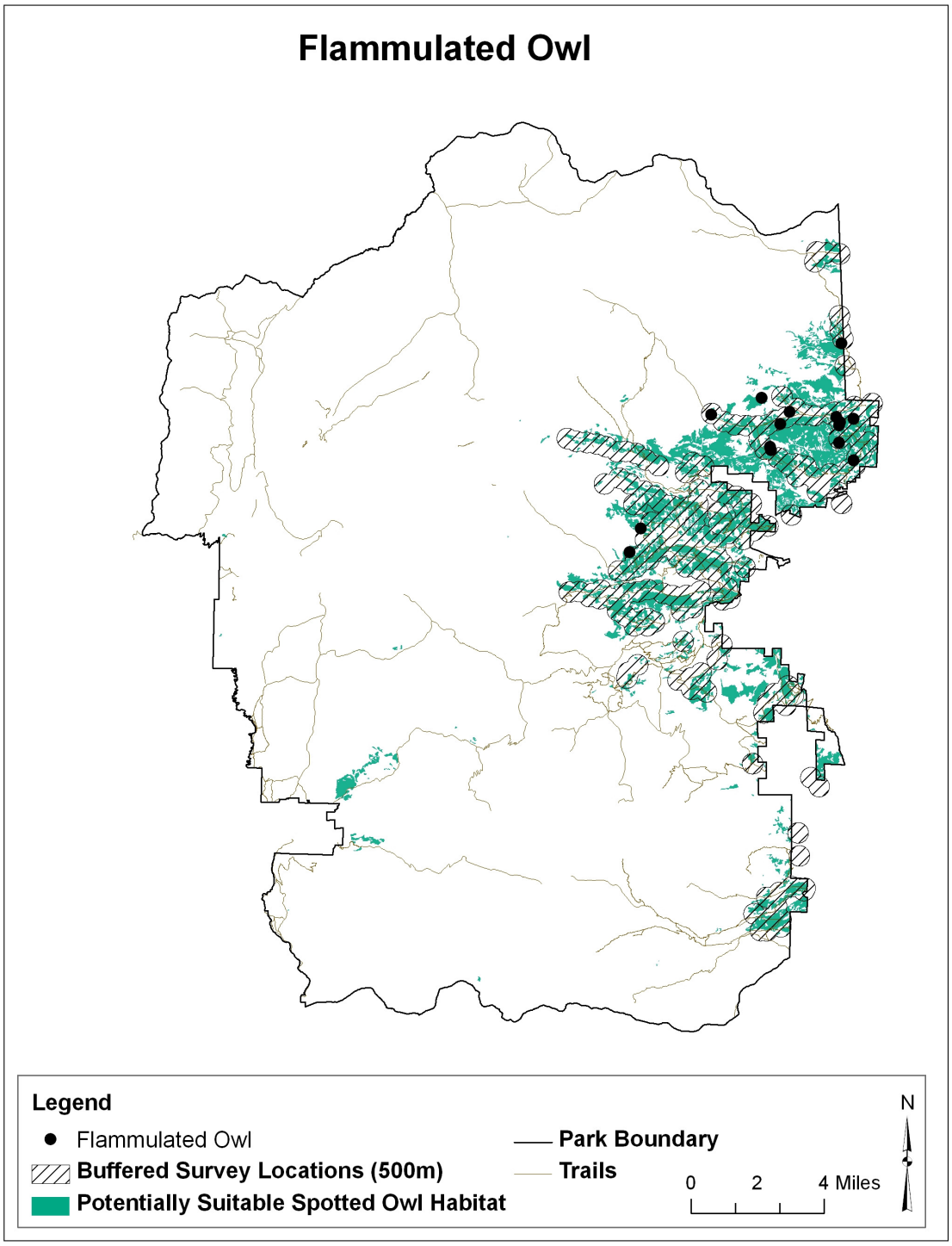

Figure 5. Locations of Flammulated Owl detections in Rocky Mountain National Park, 2007.

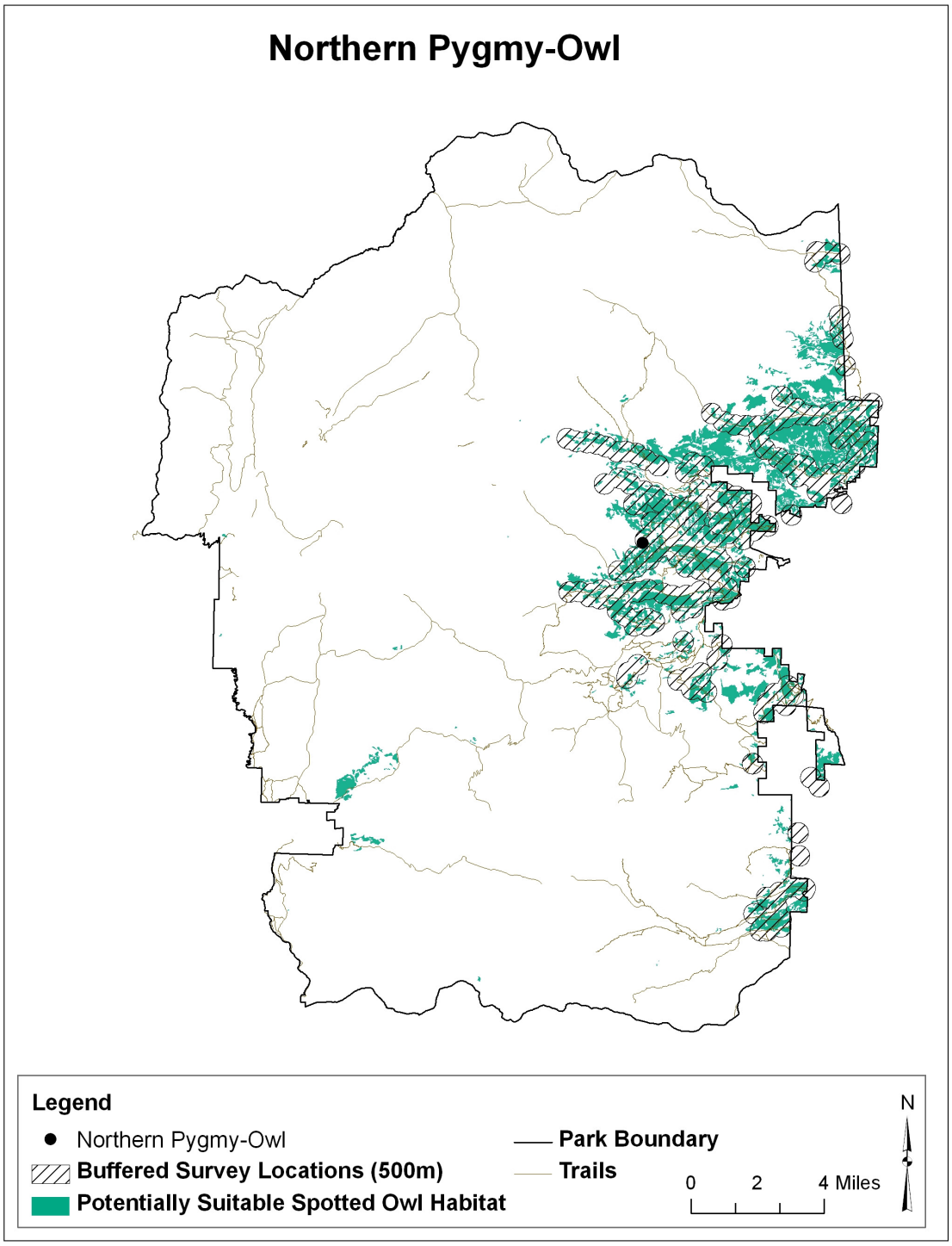

Figure 6. Locations of Northern Pygmy Owl detections in Rocky Mountain National Park, 2007.

DISCUSSION AND RECOMMENDATIONS

It appears unlikely that Mexican Spotted Owls were present in Rocky Mountain National Park in the area surveyed in 2007. Some areas identified as containing potentially suitable Mexican Spotted Owl habitat could not be safely accessed at night due to lack of trails and steep slopes. Figure 1 illustrates the area covered by broadcast surveys, assuming that broadcast surveys could be heard by an owl 500 m away, and the observer would hear an owl calling up to 500 m away. Although we could not assess the distance at which an owl could hear the broadcast calls, Spotted Owls often respond to calls up to (and beyond) 1.5 km away (personal observation). Therefore, the effective area surveyed may be larger than that illustrated in Figure 1.

We were unable to complete 4 surveys at each survey point as originally planned because of an increase in the area identified as potentially suitable Mexican Spotted Owl habitat between the time of our proposal and the time of our surveys. In addition, we experienced more nights with inclement weather in April and May than anticipated.

The Flammulated Owl is listed as a Species of Greatest Conservation Need by the Colorado Division of Wildlife, a Sensitive Species by the US Forest Service, Region 2, a Bird of Conservation Concern by the US Fish and Wildlife Service, and a bird of Continental Concern by Partners in Flight. Any future surveys for Flammulated Owls in Rocky Mountain National Park could make use of the techniques employed by RMBO. Because we broadcast calls of Flammulated Owls during all of our surveys, we were able to identify the approximate date on which this species arrived at Rocky Mountain National Park in the spring. Future surveys targeting Flammulated Owls should be conducted in May and June.

I recommend that the 45 broadcast stations which received only one visit in 2007 be visited a second time in April or May of 2008. This can be accomplished in a short time with one observer, while the majority of the field effort under this contract will be conducted by two full-time technicians in Great Sand Dunes National Park.

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