

**Four Forest Restoration Initiative**  
Mexican Spotted Owl (*Strix occidentalis lucida*)  
Monitoring Report

USDA Forest Service –Coconino National Forest, Flagstaff RD

**2018**



## Introduction

Over the last several years the Coconino National Forest has been coordinating with the United States Fish and Wildlife Service (USFWS) to implement the Four Forest Restoration Initiative (4FRI) First EIS. 4FRI is a collaborative effort between the Coconino, Kaibab, Apache-Sitgreaves and Tonto National Forests intended to restore the ponderosa pine forest ecosystems that stretch along the Mogollon Rim of northern Arizona. Unsustainable historical land use and fire exclusion have severely degraded the health of these forests. The goal of this project is to restore forest ecosystems that support natural fire regimes, functioning populations of native plants and animals, and forests that pose little threat of destructive wildfire to forest communities, as well as support sustainable forest industries that strengthen local economies while conserving natural resources and aesthetic values.

The project proposes landscape scale restoration that has the potential to affect up to 70 known Mexican Spotted Owl (MSO) protected activity centers (PACs). PACs are intended to sustain and enhance areas that are presently, recently or historically occupied by breeding MSOs, and must be at least 600 acres (USFWS 2012). A PAC is not intended to encompass the entire home range of an owl (USFWS 2012). For more information about the MSO, please refer to the 2012 Recovery plan for the Mexican Spotted Owl (*Strix occidentalis lucida*), First Revision, (USFWS 2012).

The effects of forest treatments on owls and their habitat are not fully known, but in Attachment 1 of Appendix E of the 4FRI Environmental Impact Statement (4FRI EIS) (USFS 2015) it was recognized that a “hands-off” approach within PACs may be more detrimental to the owl habitat than the treatments themselves, which could allow the PAC to better withstand a severe wildfire. Therefore, during consultation with the USFWS and the objection resolution, the Coconino NF agreed to a monitoring plan involving 18 to 20 MSO PACs. As stated in Attachment 1 of Appendix E, the plan will pair treated and reference PACs within the project area to compare occupancy, reproductive success, and habitat changes. There will be two groups of study PACs. The first group will consist of PACs receiving thinning and burning treatments and corresponding paired reference PACs (Group 1) and the second group of PACs will consist of PACs receiving prescribed fire-only treatments and their corresponding paired reference PACs (Group 2). Within the two groups, surveys for occupancy and reproductive success will be conducted for at least 2 years prior to treatment and 2 years post-treatment. The USFS had consulted on a total of 18 potential PACs for use in Group 1 and 51 PACs for use in Group 2 for a total of 69 PACs. During consultation with the USFWS, the USFS agreed to monitor three treatment and three reference PACs for Group 1 and six treatment and six reference PACs for Group 2. During the objection resolution period the USFS agreed to add an additional pair of PACs to Group 1. In 2017, the agency dropped one pair of Group 2 PACs (James Canyon/Pumphouse Wash) due to complications in implementing the burning of James Canyon without impacting the adjoining reference PAC, Pumphouse Wash. In 2015 the Flagstaff Ranger District wildlife crew monitored approximately 30 of the 69 MSO PACs that were most likely to have occupancy in order to identify which would best meet the requirements for the monitoring plan. Included in this report are the 2015-2018 results for the PACs that were chosen as treatment and reference PACs based on our 2015 surveys.

## Methods

All surveys were conducted according to the USFWS Mexican Spotted Owl Protocol (2012) unless otherwise noted. These surveys allow us to determine the presence or absence of MSO and to determine reproductive status. Known PACs received an initial daytime visit at the beginning of the season in an attempt to locate and mouse the owls without conducting nighttime calling surveys. Mousing was used to determine the reproductive status when an owl was located. If owls were not located in the PAC or there was an area of suitable habitat that needed to be surveyed, then nighttime surveys were conducted and any detections were followed up within 48 hours by a daytime follow-up survey. Nighttime surveys began by establishing calling points along roads and walking routes to ensure complete coverage of the PACs and survey areas. If calling points existed from previous years, they were retained for consistency. Call points were placed approximately 0.30 – 0.50 miles apart, and a minimum of 4 complete surveys were conducted at appropriate times during the breeding season (March 1 to August 31). Each call point takes a minimum of 15 minutes. For the complete protocol, please refer to the 2012 Recovery Plan (USFWS 2012).

## 4FRI PAC Monitoring Results

In July of 2015, after the reproductive status of many of the PACs was known, a group of Coconino NF biologists coordinated with Shaula Hedwall of the USFWS to determine which six PACs (Table 1), of the 18 consulted on, would best meet the intention of the monitoring plan as required in the Biological Opinion (USFWS 2014). Many variables had to be taken in to consideration when determining which PACs to use, including occupancy, habitat similarity, fire history and percentage of planned treatments. Of the 12 remaining PACs; five (Foxhole, Frank, Knob, Rock Top, T-Six Tank) were not monitored, as the habitat quality was considered so poor that they were highly unlikely to have occupancy; one (Holdup) was surveyed, but found to have no occupancy; another PAC (Sawmill Springs) was affected by the Camillo Fire (2015); and three additional PACs (Red Raspberry, Bear Seep and Red Hill) did not have comparable habitat to the 6 that were already committed, or to the ponderosa pine forest type that 4FRI is affecting. The remaining two (Iris Tank and Bar M) satisfy the commitment made during the objection resolution process to monitor an additional pair of PACs. Shaula Hedwall noted that these two PACs were not ideal for the USFWS study design since the pre-treatment condition differs from the remaining 6 PACs selected for monitoring. While it is true that both PACs experienced disturbance from recent fires (2014), the Forest Service expects that they will still provide additional information when answering questions dealing with the effects of restoration treatments on MSO and their habitat.

**Table 1. 4FRI Mechanical Thinning and Prescribed Burn Treatment PACs (Group 1)**

Treatment	Reference	Requirement
Archies	Lake #1/Seruchos	Biological Opinion
Mayflower Tank	Lee Butte	Biological Opinion
Bonita Tank	Crawdad	Biological Opinion
Iris Tank	Bar M	Resolution Agreement

**Table 2. 4FRI Prescribed Burn Only Treatment PACs (Group 2)**

Treatment	Reference	Requirement
Spruce Tank	Boondock	Biological Opinion
Roundup	Pierce	Biological Opinion
Gash Mountain	MB Smith	Biological Opinion
Mustang	Coulter Ridge	Biological Opinion
Coyote Park	Nestor	Biological Opinion
James Canyon*	Pumphouse Wash*	Resolution Agreement

\*James Canyon and Pumphouse Wash were dropped from the monitoring plan and not surveyed in 2017 or 2018.

**Table 3. Monitoring Results for 4FRI Treatment PACs**

4FRI Prescribed Burn Only (Group 1)				
PAC	2015	2016	2017	2018
Archies	M-NK	A	A	A
Bonita Tank	MF-NK	O-NK	O-2Y	O-NK
Iris Tank	O-NF	O-2Y	O-1Y	O-NK
Mayflower Tank	O-2Y	O-NK	O-NN	MS-NK

4FRI Prescribed Burn Only (Group 2)				
PAC	2015	2016	2017	2018
Coyote Park	O-NK	O-1Y	O-NF	O-NK
Gash Mountain	O-NK	F-NK	O-NK	O-NK
James Canyon	NI	O-NK	NI	NI
Mustang	O-2Y	O-NK	O-NN	O-NK
Roundup	O-NK	A	A	O-NU
Spruce Tank	O-NK	O-NK	O-1Y	S-NK

Occupancy:	Reproductive Status:
A = Absent	#Y = Number of young fledged
O = Pair Occupancy inferred or confirmed	NU = Nesting Unknown ( <b>NOT done to protocol</b> )
M = Male inferred or confirmed	NY = No Young produced, nesting status undetermined
F = Female inferred or confirmed	NN = Non-nesting/Non-reproduction confirmed
S = Single (sex unknown) inferred or confirmed	NF = Nest Failed
NI = No Information (PAC not monitored)	NK = Nesting Unknown ( <b>done to protocol</b> )

**Table 4. Monitoring Results for 4FRI Reference PACs**

4FRI Mechanical Thin and Prescribe Burn (Group 1)				
PAC	2015	2016	2017	2018
Lake #1/Seruchos	O-NK	O-1Y	O-2Y	O-NN
Bar M	M-NK	A	A	A
Crawdad	O-NK	O-NK	O-1Y	O-NN
Lee Butte	O-NK	O-NN	O-1Y	O-NN

4FRI Prescribed Burn Only (Group 2)				
PAC	2015	2016	2017	2018
Boondock	NI	O-NK	MF-NK	O-NN
Coulter Ridge	O-NK	O-NK	O-1Y	O-NK
MB Smith	O-NK	O-NN	O-NN	O-NK
Nestor	O-1Y	O-NK	O-NF	O-NK
Pierce Tank	M-IM	O-NK	O-1Y	O-NN
Pumphouse Wash	NI	O-NK	NI	NI

## Summary

We surveyed 18 PACs this season. Of those, two had no owl detections, one had a single unknown detection, one had a detection of a male and a single unknown, and fourteen had pairs. Based on protocol, five pairs were determined to be non-nesting while the nesting status could not be determined (nesting-unknown) for nine pairs. A non-nesting determination can only be made when a female is seen roosting for at least 60 minutes between April 1 and 30, or one or both members of the pair are offered a minimum of 2 mice, which they cache, sit with for 30-60 minutes, or refuse to take. The non-nesting determination must then be verified with one additional visit between May 15 and July 15. Often times this protocol can be very difficult to meet due to limited owl responses and daylight constraints. The non-nesting determination also includes owls that may have nested and failed prior to the first surveys.

It is worth mentioning, of the 58 PACs surveyed (35 to protocol) by Flagstaff Ranger District personnel in 2018, only two were found to be nesting, one of which failed, and the other fledged one young. Very low productivity and difficulty locating owls seemed to be a region wide (Arizona and New Mexico) trend in 2018. It is surmised that the winter drought conditions may have led to this outcome.

## 2018 4FRI Project Inventories

As agreed in the 4FRI Environmental Impact Statement (USFS 2015), MSO surveys will be conducted in MSO habitat within implementation areas (Task Order (TO)/Timber Sale (TS) or prescribed burn (Rx burn)) plus a half mile beyond the perimeter the year of implementation or one year prior to implementation to determine occupancy in new areas. These are referred to as inventory areas and are surveyed according to the MSO survey protocol (USFWS 2012). Detections of new MSOs will likely result in the establishment of a new PAC.

**Table 5. Inventory areas and acres that were surveyed in 2018 for the 4FRI project area.**  
(RX Burn = prescribed burn TO/TS = Task Order or Timber Sale)

Inventory Name	2018 Survey Results	Project Type	Acres
Bar M Rocky	No response	Rx Burn	1073
Bootleg Antelope	No response	TO/TS	527
Crazy Park	1 detection. Follow-up found no SPOWS	Rx Burn	5125
Dutton Hill	No response	TO/TS	328
Fox	1 detection. Follow-up found no SPOWS	Rx Burn	3131
Horse Park	2 detections. Had one late night visual.	TO/TS	1996
Kachina	No response	Rx Burn	643
Lake Mary West	No response	Rx Burn	1075
LO Pocket	No response	TO/TS	765
Munds Park	No response	Rx Burn	333
Red Hill	Detections led to new PAC LO Spring	TO/TS	1038
Shoreline Lake Mary	No response	Rx Burn	689
West Fork	No response	TO/TS	503
Willard	1 detection. Follow-up found no SPOWS	TO/TS	703

## Summary

The Kachina inventory area was surveyed for a third year due to owl detections in 2016 and 2017. No birds were detected this year. The Crazy Park and Fox Inventory areas both had one spotted owl detection. Both will be surveyed again next year prior to implementation.

The detections in Horse Park and Willard were potentially related and will also be followed up on next year. Detections in the Red Hill Inventory area led to the designation of the new LO Spring PAC.

## Other PACs Surveyed

**Table 6. Other PACs monitored in 2018.**

PAC Name	2018 Survey Results	Reason Surveyed
Casner Cabin	O-NU	Proximity to TO/TS inventory areas.
Fisher Canyon	O-NN	Hand-thinning planned within PAC for Fall 2018.
Foxhole	O-NU	Proximity to TO/TS inventory areas.
Frog Tank	A	Portions were treated (burned) during the Coyote Park PAC Rx.
Geronimo	O-NU	Proximity to TO/TS inventory areas.
Knob	A	If unoccupied after 3 years of survey, can be mechanically treated. Absent in 2017.
LO Pocket	M-NK	Proximity to TO/TS inventory areas.
Mint	O-NN	Surveyed for 3 years due to portions of high severity burn in 2015 Camillo managed fire. 2015 O-NU; 2016 M-NK; 2017 O-NF
Powerline	S-NU	Portions were treated (burned) during the Spruce PAC Rx.
Red Hill	M-NK	Proximity to TO/TS inventory areas.
Sawmill Springs	A	Surveyed due to proximity to the Spruce PAC and portions being treated (burned) during the Spruce PAC Rx. 2015 O-NN; 2016 NI; 2017-A; 2018-A
T-Six	A	If unoccupied after 3 years of survey, can be mechanically treated. Male detected in 2017, but likely from adjacent PAC.
Volunteer	O-NU	Proximity to TO/TS inventory areas.

## Summary

In addition to monitoring the 18 reference and treatment PACs, we also monitor other PACs that have the potential of being affected by projects. In particular there are two PACs, Knob and T-Six, that per the Objection Resolution, if they are found to be unoccupied for three consecutive years, they can be mechanically treated and prescribe burned in order to retain and improve owl habitat. Several PACs (as reflected in Table 6) were also monitored to determine post-fire occupancy. Several other PACs were also surveyed due to the close proximity to upcoming Task Orders and to help determine current locations of owls, and to help determine if owls detected

during inventories were from known or potentially new PACs. This helped lead to the designation of the LO Spring PAC.

This year we coordinated with the Camp Navajo biologist due to the shared boundary of the Volunteer PAC. Using current Camp Navajo survey information and FRD crew inventory results we were able to designate an additional PAC (Saddle Horse Tank) in the Volunteer Canyon vicinity.

## **4FRI Project Activities**

Mechanical work in the Bonita, Iris and Mayflower PACs were initially offered as cut, skid, and deck service contracts in August 2017. Contracts were awarded around mid-September but were terminated within a few weeks after the contractor expressed concern about the ability to complete the work in the given timeframe (in addition to a few other issues, including not being able to keep the wood). Hand-thinning work in Archies, Iris, Mayflower, and Bonita was completed in September-October 2017. Piles may be burned in the winter of 2018 or 2019. Mechanical work in Bonita, Iris, and Mayflower were re-offered as IRSC (Integrated Resource Service Contract) in August 2018. Contracts received no bid. Contractors cited some challenges with road work, operational concerns, and low volume, but mostly were concerned about how to get rid of the wood, given the limited market. Currently, the mechanical work is “on the shelf” with no plan to re-offer in FY19, unless markets improve significantly. There is currently not a set timeline for re-offering.

Flagstaff and Mogollon Rim Ranger District fire staff completed the prescribed burn treatments in the five identified burn-only PACs in October and early November of 2017. October 2017 was the driest October since 1917, and conditions were not ideal for first entry burns in structurally complex habitat that had not experienced fire for many decades. To minimize effects to key habitat components such as large trees and snags, fire staff conducted night burns in these areas to take advantage of higher humidity and favorable winds. Prescriptions were met across most of the PACs with some pockets of higher-severity fire effects. However, fire is an imprecise tool and we expected some individual tree mortality as well as patches of tree mortality, particularly on drier, south-facing slopes and in patches with high fuel loads. Vegetation plots were established in the treatment and reference PACs prior to treatments and will be monitored in the prescribed burn PACs and the corresponding reference PACs in the spring or early summer of 2019 to obtain data on forest structure.

## **Literature Cited**

- U.S. Department of Agriculture, Forest Service (USFS). 2015. Final Environmental Impact Statement for the Four Forest Restoration Initiative with Errata and Objection Resolution Modifications Volume 1. MB-R3-04-23. Coconino and Kaibab National Forests. Updated April 2015. 575 pp plus Appendices. Available online at [www.fs.usda.gov/4fri](http://www.fs.usda.gov/4fri).
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